CONNECTICUT

Woodlands

SUMMER 2025

Tracking Diamondback Terrapins

A MAGAZINE OF THE CONNECTICUT FOREST & PARK ASSOCIATION

Land Acknowledgment Statement

CFPA acknowledges we are on the traditional lands of the Mashantucket Pequot Tribal Nation, the Mohegans, the Eastern Pequot, Schaghticoke, Golden Hill Paugussett, Nipmuc, and Niantic peoples. We pay our respect to the Indigenous people who are no longer here due to colonization, forced relocation, disease, and warfare. We thank them for stewarding this land throughout generations. We recognize the continued presence of Indigenous people on this territory who have survived attempted genocide, and who still hold ties to the land spiritually and culturally. We shall be good stewards of the land we all call Quinnentucket, Connecticut.

CONTRIBUTOR'S *Spotlight*

John Michael Arnett loves all turtles but is especially fond of the diamondback terrapin. As a graduate student at Western Connecticut State University, he researched population dynamics with the Terrapin Tracking Project. After earning an M.S. in Integrative Biological Diversity, he returned to his home state of Texas where he's an associate scientist with Environmental Consulting and Technology.

Why terrapins?
Diamondback terrapins have always been a dream species of mine to work with. From their charismatic look, to being the only species of turtle in North America that lives in brackish waters, they instantly drew me in.

What were you most surprised to learn from your graduate research?
First, all population knowledge on terrapin in Connecticut came from just one study done at one site in 1999. Second, the sheer number of terrapins we caught. We originally were permitted for 300; by the end of our second season we caught over 1800, showing how little we actually knew about their populations. My study is a snapshot in time of their populations and only more research can truly tell us the status of the diamondback terrapin.

What are some of the broader lessons for turtle conservation?
Turtles have been around for hundreds of millions of years. These animals were designed to handle the worst of the worst; only now are their populations at an all-time decline. Their greatest threat is humans. But if we take the time to help them across the road, go the extra mile to help them across the road and help reduce the destruction of the habitat, some populations may have a fighting chance.

What is one thing people should remember about terrapins?
Terrapins range from Corpus Christi to Cape Cod. That may seem like a substantial range, but when you think about how they only live in brackish water, that significantly reduces the extent of their range. They are habitat specialists; the only turtle who lives in the brackish estuaries along the eastern coast of the U.S. Only you can save these Diamonds of the Marsh.

In this Issue

Summer 2025 Volume 90/No. 3/ISSN #00106257

On the cover: John Michael Arnett holds a large female diamondback terrapin found during his research along the Connecticut coast. Read our story on page 14.

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Editor's Note

I've always loved the water, especially during summertime. To me, it's the perfect season for sailing, kayaking, or simply relaxing at the beach. But these days, it's the news that's making my head swim. We're constantly bombarded by an endless stream of violence, aggression, and blatant lying meant to sow confusion, overwhelm, and divide us.

Unfortunately, such tactics seem to be working. People are increasingly wary of our institutions—from government to higher education to the scientific and medical communities—and, worryingly, of each other. In the environmental field, specifically, thousands of government employees have been laid off in recent months, in many cases after decades of public service. Vital research funding has disappeared. Critical programs have been shuttered. Public lands are under attack. And once again, basic science is being questioned and weaponized, threatening both our personal health and planetary wellbeing.

While I believe people must organize, support one another, and continue to work for a better world in the face of such threats, I also believe it's important to put down your phone and take a break from doomsday scrolling.

Recently, our family spent the weekend camping at Macedonia Brook State Park, one of our favorite places in the entire state. We pitched our tent next to the babbling brook where our kids could cool off and hunt for crawfish. We hiked the Blue-Blazed Macedonia Ridge Trail, a challenging 6.5-mile loop that offers stunning views of the Taconic and Catskill mountains. At night, we were serenaded by a pair of barred owls. Best of all, there's no reception in the park, so we powered off our phones and were fully engaged with each other in the present moment.

Here in Connecticut, we're fortunate to have so many diverse and beautiful state parks, forests, and beaches, and over 800 miles of Blue-Blazed Hiking Trails to explore. Conservation has long been a bipartisan issue, so this summer, I hope you'll take the opportunity to get outside, get into nature, and connect with others around shared values, regardless of political ideology. It may not solve all our problems, but least it's a start.

I'll see you outside,

Timothy Brown
Editor

The Connecticut Forest & Park Association, Inc.

The Connecticut Forest & Park Association (CFPA) is a 501c3 nonprofit organization that protects forests, parks and the Blue-Blazed Hiking Trails for future generations by connecting people to the land. Since 1895, CFPA has enhanced and defended Connecticut's rich natural heritage through advocacy, conservation, recreation, and education, including maintaining the 825-mile Blue-Blazed Hiking Trail System. CFPA depends on the generous support of members to fulfill its mission. For more information and to donate, go to ctwoodlands.org

Connecticut Woodlands

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THE VIEW FROM THE

Canopy

BY LAURIE GIANNOTTI

Greetings, CFPA members and friends!

I have supported CFPA's mission throughout my entire career. Now that I am retired and have more time to spend on things I enjoy and believe in, it is an honor to assist CFPA in the role of president of the Board of Directors. In 2001, I became an official CFPA member, donor, and volunteer. I also had the great opportunity to collaborate with CFPA in my role as Connecticut Trails and Greenways Coordinator from 2007 to 2022. My husband, Rob Butterworth, chair of CFPA's Trails Committee, and I are founding members of the Winslow Society and have consistently contributed to the annual appeal and answered calls to action. At our house and on the trails with our springer spaniel Walli—on his leash, of course—it's all CFPA, all the time!

The Board of Directors is a group of dedicated volunteers who are responsible for the financial, policy, and administrative health of CFPA. I continue to be impressed and inspired by the dedication of our current and former board members, and our honorary directors are a profound resource with a wealth of expertise. We directors stay informed about state and national policy in line with our mission and take action when necessary. We are engaged in fundraising efforts, lead events in our respective hometowns, and continue to recruit and welcome new directors, most recently Jeff Bolton from Granby and Michael Ferrucci, our forester, from North Branford. Currently we are spending most of our energy working in collaboration with the staff to secure a new Executive Director. We have formed a search committee and are on track to welcome a new organizational leader later this year.

As readers of Connecticut Woodlands know, over these past two years CFPA has been navigating a time of growth and transition. Through all of this, CFPA's staff have remained resilient, delivering successful programs and driving our strategic plan goals forward. I would like to share some program highlights from a recent board meeting.

- CFPA has inspired the nation with our Connecticut Trails Day. This year, we hosted 220 events statewide, the largest offering since the COVID pandemic.
- Over 50 students graduated from our Master Woodland Managers program this spring; with the recent addition of a new education assistant, we look forward to welcoming an even bigger cohort this summer.
- Also, while you're out hiking this summer, be on the lookout for the 2025 Connecticut Woodlands Conservation Corps crew. They'll be working throughout the state on both private and public state park and forest lands, building new trails and addressing storm damage while learning construction skills and developing their leadership abilities.
- Our communications team has increased our social media connections by over 10 percent across all social media platforms.
- Our development team has increased our revenue streams and maintains 64 percent of CFPA's donors, compared to the national average of 48 percent.

