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A Geologist Looks at how Connecticut's Natural Landscape has Shaped our State

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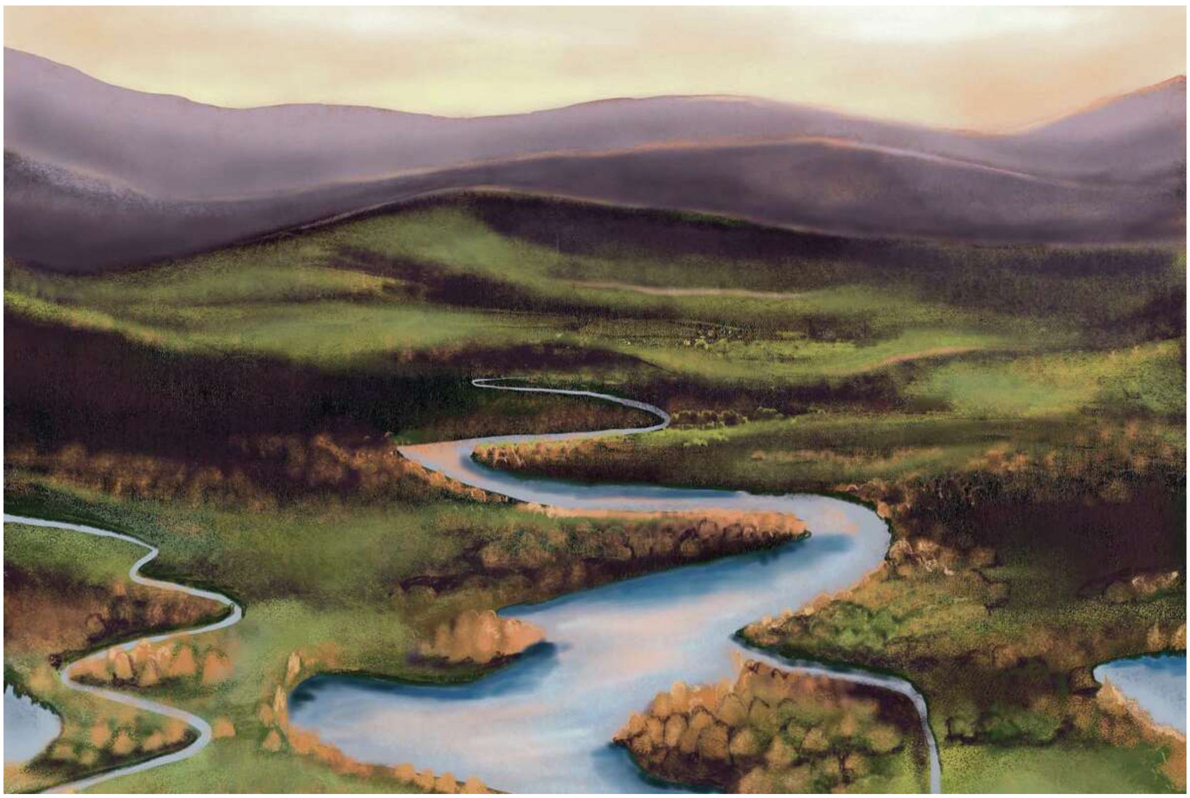

Through the generations, we have shaped Connecticut's land to suit our needs. But that's nothing compared with how the land has shaped us. Illustration by Grace Russell

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My first glimpse of Connecticut was through the scratched plastic window of a jet airliner descending to Bradley International Airport. Curving over the verdant Connecticut River Valley, I remember seeing Long Island Sound shimmering in the distance. Only decades later did I learn that our state is the happy marriage of these two special places — river and shore.

Outsiders sometimes assert that Connecticut lacks a unique state identity because we're stretched too thin by the powerful cultural gravity of New York City and Boston. But if I were asked to describe our identity, I would gush lovingly about how our physical landscape lies at the taproot of our historic statehood and invigorates culture today. If physical geography is the house where regional culture makes its home, then geology is the foundation, plumbing, wiring and internet service that makes that old house a home.

What follows are 10 essays that trace our state identity back into deep time. Some are about the whole state. Some are about its unique places. Collectively, they reveal that the bones of the landscape have greater influence over our daily lives than most of us realize.

