

Conservation Status: Unsure

By Caroline Carter

***Salvelinus fontinalis* (Eastern brook trout)****Conservation status: Unknown.**

The town of Caratunk lies quietly nested on the shores of Pleasant Pond. It is not particularly special—a quaint town with only 68 residents recorded in the 2017 census. As soon as you get more than 50 miles outside of Caratunk, most people have not even heard of the town, let alone Pleasant Pond.

Pleasant Pond is a typical freshwater pond. Sitting in the foreground of Pleasant Pond Mountain, it is 1037 acres in area with a maximum depth of 198 at its deepest point<sup>1</sup>. Realistically, you could walk around the perimeter in a morning, take a lunch break and then hike up to the top of Pleasant Pond Mountain before dinner. On a map of Somerset County, it is a blue dot the size of a pinpoint. On a map of Maine, you can't even see it.

Its waters are sprinkled with eastern brook trout (*Salvelinus fontinalis*) and lake trout, the first of which is distinguished from the second by navy, wavy, worm-like line that mark its back. Eastern brook trout puts Maine on the map as a world class fishing destination, a local fisherman Cameron tells me. He pauses and says, “you know what sweetie, you can call me Cam.” He works for Trout Unlimited, a group whose mission is “to conserve, protect and restore Maine’s trout and salmon fisheries and their watersheds.” He tells me that 97 percent of all waters containing wild brook trout populations are in Maine. Eastern brook trout is an especially popular fish for fly fishing, as they tend to migrate up and down streams to spawn. On the other hand, the closely related lake trout species is the least respected fish among fly-fishermen. Cam scoffs at the mental image of a lake trout on his line.

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<sup>1</sup> "Pleasant Pond." Lakes of Maine.

A dam no bigger than a small house blockades the southwest corner of the pond. Water trickles over the top and travels three miles to meet the Kennebec River at Caratunk village. Only a mile down the road, a ferry waits to shuttle Appalachian trail day-hikers and thru-hikers across the gurgling river so they may continue their travels.

For the past three years I have driven through Caratunk on my way to paddle the Kennebec River, a heavily trafficked class three/four commercial whitewater river. It was not until last summer when for the 20<sup>th</sup> or so time, I pass the weathered, pale blue “Welcome to Caratunk” sign, bordered by what appear to be bullet holes that I stop to make a mental note to remember the town name. What catches my attention are several white signs with the red writing “No CMP Corridor,” that stand parallel with the sign. I pull out my phone and google “CMP corridor.” The first link that appears under the “News” tab is an article with a picture of Pleasant Pond and the headline “Small Maine Town Rescinds Support for Big CMP Hydro Project.”

Honey and Graham are the names of the receptionists’ dogs at the Natural Resources Council of Maine (NRCM) in Augusta. Sitting in the waiting room of the NRCM, I watch the receptionist leave for a moment to let Sophie Janeway know I have arrived for a meeting. With no owner or employee in sight, Graham jumps onto the desk and starts eating his owner’s breakfast sandwich while Honey licks her computer screen. Unsure of what to do, I try to coax them off the desk and so they tackle me with wagging tails.

“Caroline?” laughs Sophie Janeway, NRCM Climate and Clean Energy Outreach Coordinator, “they’re quite friendly, aren’t they?” Sophie pulls the dogs off me and leads them

back behind the counter as we walk into another meeting room. She apologetically doesn't shake my hand since it is flu season.

CMP stands for "Central Maine Power Co." Sophie tells me as we walk to a meeting room. We sit down facing a wall that is covered completely in windows. Outside we can see an icy parking lot under a gray sky. Sophie slides a pamphlet over to me with "CMP Transmission Line Proposal: A Bad Deal for Maine" written in green and blue ink at the top.

The CMP corridor, also known as the "New England Clean Energy Connect (NECEC)" is a proposed 145-mile transmission line that would run from the Canada-Maine border in Montreal to Lewiston, Maine. At the Southern end, it would join existing powerlines to send electricity to Massachusetts and other parts of New England. 98 miles of this transmission line have already been built. The other 53 would plow through the Maine Northern Woods in what would comprise the first East to West powerline across the state of Maine.