As CFPA celebrates its 130th year, I am confident that our successes will continue. My vision for CFPA over the next five years includes ongoing meaningful dialogue between the Board of Directors, CFPA staff, and you—our incredible volunteers and partners; strengthening and expanding our partnerships; and celebrating our successes.

ON/THE Trail

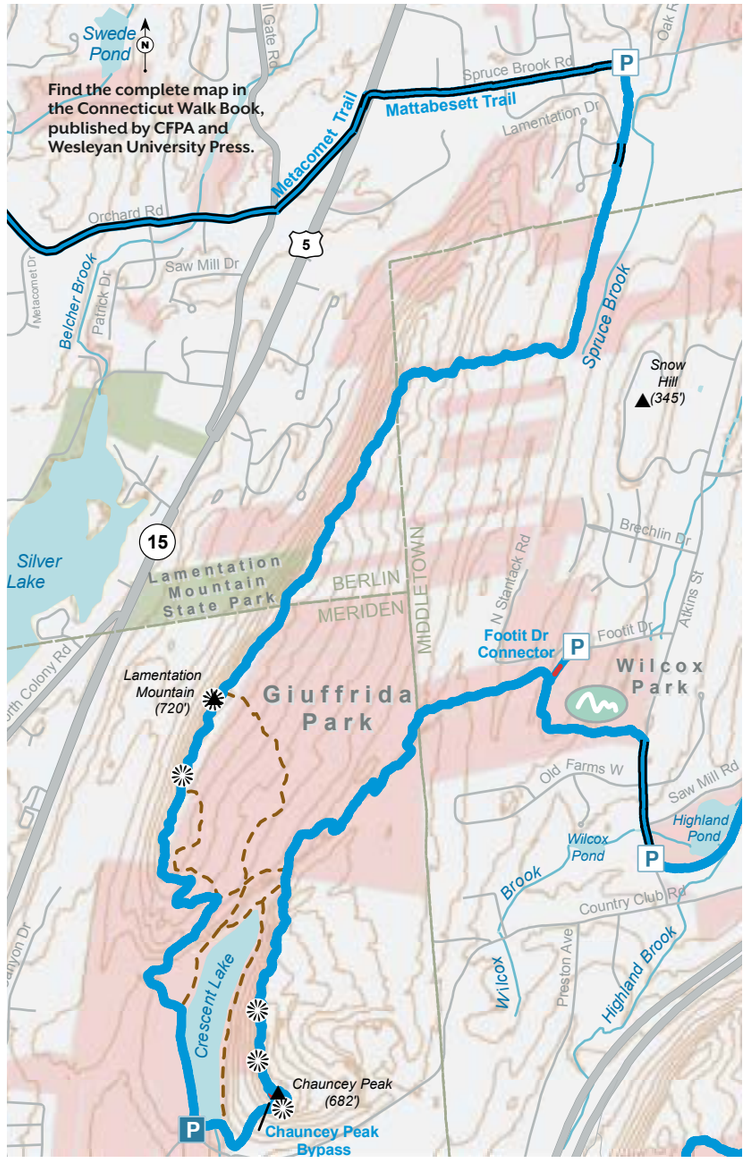
Lamentation Mountain Section of the Mattabesett/ NET Trail

By Jim Miller

I have been a hiking enthusiast dating back to my time as a Boy Scout growing up in northeast Ohio. Since moving to Connecticut in 1981, I have hiked extensively on CFPA's Blue-Blazed Trails and section-hiked over half the Appalachian Trail. When I retired in 2015, I was looking for a trail management opportunity with CFPA, so when the Lamentation Mountain section of the Mattabesett Trail came available near my home in Middletown, I jumped at the chance. For me, it is just one more reason to get out and go hiking. I am also a CFPA-certified sawyer and help clear blowdowns on a number of local trails.

I manage the northern terminus of the Mattabesett Trail. This five-mile section runs from Giufridda Park in Meriden north to the Berlin Turnpike and primarily follows the Lamentation traprock ridge. While it is known to hikers for its series of spectacular views to the west, it is almost invisible to non-hikers. (As you drive around central Connecticut, there are very few views of it). The best views of Lamentation are from the adjacent ridges in Middletown and Meriden. It made national news last fall as the location of the deadly Hawthorne Fire.

I enjoy hiking the Lamentation Mountain section year-round, and I inspect a portion of the trail about once a month. Autumn is my favorite time of year to be out hiking, but each season has its own features. It's not unusual for me to flush out a few deer, especially on the quieter north end of the ridge. One spring I encountered a fawn that had been concealed just off the trail. You can count on seeing hawks or turkey vultures cruising the updrafts created by the cliffs.



Lamentation Mountain and Chauncey Peak (also on the Mattabesett) are often accessed from a parking area at Giufridda Park off Westfield Road in Meriden. The park includes Crescent Lake, a small reservoir, and is popular with dog walkers and fisherman. The most popular hike from Giufridda Park is to Chauncey Peak, which has a tremendous view to the east and south and is a 15-to-30-minute climb from the parking area.

Accessing the overlooks on Lamentation takes a little more commitment, but they are definitely worthwhile. The ridge offers commanding views in three directions: Hartford's skyline to the north, as well as the Hanging Hills in Meriden and Sleeping Giant State Park to the west and south, respectively. Most of the hiking traffic tends to be on the southern half of the ridge. The northern half of the ridge can be accessed from a small trailhead on Lamentation Drive in Berlin.

Land ownership on the ridge is a "patchwork" of state, municipal, and land trusts, with a smattering of privately held properties. The Berlin Land Trust acquired about 50 acres several years ago, enabling greater access to the northern end of the ridge. CFPA maintains a campsite at Lamentation State Park about midway along the ridge. Unfortunately, the Hawthorne fire likely originated at the campsite, even though there was a posted fire prohibition.

I think this section of the Mattabesett—part of the New England National Scenic Trail—is a relatively unknown gem for hikers, right in the middle of central Connecticut, where the towns of Meriden, Middletown, and Berlin come together. It's not on the trail, but there is a marker on the east slope of Lamentation where the three towns (and three counties) meet. It's a great place to hike where you can get warmed up on the climb to the ridge, then enjoy some great views, fresh air, and a cool breeze even on the hottest days.

Jim Miller retired in 2015 after a 40-year career in agriculture, and in 2018 he became a CFPA Trail Manager. In addition to hiking, he enjoys genealogy, woodworking, beer making, cycling, and spending time with his grandchildren.

Building on Tradition

A unique class at Wesleyan University provides students with an opportunity to gain real world build-and-design experience, while also challenging their conceptions of nature.