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About the author

In June 1984, I flew nearly 5,000 miles from my home in Fairbanks, Alaska, for a job interview at the University of Connecticut in Storrs. I'm still here after nearly four decades of living in Mansfield, raising a family, and working as a professor, scientist, author and journalist in what is now called the Department of Earth Sciences.

As the years passed, I became more interested in what my colleagues call scholarly engagement - the giving back to the community that supports us with tax dollars and that sends its children to us to teach. I've served on various state committees ranging from the highly technical Low Level Radioactive Waste Advisory Committee to the highly literary Connecticut Center for the Book. For the last two decades, I've managed the Stone Wall Initiative and given hundreds of talks on Connecticut's heritage landscape. From 2003-18 I was a regular essayist and columnist for the *Hartford Courant.* I've since dialed back to writing book reviews for *The Wall Street Journal*.

Our Land

Connecticut is the merger of river, shore and their adjacent uplands.

We have two things that neither New York City nor the rest of New England has — the region's broadest and most fertile bedrock basin and its largest and richest saltwater sound. The pairing of these two oval-shaped lowlands guided Indigenous lifeways for at least 12 millennia, Euro-American history for four centuries, and the built environment of modern Connecticut.

In 1614, the Dutch explorer Adriaen Block claimed this land as New Nederland. Its principal port would become New Amsterdam on the Hudson River, later renamed New York. Simultaneously, English Captain John Smith claimed the land as New England, whose principal port would become Boston on Massachusetts Bay.

Connecticut was pioneered for European settlement in 1633 when the Dutch and English established competing trading posts near present-day Hartford. Three years later, the Rev. Thomas Hooker planted the Connecticut Colony in the broad river valley above modern Middletown, an oval-shaped tectonic rift basin protected by volcanic ridges, mantled by stone-free soils, and bisected by fertile floodplain meadows. Four centuries later, the result is a beaded string of river cities and towns from Suffield-Enfield on the north to Middletown-Portland on the south.

In 1638, the New Haven Colony claimed the northern shore of New England's broadest marine sound: an oval-shaped, glacier-dug, saltwater basin later named for Long Island. Fairfield, Stamford and Greenwich were its satellite colonies. Each maritime village was a touching point where freshwater streams flowed southward over ancient rock to reach safe harbors. Four centuries later, the result is a beaded string of shoreline cities and towns from Greenwich to Stonington.

Normally, the confluence of river and shore gives rise to large port cities like New York and Boston. This didn't happen at Old Saybrook, because the Connecticut River joins the Sound with shifting sandy shoals that rendered navigation by large ships impossible.

Lacking a unifying port city, the Connecticut and New Haven colonies joined forces to drive the Dutch away by 1664. This union explains why, for the next two centuries until 1875, our capital alternated annually between New Haven and Hartford.

The bond between these formerly separate colonies strengthened as settlers moved inland and upward into the forested interior. There, the combination of flowing hydropower streams and fertile hillsides nucleated hundreds of rural villages, each with a patchwork quilt of farms seamed by stone walls.