She pulls out her laptop and types in the URL "[goodformaine.org](http://goodformaine.org)," telling me that this is NECEC's official informational website. We watch the video on the front page together, which features scenic shots of dams as a narrator explains how the project will create 1700 new jobs for Mainers. The narrator moves on to say how it will also save \$40,000,000 for Maine electrical customers on the whole and reduce overall fossil fuel emissions. Finally, they ask the rhetorical question: where is the energy from the Canadian dams going to? She pauses and then enthusiastically states: the New England grid!

Sophie lets me finish reading the pamphlet and then tells me that "from the outside, it seems like this is a largely beneficial project for Maine as the bulk of the work is done in the state. But technically, this project is only going to redirect dam power to other parts of New England, excluding Maine. "CMP is lying to us. They have a history of delivering up to as little

as a third of their promised tax benefits. They go into towns without all the facts and tell residents they will save them bucket loads of money with no intention of ever really following up on the project. Who really stands to gain the most from this \$950 million project? Massachusetts.”

The rift between Massachusetts and Maine runs deep into the history, starting all the way back at the onset of the Revolutionary war. Massachusetts annexed Maine as one of its own districts in 1657, only 27 years after Maine’s beginnings as a colony, and it took no time for grievances to start to pile up<sup>2</sup>.

The District of Maine’s colonial priorities centered largely around timber, fisheries, and agriculture, which they preferred to handle on their own accord as opposed to through the commonwealth of Massachusetts. These issues continued to bubble up as they repeatedly requested autonomy, all the while obediently fighting for Massachusetts in the French and Indian War, Revolutionary War, and War of 1812. By 1819, separatist politics were too strong for Massachusetts to ignore and Massachusetts gave their consent to Mainers. But, by this time there was a bigger issue the country was facing that Maine would find themselves intimately tied up in: slavery<sup>3</sup>.

Maine had always been far left with intensely more progressive democratic views than even Massachusetts, especially on the topic of slavery. When they finally were reviewed for potential statehood, Congress was distracted by the fate of slavery as an institution in the United States<sup>4</sup>. Everyone immediately realized that Maine’s stance as pro-abolition in effect could mean

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<sup>2</sup> Blodgett, Leslie. “1775-1820 Tension, War & Separation.” Maine Memory Network.

<sup>3</sup> “Massachusetts Loses Maine.” Mass Humanities. Accessed December 15, 2018.

<sup>4</sup> “Massachusetts Loses Maine.” Mass Humanities. Accessed December 15, 2018.

the end for slavery if they were granted statehood, Congress would be seated in favor of pro-abolition states.

The Missouri Compromise was Maine's ticket to statehood, and Congress's way of putting off abolition even further. It was set that Maine could enter the union with the addition of Missouri as a slave state<sup>5</sup>. Their statehoods would be packaged together to hold onto the balance that the government was trying to keep a tenuous grasp on—the deadlock of an anti- and pro-slavery Congress.

Maine being one of the most adamant districts against slavery was now faced with the issue that their freedom, what they had been working to achieve for over half a century, would also mean the creation of another state that would practice slavery. Abolitionists everywhere were dead-set on the notion that no new slavery states could be added in this day and age. And as a result, many Mainers were suddenly protesting against the very bill that would grant them freedom<sup>6</sup>. Mainers felt that Massachusetts had created this problem for them by refusing to listen to their pleas for autonomy until the worst possible moment.

With the clock ticking, they ultimately voted to pass the Missouri Compromise only a day before the deadline on March 3<sup>rd</sup>, 1820<sup>7</sup>. They got their freedom but it was a solemn victory because Mainers everywhere would have to live with the realization that the enslavement of humans around the nation was aided by their own freedom as a district. Massachusetts, fearful of losing a district rich in resources, had kept Maine on a leash until the worst possible time for them to be granted their statehood. They would forever live with the continuation of slavery on their conscience.

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<sup>5</sup> "Massachusetts Loses Maine." Mass Humanities.

<sup>6</sup> Blodgett, Leslie. "1775-1820 Tension, War & Separation."

<sup>7</sup> "Massachusetts Loses Maine." Mass Humanities.