By Luke Kim
Photos by Christian Nakarado

Above: Students carry newly harvested beech saplings to the project site.

After a long day spent working in the woods, two classmates and I packed up to leave. What had begun as a bright spring morning was now overshadowed by a blanket of dark clouds. As we hiked to our cars carrying saws, hammers, and other hand tools, a light rain began to fall, steadily growing harder as we drove back to campus. A classmate looked at me and said, "It's almost like the woods knew we were going to leave and waited to rain." I remembered first entering the forest a week earlier and seeing the sunlight dancing through the canopy. It had felt like visiting an old friend or going to my grandparents' house where I'd always find a warm meal and cold RC Cola in the fridge. As I reflected on how we nearly avoided getting caught in the rain, I wondered if, at the outset of the class, we would have just considered it nothing more than lucky timing.

"WOOD: Building with the Forest," is a Wesleyan University design-and-build course where students host an in-house design competition for a real client and then construct the winning design using materials sourced from the building site. "WOOD" is unique from other, traditional design courses in that its focus is on working within an ecological space and moment in time. Each year's project has a unique focus under the general umbrella of sustainable design. For example, last year's class contemplated the movement between the forest and the outside world and built a gateway for the trailhead at CFPA's Highlawn Forest using trees harvested and milled from the site. This year's class worked at Field Forest, a 152-acre parcel in Durham owned by CFPA that is home to an easy hiking trail, towering trees, a vernal pool, and an array of birds and other wildlife.

Before the start of the semester, our professor, Christian Nakarado, sent us two readings to set the stage for the class: Thoreau's "Walking" and "Wisgaak Gokpenagen: A Black Ash Basket," from Robin Wall Kimmerer's landmark book "Braiding Sweetgrass." In her essay, Kimmerer describes how she learned the craft of Potawatomi basket-making and reflects on the ways in which Indigenous traditions incorporate respect and reciprocity for all life. A tree itself will determine if it ought to be harvested, she says.

We began the course by considering the life cycle of a two-by-four, from planting a seedling to the final board resting a big box store shelf. We then studied historical photos, some dating back to the 1800s, of square-framed houses built

Top: Red cedar saplings are singed prior to construction. Left: An arched beech sapling pathway mirrors the frame of the wetu.Above: The arched sapling pathway mirrors the frame of the wetu.

from these ubiquitous studs. The boards, Professor Nakarado said, represented a foundational building block of the American colonial project, one that encouraged deeper expansion into Native land while also terraforming it to Western standards through extensive logging and European agricultural practices. It was clear that the class would explore both Indigenous worldviews and the language and ethos of Western design.

For our first project, simply called the "Stud," students were challenged to create the tallest freestanding structure possible using solely a two-by-four. At the time I noticed that everyone's design, including my own, consisted of straight lines and 90-degree angles. As we worked, local artist Gary "Red Oak" O'Neil, a respected Wangunk elder, visited our class, sharing stories about his life, family, and time at Wesleyan. Later, as we toured Field Forest to choose a site for our project, we were joined by Annawon Weedon, a Mashpee Wampanoag artist and director of First Light Foundation. While we walked, he described how humans learned to navigate by following the movements of animals. At one point, he challenged us to find a square bird's nest. I watched as my classmates peered intently into the canopy and thought back to the Stud project, with our orthogonal diagrams and rectangular designs. Both Annawon's and Red Oak's stories inspired me to think differently about our work and to act more empathetically with other living beings.

Once we had finished scouting the location and researching the area, we began the design competition. Our goal was to create a gathering space that included a *wetu*, a seasonal home traditionally used by local Indigenous people, consisting of a bent red cedar sapling frame covered with bark or reeds. The class was divided into three working groups: *performance*—bringing life and movement to the space; *reclamation*— honoring and recognizing the tribes who have lived on the land; and *impermanence*—incorporating the passing of time and changing of seasons. Each week, students enhanced another group's design in an iterative creative process. CFPA staff members, as well as Annawon and Red Oak, provided feedback and selected the final design for a pathway encircling a wetu and a gathering space with a firepit.

We continually revisited the question: what does it mean to take the life of a tree?

Students secure the wetu's red oak frame.

Since Field Forest lacked red cedar for the project, Annawon harvested some in Massachusetts for the frame, which faced east according to tradition. We deviated from the customary bark cladding and instead used waxed canvas shingles. The pathway encasing the inner space was defined by a continuous set of saplings bent into arches that mirrored the frame of the wetu. This required many saplings, which we harvested from a local stand of beech trees.

While harvesting saplings, we continually revisited the question: what does it mean to take the life of a tree? Professor Nakarado, an architect and an enrolled member of the Sault Ste. Marie Tribe of Chippewa Indians, showed us how to present tobacco offerings while harvesting the trees using our left hand, which is closet to the heart, as a sign of respect, honesty, gratitude, and intentionality. He asked us to listen and speak with each sapling before taking its life. He also invited us to consider each sapling's age and to imagine ourselves at that age. I knelt, removed my ball cap, and sprinkled tobacco at the foot of the tree. There, I awkwardly asked the tree for permission to use it for the project. After felling the sapling, I counted its rings. The tree was 12 years old. I imagined all the life I had lived since I was twelve and solemnly bowed my head twice, incorporating my own pidgin of a modified Korean tradition. Somberly, I carried the sapling back to the site.

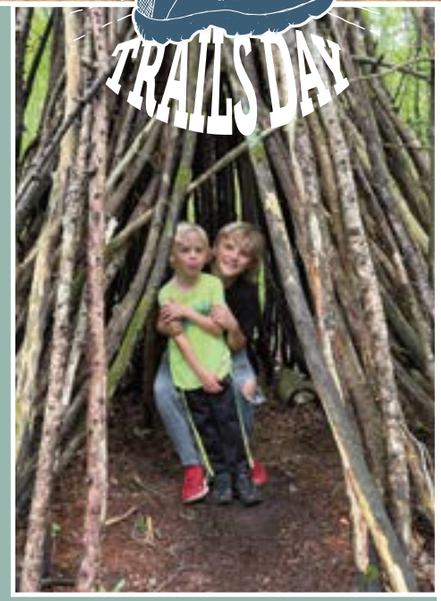
We began to construct the arches by placing each sapling in the ground and then slowly bending them inwards. We secured the arches by wrapping them around each other and then tying them together. The process required adapting to the individual characteristics of each sapling. We listened for creaks and felt for knots to determine how far each sapling could be bent. The practice made me question a more conventional approach where trees are felled anonymously and removed from the context of their natural environment. In these types of commercial operations, a tree's memories, epitomized in its rings, are split along straight lines, leaving only remnants of different rings stacked upon each other. This disruption of time, history, and heritage allows the tree itself to be forgotten, alienating it from itself, its home, and its siblings.

Students attach canvas shingles to the wetu.