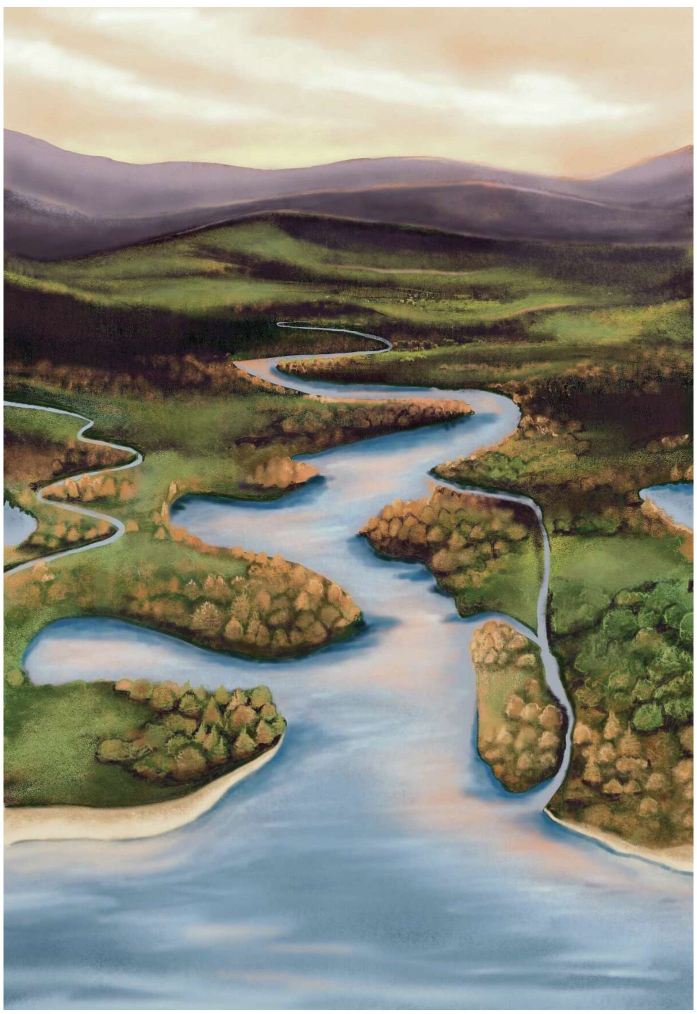
Connecticut is the marriage of river and shore, and all the blessings in between.

The Straits

The Connecticut River acts like an hourglass flowing through a nexus at Middletown.

Every sink has its drain. Every hourglass has its nexus. The Connecticut River has its Straits, a bedrock narrows between Middletown and Portland that links river and shore.

South of the Straits lies the most extensive and pristine tidal marshes in New England: they broaden toward the river's mouth at Old Saybrook. To the north lies the richest alluvial lowland in New England: it broadens northward toward Hartford.



Just as Connecticut's settlers have shaped its land and rivers, the natural environment has shaped us in turn.
Illustration by Grace Russell

At a first approximation, the Straits occur where the river crosses a major geological fault in the Earth's crust. There, the river veers eastward away from a broad lowland underlain by younger, softer, sedimentary rock into a narrow valley underlain by older, harder metamorphic rocks. At closer inspection, the bottleneck lies above a band of a very hard rock called amphibolite within a zone of merely hard rock called schist. There, in a narrows less than 800 feet wide, New England's longest river is trapped between a proverbial rock and a hard place.

Flowing upriver toward this narrows during flood tide is an unseen wedge of saltwater traveling upstream beneath the south-flowing freshwater. After being constrained at the Straits, the rising tide continues northward to lift the river at Hartford by about a foot, and to finally dissipate at Windsor Locks.

Flowing downriver through this narrows is the returning tide and the much larger freshwater flow of the Connecticut River. Under normal conditions, the Straits are wide enough to allow easy passage of this combined flow. But during times of flood, the river backs up like a bathtub with a too-small drain and the faucets wide open. The record flood of 1936 had a discharge about 15 times greater than its average flow.

The backup of water at the Straits, called a hydraulic dam, has been in operation for about 7,000 years. Before then, sea level in Long Island Sound was so low that south-flowing freshwater could easily pass through the Straits. Before then, the Connecticut River north of Middletown was much narrower and deeper, less rich, and only sparsely visited by human beings. But since the time when backup began, the river's flood plain has thickened and risen at least 20 feet, causing the valley to widen into a beautiful, stone-free meadowland with permanent human settlements.

Without the Straits, the Connecticut River's tidal marshes to the south and its alluvial meadow to the north would be diminished. This bottleneck is the nexus of our historic state identity, the physical place linking river and shore.

The Shore

The northern edge of Long Island Sound is intimately and uniquely ours.

The charm of the Connecticut shore emerges from its intimacy.

At the largest scale, we face a protected saltwater sound, rather than the open sea. It's symmetry — a lozenge-shaped basin tapering at both ends — offers a comforting sense of enclosure.

Zooming in from sound to shore, we discover an assemblage of landforms: rocky headland, pocket beach, low dune, tawny salt marsh, quiet lagoon, tidal inlet and freshwater stream — that is repeated dozens of times between Stonington on the east and Greenwich on the west. The result is a shoreline fugue with variations extending nearly 100 miles that controlled the locations of Indigenous and Colonial settlements. I count 78 public beaches along our shore, nearly one for every mile. The smaller scale of these shoreline mosaics relative to their counterparts on the open sea, combined with locally higher tides, enriches the amount and diversity of estuarine habitat.