Slavery would continue for 40 more years until it was finally abolished, but not before the most destructive war the United States would ever engage in would be fought over the issue. The Civil War's death-count was an estimated 620,000 men, 2% of the population at the time and the same amount of deaths accounted for in the entirety of the Vietnam War<sup>8</sup>. Maine's freedom was bittersweet to say the least. They would have to live with the fact that their own freedom perpetuated enslavement and contributed to the cataclysm of the Civil War.

The commercial about the CMP corridor Sophie and I watch says how the power would be redistributed around "the New England Grid." This vague terminology was another way of saying that the power would be redistributed from Canadian cities to Massachusetts. Sophie throws her hands in the air and tells me that "there is actually no net decrease in fossil fuel emissions for the Earth, it only decreases for Massachusetts and increases for Canada. Honestly, with the construction costs for all the infrastructure, it will be a net increase in carbon emissions. Not to mention Massachusetts will just plant all the infrastructure in Maine's most beautiful forests. These forests house several endangered and vulnerable species. Not to mention they are invaluable to recreators trying to hike, ski, paddle, and whatnot. Heck, they say it will give us new jobs for a few years, but I would not be surprised if tourism decreases in this area as a result of construction and then Mainers in the tourism industry are put out of jobs."

All the new construction would happen exclusively in Maine if the proposal goes through. And, the construction would take place in what is described to be the last technically contiguous forest East of the Mississippi. According the Appalachian Mountain Club Position Statement on the Northeast Clean Energy Connect Transmission Line from November 2018, "the

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<sup>8</sup> "Civil War Casualties." American Battlefield Trust.

project would increase the scenic impact to the AT [(Appalachian Trail)] by widening the corridor and installing taller towers... left unaddressed are the additional visual impacts to the AT that would occur from prominent AT viewpoints on Pleasant Pond Mountain and Moxie Bald Mountain as the line traverses the lowland between the two peaks.”

“I’m tired of Maine being treated like a third world country when it comes to Massachusetts and the rest of New England,” says Sophie.



***Lynx canadensis* (Canadian lynx)****Conservation status: Least Concern (Population stable)**

“Stay away from our wilderness.” A voice from the back left of the Hallowell town hall echoes from the television speaker. I showed up to the Maine Public Utilities Commission hearing fifteen minutes early and was bumped to the overflow room because the meeting room where the public hearing was to take place was already past capacity. People in the overflow room sat on the ground and crowded doorways, eager to listen to the dialogue. The speaker in the crowd stands up and introduces herself as Sheryl Harth.

On the monitor, someone introduces themselves as the Maine Public Utilities Commission chair and that the topic of discussion tonight is the CMP corridor. The viewing room walls are painted white with a few coffee and questionably unidentifiable stains as decorations. The tightly packed bodies are raising the temperature of the room. It feels warm and stuffy while the smell of rotting leftovers quietly lingers in the air. As people get up to go to the bathroom, the rolling chairs squeak against the ground, creating a poorly-written symphony. We finally get to the part of the hearing where people can make their comments, one by one, uninterrupted.

“I am sorry if this sounds rude but how in good conscience could government officials allow CMP to build an infrastructure that will cause more damages to its customers?”

“Killing all our plants and animals that drink and eat, that some of us hunt for food! Killing our wonderful spring water and our artesian well-tap water supply! Killing our freshwater fish and

plant life where we fish to eat and swim, for a few part-time temporary jobs? The electric goes to Mass and we get poisoned? I think not, no CMP corridor! It will burn down Maine like PG&E towers sparked and caused in California. It will cause those who live near the towers to get cancer, and MIT has done a study that the more Monsanto spray chemicals like round-up they use to keep the weeds out away from these towers, the more children will have Autism. The defoliant used is a horrible poison with a very long half-life that would seep into our water supply. Protect our future!”

“Say no, no for Maine. We will lose tourists, home values and beauty. I am referring to those ugly wind turbines to. They don't work, they can catch fire, they brought people in to install and they don't maintain them. Ugly bird killing things!”

"I simply want it noted that I vigorously oppose Central Maine Power's massive transmission line proposal. Period!”

“Please don't let big corporations ram this legislation through. We need to focus our energy and attention on responsible energy like solar and wind for small, Maine-based companies who truly care about Mainers.”

“I oppose this.”