The wetu, as a vernacular structure, represents a cultural continuity for many Indigenous people, and we relied on Annawon, an expert in wetu design, to provide us with that cultural context and traditional knowledge. It was a privilege for me to work on this project. It allowed us, as university students, the opportunity to learn about and intimately engage with a people, culture, and tradition very different from our own. But we students didn't always act respectfully. Cultural practices that were foundational to our work, like the tobacco offerings, became increasingly sporadic and eventually stopped altogether. I found such behavior disheartening. At one point, a student designed the space as a yin-yang, which prompted deep conversations with the entire class about how we should approach such culturally sensitive work.

For Indigeous people, the erasure of meaning and identity is neither new nor unique. Rather, it is the consequence of a society rooted in settler-colonialism and white supremacy. The WOOD studio is an attempt to disrupt such colonial thinking and to challenge our dominant worldview. Architecture uses signs, symbols, and motifs whose significance stretches far beyond aesthetic preference, encompassing everything from the treatment of building materials to land politics. As such, it presents a unique opportunity to be an agent in both creating and organizing meaning in the world. "WOOD" reinforced the intentionality required to produce sustainable and culturally significant designs, and reminded us students of the importance of empathy, both in our work and the wider world.

Luke Kim studies art and archeology at Wesleyan University. When not at university, they like to spend their time back home in Tennessee designing clothing, making music, or hiking. Sadly, they can't swim.



Celebrating Connecticut's Trails

Connecticut may be the third smallest state in the country, but it's big on trails. For the past 32 years, CFPA has coordinated Connecticut Trails Day, the largest event of its kind in the nation. This year, over 1,500 people participated in the annual celebration, held the first weekend in June, which included over 200 events—from hiking and trail building, to kayaking, cycling, birding, and more— each one organized and led by dedicated volunteers.

Thank you for making Trails Day such a success!

WHY DID THE TURTLE CROSS THE ROAD?

For the past five years, the Terrapin Tracking Project has monitored the movements of diamondback terrapin in Connecticut in the hope of better understanding how to protect these iconic creatures.

By Timothy Brown

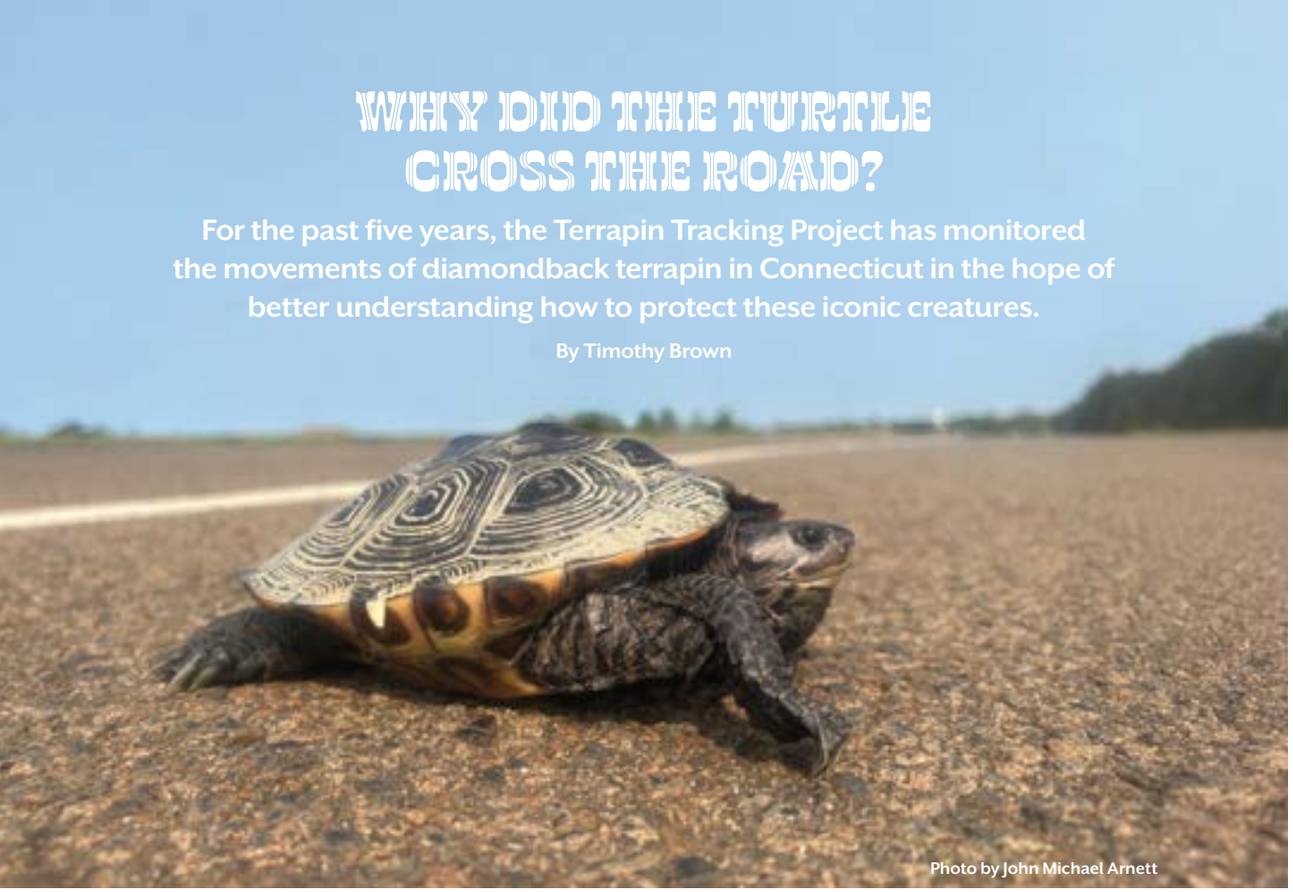


Photo by John Michael Arnett

Connecticut is home to hundreds of miles of coastal roadways that hug the shoreline of Long Island Sound. But what is a relaxing ride filled with stunning views of the water for people can be a death-trap for wildlife. And they're especially deadly for turtles such as the diamondback terrapin who lack the size and speed to quickly move out of harm's way.

The diamondback terrapin (*Malaclemys terrapin*)—so-named for the plate, or *scute*, patterns on its shell, or *carapace*—is a native mid-sized turtle found in salt marshes from Cape Cod to the Gulf of Mexico. It is the only species of turtle that has evolved to live its entire life in estuaries where freshwater rivers meet the sea. But you won't always find them swimming in the brackish waters. In late spring, pregnant females—which can be twice the size of males—haul themselves out in search of a sandy spot where they will lay upwards of 15 or more eggs before making the return trip. The eggs are left buried and unattended until early autumn when the hatchlings must make their way to the water.

It's a perilous journey for both mom and her young. Each year, untold numbers of terrapins are struck as they cross coastal roadways. While opportunistic sampling of roadkill can reveal where a turtle has been hit, it doesn't necessarily point to "hot spots"—places where roads bisect prime turtle nesting habitat resulting in a disproportionate number of turtles being killed.