Zooming in for the third and final time, we find the gentle curvature of our crescent-shaped, pocket beaches. Each is a deposit of sand trapped between hard-rock headlands that is curved by the refraction of incoming waves. Each curve acts like a lens, calling our attention to a common offshore focal point, creating a sense of unity.

Connecticut's shoreline offers a unique intimacy. Illustration by Grace Russell

All three scales of intimacy trace back to the geology, which continues to give rise to the physical setting, which gives rise to the ecology, which gives rise to the human community.

Long Island Sound is effectively a saltwater lake. In size, shape, orientation and genesis, it resembles a scaled-down version of Lake Erie, which is about twice as long and wide. Both are natural bedrock basins that were enlarged and deepened by glacial erosion beneath the same Laurentide ice sheet. Both are rimmed to the south by a broadly curved moraine created by the thrusting and deposition of marginal glacial sediments. As the ice sheet receded northward, staggering quantities of gravel, sand and mud poured into turbid, gray, glacial lakes dammed up by the moraines.

Only at this point in time does the history of the two basins diverge. Lake Erie remains with us today at a lower level. In contrast, Glacial Lake Connecticut drained completely, exposing its former bottom as a dusty, dry, vegetated and inhabited plain before it was re-flooded by the rising sea to create a marine sound. During the last 7,000 years, the slow global rise of sea level shoaled glacial sand into the mouths of bedrock valleys, partially plugging them. Finally, the refraction of waves between headlands shaped that sand into curved pocket beaches, allowing dunes and marshes to form behind them.

The charm of the Connecticut shore is the grand sum of these three nested scales of landscape process: sound, shoreline mosaic, and crescent beach. The result is an intimacy unmatched anywhere else in the world.

Diamond Pixels

Our finely textured hilly landscape is a crisscross of bedrock ridges and glacial flow.

When I moved to Connecticut from Alaska, my biggest adjustment was the compression of spatial scales. Connecticut is 120 times smaller than Alaska. My new town government was 164 times smaller than my old one. Why, I wondered, did this small state have 169 towns, one for every 20,000 residents?

Only later did I figure this out. The texture of the landscape is much more finely woven than in big-sky country. Borrowing from Dr. Seuss's *Cat in the Hat,* I realized that two things worked together to pixelate the upland landscape.

Thing 1 is the bedrock grain of harder and softer rocks generally aligned from north-northeast to south-southwest. The result is a corrugation of small parallel valleys with sluggish streams, stretched-out swamps, and rock ledges, most clearly expressed in Union, Eastford and Ashford. Thing 2 is the glacial grain of the Laurentide ice sheet that flowed down from Canada to rake the landscape from north-northwest to south-southeast. Over time, a glacial grain of elongated hills called drumlins, intervening troughs, and rocky streams was superimposed diagonally across the bedrock grain. This can be seen in Litchfield and Woodstock.

The geography created by the glacier that once covered the land determined how Connecticut's towns were settled.
Illustration by Grace Russell

Ultimately, these two landscape grains have a common origin. The northwest-directed tectonic collision that created the bedrock grain also indirectly created the southeast regional slope, down which the ice sheets flowed.

When the bedrock and glacial grains are combined, the result is a crudely diamond-shaped pixelated landscape of local uplands surrounded by edging streams. During the 17th, 18th and 19th centuries, these topographic pixels determined the layout of roads at the village and town scales. For example, the boundaries of the state's southwesterly towns most closely align with the glacial grain, whereas its northwesterly towns align best with the bedrock grain.
In short, Connecticut's finely textured history is guided by the finely textured lay of the land. More players in tighter spaces make for a more detailed story.

With each year of residency, I grow fonder of our highly pixelated landscape. The losses I felt after leaving Alaska's majestic, large-scale landscape are more than compensated by the tighter weave of our local communities.

The Hills

Connecticut is more hardscrabble than gently rolling. Blame the glacier.

The verdant image of inland Connecticut is of gently rolling hills. Picture smooth slopes curving up and down the landscape like waves on water. Of bucolic pastures, productive farms, and smiling children.