The comments go on for about an hour, interspersed with uproarious applause, and then the meeting is adjourned. As we leave the building, I find one of the citizens who spoke at the

hearing in the parking lot and asked her where she is from. She introduces herself as a retired nurse from Jackman. “It just ain’t fair. People who live up North live there for a reason. We like being away from all of the talk and the politics. We like looking out our door and seeing the birds and the deer. I don’t want to have to deal with the noise and clamor from the construction. Heck, I’m old, what if it kills me!”

I hop in my car and turn on the engine. Flipping through songs on my phone for the drive back to Bowdoin, I watch the yellow and blue headlights peel out of the parking lot one by one until I am one of the last in the parking lot. Crickets chirp to the unpredictable hum of cars driving by. Starting the ignition, I wait for the air conditioning to turn from cold to warm before putting my car in reverse and easing out of the parking lot.

I have had a car ever since I got my license five years ago. About 50% of my friends at my high school got cars as soon as they got their licenses and almost all of them have their own cars in college by now. My family of four has four cars, and my sister does not even use hers. Today, over 100 years after the invention of the gas-powered automobile, the United States accounts for 5% of the world’s population and 52% of the world’s fossil fuel users. The United States is one of the largest passenger vehicle market of any country in the world, second only to China. There are an estimated 276.1 million registered vehicles in the United States in 2018.

In 1846 when he was only two years old, Karl Friedrich Michael Vaillant’s father died of pneumonia, and Karl’s mother changed his name to Karl Benz after his father to remember him. He was born into a poor household. His mother, Josephine, worked as a single mom and strove to give him a solid education despite their poverty. When he was only nine years old, he started studying lock-smithing at the scientific school Poly-Technical University. When he was 15,

however, he switched his track to mechanical engineering to study locomotives, following in the footsteps of his late father<sup>9</sup>.

Karl's imagination was nothing short of ingenuity. Before he even graduated university, he had invented early models of the speed regulation system, battery ignition, spark plug, carburetor, clutch system, gear shift, and water radiator<sup>10</sup>. Of course, he could not realize it at the time, but these would all become part of standard production for the soon-to-be-made two-stroke engine.

In 1886, Karl invented the Motorwagen: the first automobile that generated all of its own power, as opposed to motorized stage coaches or horse drawn carriages. It was patented as the first "automobile fueled by gas."<sup>11</sup> Karl happened upon a gold mine. He was eager to share with the world his creations and offered several test rides to Munich residents, one of which exclaimed "seldom, if ever, have passers-by in the streets of our city seen a more startling sight."<sup>12</sup>

It was not perfect by any means. There were several problems with the machine, starting with its difficulty to control, as exhibited in one of the first public demonstrations where it crashed into a wall. It had one gear and could not climb hills unaided. Benz worked day and night on his machine, developing the Motorwagon Model 2 and Model 3 over the next couple years<sup>13</sup>. It was not until 1889 when the first brake pads were added to the machine. Benz founded several companies over the years, Benz & Cie. Expansion, Blitzen Benz, and Benz Sohne, the first of which merged with DMG to make the Dimler-Benz company just three years

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<sup>9</sup> "Karl Benz." Britannica, The Editors of Encyclopaedia.

<sup>10</sup> "Karl Benz." ASME.org.

<sup>11</sup> "Karl Benz." ASME.org.

<sup>12</sup> "Karl Benz." Britannica, The Editors of Encyclopaedia.

<sup>13</sup> "Karl Benz." ASME.org.

before Karl's death in 1926. This company would go on to create a machine we still gawk at to this day: the Mercedes-Benz<sup>14</sup>. Now, not even 150 years since it's invention there are 1.015 billion cars on the planet.

I merge onto route 1 south on my way back to Bowdoin. A strange clicking sound is coming from my engine, like the noise a fork loose in a drying machine might make. I turn on the radio to drown out the noise and try not to look at the "check engine" light on my dashboard. Ads for getaway vacations to the Bahamas add to the white-noise.

A figure the size of a large dog or small bear quickly runs across the road, and I slam on the breaks, knocking my chest against the wheel. There are no other cars around so I pull off to the side where two green eyes are looking at me from the bushes. It turns its head to the left side, and I click on my high-beams to reveal a cat-like animal. It's significantly more muscular than a domestic cat, not to mention that I've never seen any pet as large as this animal. It has a dark coat and with two tufts of fur hanging off its chin. Its tail is snake-like. The gentle hum of another car starts to resonate and the cat takes one final look at me and darts back into the woods.