Scientists are uncertain why terrapins choose a particular nesting site. Perhaps they are driven by instinct to places that have been used by generations of turtles. Or maybe other factors—temperature, for example—influence where a mother will decide to lay her eggs.

"It's probably a little of both," says Brian Hess, a wildlife biologist with the Connecticut Department of Energy and Environmental Protection (DEEP). "There has been success in creating new nesting habitat—it can work—so there is some plasticity." But because only females make this migration, a single incident of roadkill can have a devastating impact. "Even if you lose a relatively small number, it can have an outsized impact," he says. "You're losing the most valuable individuals from that population."

"It's clear that there is some preference as to where they go," echoes Theodora Pinou, a professor of biology at Western Connecticut State University (WCSU), whose research includes terrapins in Connecticut, where they are listed as a species of special concern. "Nests are not randomly distributed," she says. "They seem to be in these pockets."

The uncertainty surrounding the conservation status of terrapins in the state, including these migration hot spots, was the inspiration for the Terrapin Tracking Project, a unique partnership between DEEP, WCSU, and The Maritime Aquarium at Norwalk, which spearheaded the project.

"Our initial thought was a presence-absence survey for people to report finding terrapins, because at that time there really wasn't much work being done in Connecticut," says Bridget Cervero, education supervisor at the Aquarium who, amongst other duties, coordinates its volunteer community science program. But after contacting DEEP and WCSU in late 2019 as potential collaborators, the project's focus began to shift to roadway mortality. "All the different partners had the idea to do something with terrapins," Cervero says. "It was very much a collaborative effort."

Cervero grew up going to the beach every day on Cape Cod but says she first learned about diamondback terrapins while working at the Aquarium where they act as animal ambassadors and are often used in educational programs. The Terrapin Tracking Project grew out of her passion for engaging members of the public as community scientists.

"Community science allows people to let their inner scientist free and have those hands-on opportunities," she says. "I feel very lucky to be able to do this kind of work and to get people involved because that's the first step in education."

Cervero recruited and trained the volunteers how to collect data accurately and systematically, and in late spring 2020 the first community scientists ventured out along coastal roadways from Old Saybrook to Darien looking for the turtles. These community scientists, who ranged from college students to seniors, recorded the presence—or absence—of turtles, along with other vital information, such as temperature. Their data was then shared with DEEP and WCSU for further analysis.

Cervero insists that community scientists are indispensable for this type of landscape-scale, longitudinal research.

"They allow scientists to collect more information over a larger area and often for a much longer period of time. That's where the value is—seeing those long-term trends. Without volunteers, that wouldn't exist," she says. "I think it's such a beautiful benefit for the volunteers as well. It allows them to make that connection with nature, to appreciate what's happening in their own backyards, and to have an actionable way to participate in conservation."

In addition to professional biologists, Pinou's graduate students have used data from the Terrapin Tracking Project to pursue their own research questions. For example, master's student John Michael Arnett designed a mark-and-recapture study to better understand how roadkill affects population dynamics. Another student, Henry Schwendler, researched the relationship between nesting sites and temperature, a proxy for climate change. "Understanding the areas where the terrapin nest, what it looks like in terms of temperature distribution, might be the roadmap as to why they're picking a specific area," Pinou says.

Because only females make this migration, a single incident of roadkill can have a devastating impact.

Photo courtesy of The Maritime Aquarium

While questions remain about terrapin hot spots in Connecticut and the reasons why the turtles choose a particular nesting site, Hess says there are steps we can take to reduce roadkill, such as signage that alerts drivers about migrating turtles or drift fencing that prevents them from crossing roads in the first place.


Photo by John Michael Arnett

"In my mind, the best option is to improve the passage," he says. While installing or improving culverts is a major operation involving multiple agencies, the Terrapin Tracking Project has provided important data about where to direct funding. "If DOT came to us today and said, 'We have this money to apply to terrapin crossings, where would you like us to apply these funds to?' We could point fairly easily, thanks to the data collected in this project, to a handful of sites that I think would be helpful."

But cars aren't the only hazard terrapins face. There's habitat loss, sea level rise, and natural predation by foxes, raccoons, and other creatures. The turtles may also become entangled in abandoned fishing traps and nets and drown. But posting signs encouraging people to slow down or to clean up fishing gear could have unintended consequences, such as directing poachers straight to their nests. And conservationists are already fighting a robust black-market trade in North American turtles.

"By advertising (the turtles' presence) you risk them being poached," Pinou says. "It's a small percentage of people, but even one person can destroy an entire population because they're not just taking one or two, they're removing hundreds."

One poacher from Pennsylvania, for example, who had collected both hatchlings and adult turtles from the New Jersey shore, was caught with over 3000 terrapins in his garage. Wild terrapins are often illegally sold as pets, or occasionally as food.

"They are highly collectable, and very easily collectable," says Hess, "so there's a balance that you have to strike. You don't want to attract too much attention to where these turtles are congregating and make them easy spots for people to come pick them up, but you also want to provide folks with knowledge. It's a challenging balance to find."

Removing diamondback terrapin from a salt marsh can have devastating tertiary effects. Their diet, which includes fiddler crabs, small fish, and periwinkle snails—voracious herbivores that will devour cordgrass—helps to maintain the health of the marsh, which itself buffers more inland habitats from destructive storms.

"These turtles are sensitive to a lot of threats that wildlife are facing in general. By addressing the needs of these turtles, we're hoping to address the needs of other wildlife as well," he says. "It is species-based conservation, but we're trying to do it in a way that benefits other species."

Despite these threats, the project showed that terrapin are widespread throughout the Connecticut shoreline. "I wouldn't say they're coming back," Hess cautions, "(but) we're doing a better job of identifying where those hot spots exist."

As the Terrapin Tracking Project winds down after five years, The Maritime Aquarium is shifting its focus and joining a regional terrapin conservation project managed by the Delaware Center for Inland Bays that will involve partners from Massachusetts to Virginia.

"It's a head counting program. Volunteers will stand and just count terrapins," says Cervero. "We're all going to be doing the exact same work, so it's going to be more valuable on a bigger scale. And we're looking for *living* terrapins. The spots that we've identified for these sessions are all known for terrapin sightings, so in that regard, I think it's going to be a little more exciting for the volunteers, too."

The aquarium is also expanding its role in the community. Their new strategic plan—An Aquarium Without Walls—reinforces their commitment to the local community by working to address both environmental and social challenges and strengthening people's connections to the natural world.

"We have a people-focused mission," Cervero says. "The idea is thinking about ways we can connect, and projects like (the terrapin research) speak to that very well."

Hess agrees that community-centered conservation is critical to saving endangered species and other environmental challenges. "The more that I do this job, I realize that it's really about creating and managing relationships with people," he says. "It's what makes progress happen."

Timothy Brown is editor of Connecticut Woodlands.

Tenacity

Land and water are wise,
working together to shape
the world whole.