The hardscrabble image of Connecticut is equally evocative. Picture some tough old Yankee in a rocky pasture hefting stone to a massive boundary wall, cursing as he works.

Both images are part of the Connecticut identity. Which resonates most with you? Which comes closest to earthly truth?

The two largest patches of truly rolling hills in the state are centered on Litchfield in the western highlands, and on Woodstock in the eastern highlands. These are swarms of drumlins, the anglicized version of *druim*, a Gaelic word for a rounded hill.

As the glacier receded, it left Connecticut's now-iconic hills in its wake. Illustration by Grace Russell

The soils of drumlins have special properties that, historically, made them exceptionally productive for grass in the form of pasture, hay or grain. In the early 19th century, the Rev. Timothy Dwight gushed about their fertility in his opus *Travels in New England and New York*. “I attribute the peculiar moisture of these grounds to the stratum lying immediately under the soil, which throughout a great part of this country is what is here called the hardpan.”

This is what geologists call lodgment till, a Scottish word for a “kind of coarse and obdurate land.” This variety of till is a stiff paste of pulverized rock that was crushed by glacier motion before being pressed and smeared onto the bedrock beneath the great pressure of passing ice. It was soft enough to be shaped into drumlins, but hard enough to hold up as hills. Being loamy and fertile, it made a wonderful agricultural soil, despite the presence of stone usually moved outward into well-built and widely spaced walls.

The alternative image of hardscrabble terrain — rocky hillsides, bedrock ledge, bouldery gravel, swamp and bog — is widespread in every town except for those in the Connecticut River Lowland. Such terrain is underlain by a melt-out (rather than lodgment) till composed of uncrushed debris that was let down on the land like a stony shroud from stagnant ice. Though seldom cultivated, these stonier landscapes were productively pastured, timbered, sugared and cut for fuelwood. Stone walls abound, and are commonly massive, closely spaced, and crudely stacked.

Melt-out till is the terrain Ezra Stiles described when he penned his poem about Cornwall, Connecticut: “Nature / Out of her boundless store, / Threw rocks together / And did no more.” Which terrain is more common? Estimating aerial coverage from the state’s official surface materials map, the rolling hills of lodgment till make up less than 20 percent of the state’s geographic area. Conversely, the hardscrabble terrain of melt-out till covers approximately 70 percent.

Despite the overwhelming dominance of hardscrabble terrain in our state, the more bucolic picture of rolling hills usually graces our state’s marketing materials. Why? Perhaps the stony soils and irregular topography of most of our hillsides is hidden by forest. Or perhaps because our smoothest hills provide most of our farm skyline views.

I'm fine with our bias for rolling hills. It's a case of putting our best type of till forward.

Rock Stars

Let our state rock symbolize the great energy of our land and culture.

Ecologically, Connecticut has a state tree, flower, bird, animal and insect — the white oak, mountain laurel, robin, sperm whale and praying mantis, respectively.

Geologically, we have a state mineral, almandine garnet, the dark, ruby-red crystals that speckle mica-rich rock and color our beach sand. Almandine is ubiquitous statewide except for patches here and there. We also have a state fossil, a large, three-toed dinosaur footprint called *Eubrontes*, made by some fast, carnivorous predator. It's featured at Dinosaur State Park, a world-class dinosaur trackway site in Rocky Hill.

Alas, there's no state rock, perhaps because we've got too many excellent choices. There's maroon brownstone from the sandstone quarries in Portland. Pink granite from Stony Creek in Branford. Greenish-black basalt from the traprock ridges of the Central Valley. Creamy marble from the Housatonic Valley in Kent. Sparkling quartz from Lantern Hill in North Stonington. Rusty bog iron from everywhere. Which to choose?

I say none of the above. My nomination is the barite breccia of Connecticut's central valley. Not because it's most representative or because it was once important to our economy, but because it's most symbolic of the great energy responsible for creating our land and culture.

Barite is a discrete mineral: a naturally occurring, usually milky white, crystalline solid with a fairly fixed chemical composition, in this case a barium sulfate. It's unusually heavy for a non-metallic mineral and unusually soft, making it diggable with a pick or chisel.