I pull out my "Mammals of North America" guidebook from my glove compartment, which I almost never get the chance to use, and find the cat section. It looks the closest to a Canadian lynx (*Lynx canadensis*). According to the handbook, the Canadian lynx is on the IUCN red list as threatened, and is found throughout almost all of Canada, Alaska, and bits of Northern Maine, Minnesota, Montana, and Washington State. It has been reintroduced to parts of Wyoming and Colorado. Threats to the species include commercial and industrial areas, roads

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<sup>14</sup> "Karl Benz." Britannica, The Editors of Encyclopaedia.

and railroads, hunting and trapping, and dams and other ecosystem modifications. That last part is written in bold.

“There is *literally* no way you say a Canadian Lynx in this part of Maine” a friend of mine tells me when I get back home. He is a biology major, like me, and I should add considers himself smarter than everyone else. “Come on, it was probably like a dog or car, or okay *maybe* a bear if we’re using our imagination here.” I roll my eyes and we change the subject. I know what I saw.

“What comes next? Where will we draw the line?” Kaitlyn Bernard sits next to me at Frontier café on Maine Street in Brunswick. Right outside the window is the dam on the Androscoggin river. The water is barely flowing over its gates. The entire structure is bone dry except for one section. From here it looks no more voluminous than a sputtering faucet, and from up close it’s probably about as wide as a school bus. Pigeons stand on top of the dry sections, probably sleeping, clueless to the thousands of cubic feet of water their napping place is holding back.

Kaitlyn works at the Appalachian Mountain Club in Brunswick and has agreed to a short 30-minute meeting before she hits the road to go to a conference in Boston. She’s a couple minutes late and can’t stop apologizing for her tardiness and the brevity of our time. She sits down and accidentally knocks over her coffee as she shuffles for something in her bag.

As the waitress cleans up the mess, she glances at her watch. “They say that the corridor will only be 300 feet in width. But think about it. That’s the width of the Maine turnpike. On a clear day, you can see that from thousands of feet up in the air in a plane. That’s not nothing, and sooner or later they’ll develop more roads around the corridor, then a few houses, then

towns, and then resorts. CMP says you can't bring up stuff like that because they are proposing to build only the corridor and nothing else, but the issue is larger than that. The issue is bigger than the corridor itself. And let's not forget about the rare and endangered species that have no say in the issue."

According to the CMP statement by the Maine Audubon Society, "NECEC, as proposed, would negatively affect wildlife by permanently dissecting large, intact forest ecosystems and waterways and further threatening those ecosystems through habitat loss and degradation. The proposed corridor would require significant clearing through sensitive habitat, including habitat for rare species like Canadian Lynx, Bicknell's Thrush, and Northern Spring Salamander, as well as ecologically and economically important species like Brook Trout and White-tailed Deer. The proposal would affect more than 1,000 acres of wetland, cross 115 streams and scores of vernal pools, and degrade approximately 20 acres of inland waterfowl and wading bird habitat.<sup>15</sup>"

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<sup>15</sup> Couturier, Lee P., & Zavotsky, Diane. "Statement on CMP's Proposed NECEC Transmission Line Project."

***Catharus bicknelli* (Bicknell's Thrush)****Conservation status: Vulnerable (Population decreasing)**

Earlier today, a freak 10-minute storm plowed its way through Brunswick, Maine. The wind whipped through eastern white pine trees around Bowdoin College campus and rain pierced rooftops so loudly that it felt like I was in a dishwashing machine. I take a quick detour through the Bowdoin Pines on my way to meet a friend for brunch. I stop and listen closely to hear the whispering sorrows of the trees at a crosswalk where the street meets the forest. The honks from beeping construction trucks and hollers from bumper to bumper traffic almost completely drown out their moans. This section of road where the pavement meets the forest has been blocked off for a couple hours now to repair a damaged power line and so the forest may pay respects to a fallen tree.