A river carves a valley,
calling life
to its banks.

Rock is made smooth
by water
patiently grinding.

Algae grabs onto rock
clinging fast
to its wet support.

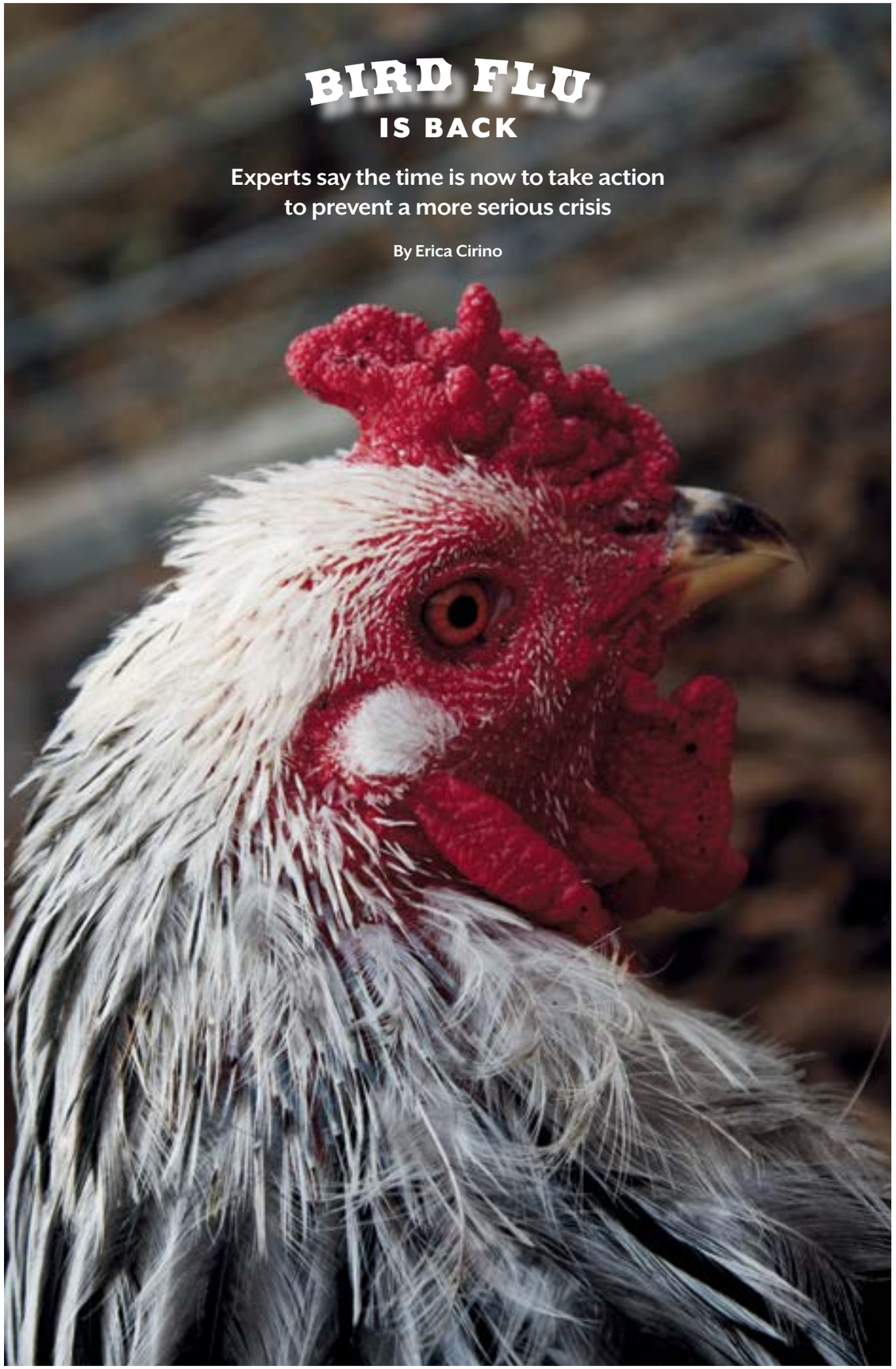
Moss anchors without roots
holding its own
water to survive.

Dirt settles,
sticks to moss and rock
building a foundation.

Spores, then seeds
spread out in thousands
to make one more plant.

The river is moving,
the ground deepens.
This is our life.

John Long is a poet, playwright, and documentarian. His poetry has appeared in the Connecticut River Review, Here: A poetry journal, New Square, Dark Horse, and The Hartford Courant. His plays have been produced at Ensemble Studio Theater, Seventh Sign Theater, Warner Studio Theater, and Phoenix Stage Company. Previously, he was a lecturer in Drama and Film at the University of Connecticut.



BIRD FLU IS BACK

Experts say the time is now to take action to prevent a more serious crisis

By Erica Cirino

Ask Connecticut poultry and livestock keepers and birders alike what keeps them up at night, and you're likely to hear "bird flu."

More than three years into the latest outbreak of highly pathogenic avian influenza (lethal bird flu) in the United States, Connecticut has—thankfully—seen relatively few cases: 280 total in domestic birds raised for backyard flocks or exhibition since March 2022. Eighty-two wild birds statewide have tested positive for the virus from February 2022 to mid-March 2025. Nationally, however, cases have been far more numerous, with millions of domestic birds and thousands of wild birds infected. Worldwide, lethal bird flu cases have been surging since 2020, and besides Australia, every continent—including Antarctica—has seen cases.

The present epidemic is the latest in a string of increasingly worrying bird flu outbreaks to strike the U.S. and the world. While experts stress that most people are not in immediate danger of infection, and there is much bird-keepers can do to keep themselves safe, the longer bird flu sticks around, the more that virus's dangers are evolving in worrying ways, infecting not only birds, but many other animals, including people.

From Wild Birds to Poultry and Back Again

The last major outbreak of bird flu in the United States lasted from 2014 to 2015. Some 50 million domestic birds died from the virus or were killed to control it, costing the poultry industry an estimated $3.3 billion, with American poultry farmers losing more than $1.6 billion. The outbreak was finally quelled through mass euthanasia of infected flocks of domestic birds, a push for better hygiene practices on commercial poultry farms and in backyard coops, and close monitoring of wild birds for disease.

The present outbreak is far more severe. Since December 2021, more than 169 million domestic birds—primarily on commercial farms, and in backyard and exhibition flocks—have tested positive for so-called "H5" strains of the virus. As during the previous epidemic, once an infection is detected, all birds in an exposed flock are quickly euthanized to help quell the spread of the virus. More than 13,000 wild birds, primarily waterfowl like ducks and geese, have also tested positive.

Connecticut may appear to have few cases because it lacks a high concentration of commercial poultry farms. Commercial poultry operations, most of which are concentrated in the Midwest and Southeast, can house tens of thousands to millions of birds in high-density living conditions ripe for the spread of disease.