Though there is no official state rock of Connecticut, many types are found here. Standing above the rest, according to our author, is barite breccia. Illustration by Grace Russell

Breccia is a rock that's been broken into jagged fragments that were later fused back together. One common type originates along fault planes where colossal masses of brittle rock shear past one another, crushing the contact between them.

These two phenomena came together in central Connecticut about 200 million years ago during the late Triassic Period. At the time, the land was being torn apart along great faults to create a rift basin not unlike that of east Africa today. Crustal blocks slid downward past one another, fracturing and fragmenting the contacts between them and opening up void space. Simultaneously, steaming-hot volcanic fluids circulated through these voids before precipitating as veins and clots of barite breccia.

Between 1838 and 1878, two prominent veins of barite ore on Jinny Hill and Peck Mountain in Cheshire were dug by hundreds of native Yankee and immigrant Cornish miners. Using hand tools, they picked apart a labyrinth of underground tunnels and shafts up to 4 miles in length, reaching a depth of 600 feet. The result was New England's most extensive and deepest mine, the abandoned diggings of which pose a modern collapse hazard. More than 160,000 tons of ore was hauled up to the surface, crushed, washed, loaded on barges, floated to New Haven for processing, and sold, mainly as a thickener for the white paint that still covers so many architecturally significant frame buildings.

In 1937, a gorgeous slab of barite ore was chosen to represent Connecticut in a small structure of specimen stones from all 48 states in the U.S. at that time. Long known as the "Little Stone

House" at UConn, and soon to be designated the "Stone Pavilion," it saw the addition of stones from Alaska and Hawaii in the 1960s.

Whenever I see our state specimen in that exhibit, I try to imagine the tectonic dynamism associated with this fascinating rock, and the cultural dynamism associated with its use as a natural resource. That's the kind of energy that made Connecticut what it is today.

Lakes Lost and Found

Our thousands of inland wetlands were once a myriad of clear blue lakes and ponds.

Connecticut is speckled with thousands of inland wetlands. Dozens, if not hundreds, occur in every town. They are gorgeous in their autumnal tints and vernal greens, and are ecologically fascinating in every season.

I've spent dozens of career days standing knee-deep in peaty muck, trying to find out what lies beneath these swamps, bogs, marshes and fens. After building a platform of planks to stand on, we push down on our stainless-steel sampling tubes, or we vibrate them down beneath a heavy weight, until we can go no further. At the bottom of nearly every sediment core is a gray stratum of inorganic silt and clay.

The significance of this stratum is not widely appreciated. Its texture was tight enough to cup rain and snowmelt. Its layering indicates standing water. Its gray color indicates it was never oxidized to the familiar browns and yellows of our soils. The absence of dark organic muck or of flecks of fossil plant tissue suggest a near-absence of living things.

These features combine to tell a story. The Connecticut landscape was once speckled by thousands of crystal clear, azure-blue ponds and small lakes. Henry David Thoreau described a similar landscape of the interior Maine in the 1850s as "a mirror broken into a thousand fragments … reflecting the full blaze of the sun."

It's fun for me to imagine the colder, windier, drier, clearer and treeless wilderness left in the wake of the retreating Laurentide ice sheet about 20,000 years ago, yet before an abrupt warming about 15,000 years ago. For at least two millennia, the land was only sparsely vegetated, an interval at least five times longer than the whole of Connecticut history since Adriaen Block's 1614 voyage. That austere world was decorated with a nearly continuous labyrinth of elongated blue lakes and ponds, most of them the size of our present inland wetlands. Though ice-covered for much of each year, these gems were pure enough to drink from whenever and wherever they were unfrozen.


Connecticut's land was once pocked by a great many more lakes. Illustration by Grace Russell

The Connecticut we know and love today is a much warmer and more verdant place. We have a long warming period to thank for that. A world warmed up enough to support luxurious life. This began when our hillslopes were painted green with a carpet of tundra, our pond shorelines were rimmed by grass, sedge, reeds and shrubs, and the standing water was enriched enough to support an abundance of aquatic plankton.

Connecticut's most famous fossil of this transition from glacial to nonglacial life is the Pope mastodon, a nearly complete skeleton discovered in 1913 at Hill-Stead in Farmington. Perhaps it came for a drink.