Over a hundred years ago, this Eastern white pine found its home as a sapling. It shoved its roots into the rocky soil, desperately extracting water, nitrogen, phosphorus, magnesium, and sulfur from its neighbors, stretching its feeble branches to the sky in search of sunlight and carbon dioxide. Each year it added 24 inches of vertical woody tissue to its branches, as its roots continued to creep below our feet, tangling themselves between and around other tree roots, strangling them of their precious nutrients. As the years went by, it watched its neighbors to the South be torn down and a black asphalt road be painted over their graves as red, brick buildings popped up on the other side. Each year in September, it shed its new needles to the forest floor with a little help from the wind, as it braced for the bitter winter.

But this particular 130-year-old tree on the forest edge still has most of its needles, which extend in all different directions, as if it had been desperately reaching out to its neighbors to



catch itself from falling. The storm blew this tree away from the forest and instead onto the graves of its old friends, decomposing under the black asphalt road, where the only support was a power line, now being nurtured back to health. The creaking trees groan under the gentle breeze, mourning its old friend who once stood at the front line of the forest, now lost in combat.

Taking a closer look, I notice a small bird jumping up and down as it picks up twigs in its mouth and moves them around a branch about a foot off the street. The bird could fit in my palm and is a light beige brown color with an orange beak. It's a very rare species called Bicknell's thrush (*Catharus bicknelli*) and appears to be trying to save its nest in the fallen tree. It chirps between placing twigs back onto the branch that will soon be removed by the construction company.

I wonder if there were eggs or chicks in the nests.

Cars honk on.

Standing at 15 floors tall, Throne Dining Hall is the second largest tower in Maine, supposedly with the fastest elevator in the entire state. It is one of two dining halls for me and my fellow peers at Bowdoin College. On October 28<sup>th</sup> of last year, Thorne dining hall (casually referred to as Thorne) needed to serve dinner for almost 1500 students. Its capacity is supposed to reach its ceiling at 630 people.

"It was in the middle of October, I forget exactly which day it was," Duncan tells me. Duncan is a government and computer science major born and raised in Lander, Wyoming, in his last year of college. He agreed to get brunch with me in Thorne, almost a year after the storm. "I don't remember much of the storm because it happened overnight, so I was asleep for most of it. Honestly, it didn't seem that different than some of the storms back home in Wyoming.

Maybe it was just a big deal for Maine.” He pokes his eggs softly with a fork and watches the yoke bounce back, contained in the whites.

Duncan tells me that when he left his house in the morning, he was struck by the destruction one night could do, “I was like woah, it all felt very isolating.” Walking through the quad to get to Thorne, one of two buildings on campus still with electricity, he stopped to look at the massive trees that were downed in the storm. Eastern white pines and red oak trees whose trunk diameters were almost as long as himself were laying horizontally on the quad. Their massive root systems had picked up chunks of grass large enough to use as a backrest if you were to sit on the ground.

“Thorne was hilarious, it was a mess, there was like tons of people here and everyone was fighting for chargers so they could do their homework and check Facebook. It was very stressful for a lot of people. It was just pretty silly, everyone was freaking out without any power. To be honest, I thought people were losing their minds at some points, everyone would just start singing random songs like “row, row, row your boat.” Duncan pierces his eggs and the yoke spills out the top and onto his plate. He pushes the plate to the side and looks at me, “I honestly didn’t spend much time in Thorne because it was such a shit-show. I went kayaking a few times instead. Classes were cancelled and the rain brought up the water levels in some rivers, so I thought why not.”

One other senior, Anne, sits down with us and says how the week after the storm she went to Portland to get manicures and coffee with some friends during the time off from school. “It was honestly pretty fun, we didn’t have any class so I took some me-time to rejuvenate. I kinda liked having no power and no stress from checking my email or Instagram feed. What really struck me was the massive, and I mean *massive*, trees that were down. You just heard

stories of electrical fires and fatalities of trees crashing on powerlines and houses around Maine. Driving around it felt like a war zone.”

On my way home from chatting with Duncan, I take a stroll through the quad. It’s covered in frozen piles of leaves as many of the trees have already shook their layers off for the winter. Among them are a few memorial stumps of those that did not survive the storm from last year. When this location was cleared for the college, several trees were chopped down to create residential dorms and academic buildings for its students. Trees were removed that would typically buffer forests from the anomaly wind storms, like the one last year and earlier today, and protect its populations from falling down. Now over a year later, the stumps are started to be populated by moss and lichens, an early successional micro-community. Beetles and worms peak out from beneath the plants before scurrying back into their homes. The rings on one stump are starting to fade, but I start counting. 73 years old. A napkin and apple core lay next to the 73-year-old’s remains, and I pick them up and throw them into a nearby trashcan.