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Globally, migratory birds travel along nine overlapping "flyways" stretching north to south. From these busy areas, wild birds travel on these overlapping travel routes and can spread the virus far and wide. Map courtesy of the U.S. Fish & Wildlife Service.

Yet five backyard bird-keepers in New Haven and New London counties were hit. Backyard birds, especially those who are kept free-range, are vulnerable to bird flu; all it takes for them to get sick is contact with infected birds, their feces, or infected food or water. Usually in these cases, it's wild birds that have spread the virus to domestic flocks.

"Avian influenza likely entered the state via wild migratory birds as they moved between states and across North America," said Will Healey, director of communications at the Connecticut Department of Energy & Environmental Protection (DEEP). "(Among wild birds) the outbreaks tend to be most severe during the winter when wild migratory birds are congregating in large numbers, disease is easily transmitted from bird to bird, and some birds may be in poorer body condition, and thus more susceptible to infection. As temperatures rise, we often see less mortality in wild birds as they begin to disperse, are not in close contact with one another, and are less challenged by adverse weather and other stressors on their overall health."

Globally, migratory birds travel along nine overlapping "flyways" stretching north to south. Bird flu can spread rapidly among migratory birds, particularly when they congregate at their feeding grounds during the winter, and sometimes at high-traffic water sources, like lakes and ocean shorelines, during summer breeding season. From these busy areas, wild birds travel on these overlapping travel routes and can spread the virus far and wide.

Bird flu is an influenza-A type virus which normally disperses seasonally in a far less deadly "low-pathogenic" form among wild birds, particularly waterfowl. Older, injured, or already sick birds may become very ill from low-pathogenic bird flu, but healthy birds usually recover. Domestic birds are sickened through interactions with infected wild birds and their feces, or contaminated air, farm equipment, food, soils, or waters.

It is through the repeated exchange of bird flu viruses between wild and domestic birds that low-pathogenic strains of bird flu tend to develop into more lethal subtypes. And the crowded living conditions typical on commercial poultry farms create an incubator for disease, enabling viruses to survive, multiply, and mutate into more lethal forms. A pattern of increasingly serious infection and mutation enables more virulent strains of bird flu to emerge and spread from wild birds to domestic birds, and back again.

Lethal Bird Flu Goes Beyond Birds

Globally, the current outbreak is wreaking unprecedented havoc on nonhuman mammals. In the U.S., H5 strains' newer subtypes have spread lethal bird flu to more than 200 mammals since May 2022, including bears, dairy cows, domestic and wild cats, foxes, raccoons, and many others. In Connecticut, two bobcats—in Fairfield and Windham counties—tested positive for bird flu. And for the first time, bird flu has jumped from nonhuman mammals to infect at least 70 people, many of whom work on poultry and dairy farms.

The best strategy to mitigate the development of more virulent strains of bird flu is preventing the virus from spreading.

Decades ago, it was rare for bird flu to infect mammals, unless an animal consumed an infected bird or was exposed to environments contaminated with the virus. Now, bird flu infections in mammals are becoming more frequent and could be making the virus more deadly. The subtype of bird flu now circulating among dairy cows seems particularly contagious; it has spread to 17 states and is responsible for the death of a Louisiana resident.

Worryingly, researchers at the University of Wisconsin at Madison and in Japan found that they could infect ferrets and mice with lethal bird flu virus that had sickened a person who had become infected through contact with dairy cows. What's more, they found that this virus readily spread through the air to ferrets living in separate cages, and appeared capable of binding to and replicating in human lung cells.

"Based in these observations, every effort should be made to contain HPAI (highly pathogenic avian influenza) H5N1 outbreaks in dairy cattle to limit the possibility of further human infections," the researchers wrote in the journal "Nature" in October 2024.

In another study, scientists at Scripps Research discovered that an additional single mutation on the surface protein of the lethal bird flu subtype circulating among dairy cows could make it easier to transmit among people. In our post-COVID world, the consequences of highly virulent zoonotic diseases are now well-known to most people. It and earlier bird flu outbreaks, which infected and killed millions of people, serve as a warning of what could occur should H5 lethal bird flu continue to mutate in ways favorable to human infection.

Why Bird Flu Keeps Coming Back, and How to Stop It

Worldwide, the U.S. and other regions in the Global North deal with bird flu by stressing the need for good farm hygiene—cleaning farm equipment and birds' living quarters, sanitizing boots, and quarantining sick animals, among other measures—and disease eradication through rapid euthanasia. Other countries with many outdoor industrial farms, typically in the Global South, struggle with separating domestic birds from their wild counterparts and may lack veterinary care so diseases are allowed to circulate, sometimes with use of vaccines to lessen illness and death. However, experts say animal vaccines do not prevent birds from bird flu infection or from shedding the virus, and so, it persists.

Meanwhile, research shows that chickens are stressed by the overcrowded living conditions typical on both indoor and outdoor commercial farms, which reduces immunity and increases susceptibility to disease. Establishing networks of smaller farms where animals have more space—and farms have reduced needs for transporting animals, equipment, and workers—are other ways to keep animals healthier and disease at bay.

As bird flu outbreaks become more common and worrisome, some experts think a vaccine will be necessary to protect people from another zoonotic pandemic. Scien-tists had been working on a vaccine, but in May the federal government announced it was cancelling a $766 million contract with Moderna citing "safety concerns" and "a shift in federal vaccine funding priorities." This means, for now, it's up to consumers and producers to help slow the spread of the virus.

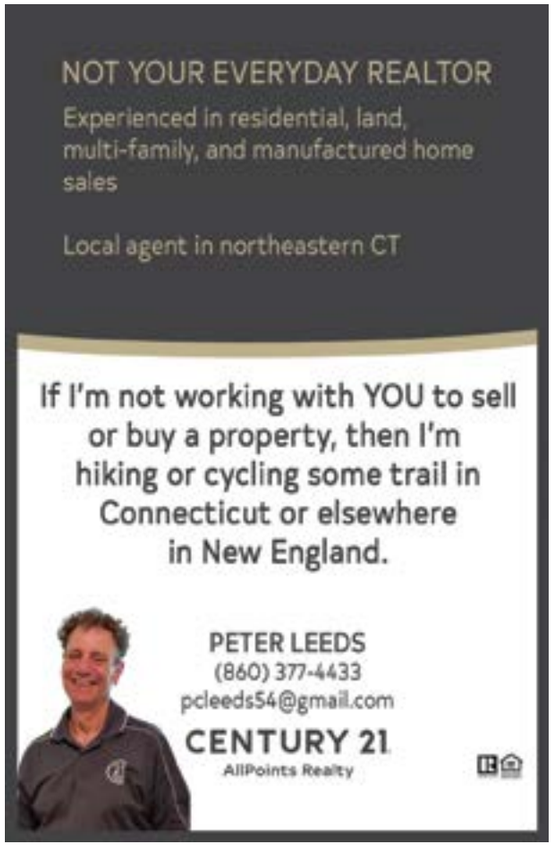
"At the height this year, I had a water and bleach solution that I would dip my boots in before going into the run," said Kelly Boyle, a licensed National Poultry Improvement Plan chicken breeder based in Willington. "I also sprayed the feed bag with rubbing alcohol to kill anything that was picked up at the store or in transit." In addition, the Connecticut State Department of Agriculture tests her flock for bird flu every three months.