As the warmth kept coming, so too did the biological richness. Ever so gradually, our small lakes and ponds filled in with organic matter produced mainly by the aquatic ecosystem and less by sediment washing in. The result was the mélange of swamps, marshes and bogs we call inland wetlands.

Humans are responsible for the last three phases of wetland history. Those that were not ditched and drained for settlement agriculture were often impounded to create the reservoirs that powered industry in the era before fossil fuels. In the 20th century, we opted to protect wetlands vigilantly. In the 21st century, we will watch them change as a consequence of our human-altered climate.

The ultimate fate of our inland wetlands is to fill in, dry out, and become more terrestrial than at present. Thankfully, that will be a long time from now.

Crushing Insights

There's nothing magical about the audible seismic vibrations called the Moodus Noises.

Connecticut experiences thousands of small earthquakes each year because the brittle bedrock beneath our feet is being squeezed by the steady vise of tectonic pressure. Nearly all are too small to feel or hear.

Not so in Moodus, a village in the town of East Haddam. There, the rumbling, rattling and roaring of micro-earthquakes is sometimes audible.

Moodus is short for Machimoodus or Mackimoodus, which means "place of bad noises" in the Algonquian dialects spoken in the region. The earliest English colonists also heard these growling noises when they settled in the late 17th century, interpreting them as a divine warning to heed the Lord's power and reject sin.

As the Moodus Noises prove, while earthquakes are not common to Connecticut, they are not historically unknown, either. Illustration by Grace Russell

There's a perfectly straightforward scientific explanation for these "bad noises." They result from unusually shallow seismic displacements within an unusually strong crust that are acoustically focused by rock fractures and topography. These conclusions were proven by a major geotechnical study done in the late 1980s in response to the potential threat posed by the nearby Haddam Neck Nuclear Power Plant, now decommissioned.

The study began with an analysis of micro-earthquake swarms from 1981, 1982 and 1986, with magnitudes up to 3 and with some events accompanied by noises. Next, they drilled a mile-deep borehole to examine the solid crust directly. At the bottom of their originally cylindrical hole, the hard, rigid, granitic rock had been squeezed into an ellipse by steady easterly pressure exceeding 800 atmospheres. Finally, they carefully instrumented a 1987 swarm of 170 quakes, confirming that they were caused by east-directed compressional movements on small geological faults.

Beyond its curious noises, Moodus does pose a seismic threat. The state's largest known earthquake happened there on May 16, 1791. The *Middletown Gazette* reported two strong shocks, the first lasting 12 seconds, eight aftershocks and hundreds of tremors that day. Chimneys were wrecked, stone walls thrown down, and fish jumped out of the water. Boston, New York and our whole state felt its booms and shakes. These historic descriptions yield a magnitude of 4.3.

Smaller quakes continued at Haddam through 1794, when things went quiet for a while. Since then, the noises have returned at irregular intervals to haunt those who like to be haunted and fascinate those who enjoy investigating Earth's power.

Revealing Climate's Story

An off-limits pond in Branford helped launch the study of climate change.

Colonial winters were colder winters in New England.

In 1607, a bitterly cold winter at Popham Point, Maine, changed the course of U.S. history. Olde England's first pioneering attempt to create a New England colony failed after one year, delaying pioneering settlement for 13 years. In February–March 1717, the legendary Great Snow buried fences and houses for days. In December 1777, George Washington's Continental Army froze at Valley Forge, Pennsylvania. In 1810, an Arctic blast named Cold Friday blew in from the north to plunge overnight winter temperatures down more than 60 degrees Fahrenheit.

New England's "Year without Summer" in 1816 was a cold year made colder by the eruption of Tambora in Sumatra. Every month had at least one hard frost. More than a half-foot of snow fell in June. Daylight skies were a gray haze. Sunsets deepened with crimson red.

These climatic stories are anecdotal. All predate 1850, when quantitative measurements of temperature, precipitation and other parameters became reliable enough and global enough to serve as a baseline for more recent climate change. The Intergovernmental Panel on Climate Change, for example, uses the interval 1850–1900 as their oldest standard. For Connecticut's official analysis, the starting year is 1895.