The storm was described as a “bomb cyclone” as it was the result of a phenomenon called “bombogenesis.” This scientific term defines when atmospheric pressure drops as quickly as 24 millibars in 24 hours<sup>16</sup>. This is strong enough to down countless trees, trees older than the oldest human.

The storm only lasted eight or so hours before whipping its way down to Cape Cod and out to sea. Some wind gusts were recorded at 130 miles per hour, which is in the range of a category 4 hurricane. The storm knocked out power for almost 1.5 million homes and business for as much as a week as electrical companies, including CMP worked around the clock to repair

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<sup>16</sup> US Department of Commerce, and National Oceanic and Atmospheric Administration. "What Is Bombogenesis?"

powerlines. CMP spokeswoman Gail Rice said that this is “the largest number of outages in the company’s history” since its foundation in 1899. Governor LePage had to issue a state of emergency to help the utility companies like CMP to repair the over 200 broken power poles<sup>17</sup>.

When CMP users got their electrical bill in November, they were shocked at the 60% increase in price. They were paying for the damages the storm had caused, even though they had a week less of power usage overall due to the storm. The people who kept their power, or had it back quicker than others were mostly those working with solar companies, not CMP. Ironically, CMP’s slogan is “flip a switch and we’re there,” yet they could not handle this freak storm.

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<sup>17</sup> Graham, Gillian. "Power Companies Expect Recovery from Historic Storm to Take Days."

***Terrapene carolina* (Box turtle)****Conservation status: Endangered (Population decreasing)**

It takes Duncan three flights and a four-hour drive to get from Bowdoin College in Maine to his home in Lander, Wyoming. Intuitively, it did not make much sense for him to go home for Thanksgiving he tells me at our meal in Thorne. Instead, he went with his best friend to celebrate the holiday at his friend's Dad's home in Houlton, Maine. Houlton is only 6,123 people and a hop, skip, and a jump from the Canadian border.

"Their home was completely off the grid, it was honestly really nice to be somewhat unconnected and have time to recharge. They have their own little solar farm and the town has a wind farm on a nearby mountain. Because they were generating all of their own electricity, we were way more conscientious about it. I would have felt so bad if I had forgotten to turn off a light overnight or even stayed up much past dark. Also, there was no Wi-Fi unless we went to the town library, so we just spent a lot of time reading and chatting when in the house." Duncan goes on to tell me that the house was completely off the grid in 2012 when the wind turbines were developed, formally called the Oakfield Wind Project. It generates power for 50,000 homes.

"There was this really cool pond just outside his house with all these cute turtles. They all hung out on a log and would just look up into the air, not really moving at all for most of the day. Sometimes they would hop in the water, probably to look for food, I'm not totally sure. But occasionally they would poke their little heads up to get some air and say hello. Apparently, they are like the only family of those turtles in the area." I ask him to describe them to me and he says that they varied in form. They were no bigger than his hands (granted he's 6' 3" and has

quite large hands). Some yellow, some red, and others brown. What struck him was the intricate patterns on their shells, and also their eyes. They had red irises. I show him an image of the Eastern box turtle (*Terrapene carolina*). He says it's a match.

The earliest turtles are from the Triassic Period, which was about 220 million years ago. They were nearly identical to modern turtles in terms of anatomy<sup>18</sup>. Using fossil records, we can go back in time to find neatly preserved fossil remains from the Triassic period and even earlier. The oldest fossils date all the way back to the Precambrian period, 650 million years ago. The organisms from this period are classified as Ediacrans. They do not bare any resemblance to anything found on Earth anymore, except maybe a ribbed doormat<sup>19</sup>. Next came the Ordovician period, which featured the earliest marine invertebrates and fishes. These species were cooled to a mass extinction with the rapid onset of a glaciation period<sup>20</sup>. The Devonian period followed, known as the “age of the fish” as primitive sharks started to stalk the oceans while first vascular plants had sprouted on land<sup>21</sup>.