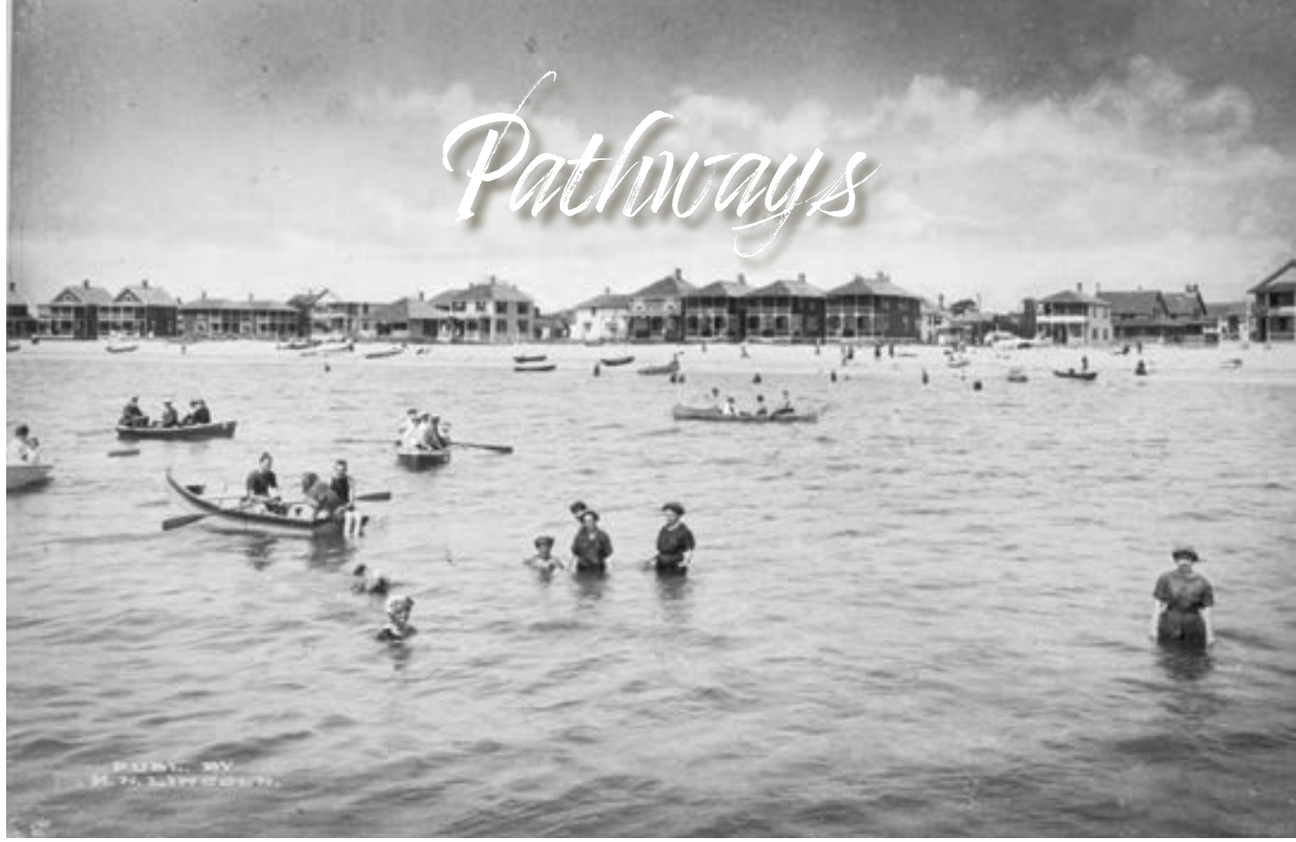
Knowledge, preventative action, and vigilance are critical to preventing further infec-tions. But ultimately what's also needed is widespread improvements to the lives and health of poultry and livestock on large high-density animal farms. Making such a necessary change will require reevaluating our relationships with the animals we rely up-on for our survival and the realization that their wellbeing is directly connected to our own.

Erica Cirino is a writer and artist who explores the intersection of the human and more-than-human worlds. She serves as communications manager at the nonprofit Plastic Pollution Coalition and is best known for her widely published photojournalistic works, including her award-winning book, Thicker Than Water: The Quest for Solutions to the Plastic Crisis.

Slowing the Spread of Bird Flu

- **Purchase eggs and meat from small, local producers rather than large, commercial farms. Thoroughly cook all poultry.**
- **Isolate domestic flocks from wild birds such as ducks and geese.**
- **Avoid direct contact with sick birds and other livestock and their bedding. Wear personal protective gear such as gloves and masks when handling infected or deceased animals.**
- **Practice good hygiene, including frequent hand washing.**
- **Consume only pasteurized milk and other dairy products. (Pasteurization kills the virus).**
- **Report sick poultry, an unexplained high number of deaths, a sudden drop in egg production, or a sudden reduction in feed or water intake to the State Veterinarian at 860-713-2505 or ctstate.vet@ct.gov.**





Pathways

For many people, summertime means a trip to the beach. Beaches are so popular that early conservationists prioritized the protection of beaches along Long Island Sound—from establishing Connecticut's first state park, Sherwood Island in 1914, to safeguarding the state's longest beach, Hammonasset in 1920, which attracted 75,000 visitors during its first season. Today Hammonasset Beach is the state's most popular park, drawing more than 3 million people each year.

Connecticut is home to over 600 miles of coastline, but only 14 percent is sandy beach, and 80 percent is privately owned. And while we tend to think of beaches for our own recreation and relaxation, it's important to remember they're also prime habitat for wildlife, such as nesting birds and turtles. It creates a challenging situation for conservationists in a state that has one of the most densely populated coastlines in the country.

The fight over public access to Connecticut's beaches dates back to the founding of the republic. But in decision after decision, the Connecticut Supreme Court has repeatedly affirmed the public's right to access the coast to fish, shellfish, gather, and pass (e.g., walk). Private property rights, the Court has maintained, end at the mean high-water mark; beyond that, the state holds the land in trust for the benefit of all people. And as recently as 2001, the Court ruled that municipalities cannot prohibit non-residents from accessing town beaches.

CFPA has often waded into these choppy waters in defense of our public lands, helping to establish many of our state forests and parks in the early 20th century, and more recently, championing Passport to the Parks, a revolutionary program established in 2018 that provides all Connecticut residents with free admission to our state parks, forests, and beaches. Because all people deserve to have a day at the beach.

The above photo, courtesy of the Connecticut Museum of Culture and History, was taken between 1900 and 1925 at Swan Beach in Old Lyme.

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