Winters of yore in Connecticut frequently were much colder with more snow. Illustration by Grace Russell

So how do we know what the Connecticut climate was like before these recent measurements? One answer is lowly Linsley Pond in Branford. It's a perfectly ordinary small lake with a wooded shoreline, an area of only about 23 acres, and no public access. The small size, crude symmetry, limited inflow-outflow, and lack of disturbance of this glacial kettle lake made it the perfect place to pioneer the backstory of climate change in Connecticut.

The pioneer was Edward Deevey Jr., an enthusiastic and creative Ph.D. student of G. Evelyn Hutchinson at Yale University. Deevey's 1938 dissertation, *Studies of Connecticut Lake Sediments*, investigated the bottom sediments of Linsley Pond as an undisturbed archive of pollen, fossils and chemical markers linked to environmental history and climate change. From this and other nearby lakes we've since extracted the deep-time history of Connecticut climate change dating back to about 20,000 years. This narrative moves from the tundra of early postglacial time to drier boreal conditions, to the richer deciduous forest of peak interglacial warmth, and to the Little Ice Age cooling within the last few millennia. Near the top of each sediment core, the human and environmental histories become entangled, and the trend is toward warmth.

Also emerging from Linsley Pond was a new discipline called limnology, aka lake science. There, in the 1940s and 1950s, Hutchinson and his students explored the quantitative links between climate, hydrology, geochemistry, botany and zoology to help pioneer a new discipline called ecology.

When lake sediments are used to rewind ecology back in time, the result is called paleoecology. This seamless narrative puts the present in context and helps us understand future impacts from climate change.

Land of Steady Habits

The origin of our land makes it strong, stable and steady against most natural hazards.

Our unofficial state motto, "The Land of Steady Habits," has stuck like a patch of Velcro. In a recent essay, state historian emeritus Walter Woodward explained when this moniker originated and why it endures. First used in the early 1800s, it describes the "ancient tradition of assuring political stability through repeatedly electing the same officials to high office." The phrase has lasted, he continues, because it's "remarkably elastic, capable of changing with the times."

But what about the physical landscape that gave rise to the historic culture that gave rise to the saying? Could the steadiness of our landscape be partly responsible for our steady habits at a deeper level? My answer is a partial yes.

We live on what we geologists call a "passive continental margin." This is our way of saying that nothing dramatic has happened tectonically in the last 200 million years. Before that, the land we call Connecticut experienced plenty of action, for example the collision of continents responsible for creating mountains as high as the Himalayas, and the tearing apart of those mountains to make room for a new ocean, the Atlantic.

But since then, the geothermal power supply has been unplugged. The result is half an eon of steady erosion that has leveled our formerly rugged peaks and exhumed the deep crystalline roots of those ancient mountains. Our crust is cool, thick, hard and resistant to change, with no need to worry about catastrophic earthquakes, volcanic eruptions, major landslides, sinkholes, or land subsidence, except when caused by human error.

Slow and steady motion of the North American plate is responsible for Connecticut's moderate climate. As our land mass drifted northward from equatorial- to mid-latitudes, the nearby ocean widened. Average and extreme temperatures are moderate relative to continental interiors. Precipitation falls all year long, with no less than about 3 inches in February and 4 or 5 in May.

Our moderate climate minimizes the danger from the wildfires and droughts which typically plague other climes.

Connecticut used to have the reddish-yellow, clay-rich soils responsible for serious flooding south of the glacial border. During glaciation, the last of these gooey ancient soils were stripped away and replaced with sandier soils that allow rain and snowmelt to infiltrate downward to aquifers, rather than run off in torrents, yet loamy enough to hold moisture. And except for floodplains and coastal marshes, most of our land has gentle to moderate slopes, allowing it to shed rain efficiently.

Near the shore and large streams, we remain vulnerable to sea level rise, hurricanes and nor'easters. Fortunately, the vast bulk of the land lies well above any projected flood or shoreline submergence.

By and large, we live in a land of steady habits relative to most other places: tectonically, gravitationally, climatically and ecologically.

Alas, the atmosphere above us is less steady than the terrain. Within the past century, our habit of burning copious fossil fuels has made our meteorology more volatile than before. It's time to return the atmosphere back to its older, steadier habits.