Following yet another major extinction, the first mammals and turtles began to pop up who would become the ancestors of Duncan's box turtle family. They were one of the few types of animals to survive the “Great Dying,” where 96% of all marine species and 70% of all terrestrial species were suffocated out of the ocean with a spike in carbon dioxide<sup>22</sup>. It is not until about 250 million years ago that we get into the age of the dinosaurs, also known as the Triassic-Jurassic period. The world was unlike any other we could ever imagine, with monsters like the 35-foot shark megalodon an example of a typical-sized sea creature<sup>23</sup>. Following the

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<sup>18</sup> Bradford, Alina. "Turtle Facts." LiveScience.

<sup>19</sup> “Earth's Major 'mass Extinction' Events.” Phys.org - News and Articles on Science and Technology.

<sup>20</sup> Richter, Viviane. “The Big Five Mass Extinctions.” Cosmos.

<sup>21</sup> “Earth's Major 'mass Extinction' Events.” Phys.org - News and Articles on Science and Technology.

<sup>22</sup> “Earth's Major 'mass Extinction' Events.” Phys.org - News and Articles on Science and Technology.

<sup>23</sup> “Earth's Major 'mass Extinction' Events.” Phys.org - News and Articles on Science and Technology.

split of Pangea, yet again the Earth had to jumpstart life with what is considered the most recent major extinction, knocking out 75% of all species<sup>24</sup>. There have been five major extinctions throughout Earth's history, and many scientists say that we are in the midst of the 6<sup>th</sup> as we are currently losing species 1,000 to 10,000 faster than normal. Natural geologic events, such as rapid cooling, warming, and meteorites, were the cause of the first five. This sixth extinction will be the first major extinction to have been caused by one species: humans, us.

We are projected to burn through 650 million years of Earth's fossil history deposits in about 300 years. We started burning fossil fuels at the start of the industrial revolution in the mid 1800s. Beginning in Great Britain and quickly spreading to the rest of Europe and the United States, this marked the overall transition from hand-mechanized processes to machines and ultimately factories. At the beginning of the industrial revolution, atmospheric carbon dioxide levels were at about 280 parts per million (ppm) and since then have raised to 400 ppm. We cannot afford to continue industrialization at the rate we are going.

Other parts of the world are currently playing catch-up in their industrial development, such as India and China. Their current populations are three magnitudes larger than any country undergoing development at the onset of the industrial revolution. They cannot afford the same growing-pains that the United States and most of Europe were lucky to have. We are projected to run out of fossil fuels maybe not in this lifetime or our children's lifetimes, but certainly before our grandchildren retire. Fossil fuels are comprised mostly of oil, natural gas, and coal. We get 81% of our energy from oil, coal, and natural gas, all of which are fossil fuels. At its most basic level, we use oil to power our cars, natural gas to power our homes, and coal to power

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<sup>24</sup> Richter, Viviane. "The Big Five Mass Extinctions." Cosmos.

electrical plants. It is expected that we will burn through oil deposits in 50 years, natural gas deposits in 51 years, and coal in about 107 years.

The earth is 4.5 million years old. It is comprised of an intensely hot iron and nickel core which is surrounded by a considerably less dense mostly iron, magnesium, and calcium mantle. Encapsulating the mantle is the crust made up of tectonic plates, which “float” on the mantle<sup>25</sup>. It accounts for less than 1% of the volume of the Earth. Enveloping the crust with its oceans and life forms is our atmosphere which rapidly decreases the further away you get from Earth. It is composed largely of 78% nitrogen, 21% oxygen, 0.9% argon, and 0.03% carbon<sup>26</sup>.

While the atmosphere has changed drastically over the course of Earth’s history in ways that would be certainly unlivable for humans, one thing has not changed: the interior of the Earth has always been hot. For the past 4.5 million years, below our very feet, the Earth’s core has been radiating 10,800°F heat. Much of this heat is lost by the time it reaches the surfaces, but in some places, rock and water can be heated up to 700°F in the crust. Geothermal energy is a type of renewable energy that maximizes on the relatively universal fact that not too far below us, there is enough heat to generate energy. Since 1892, people have been capitalizing on Earth’s heat to warm, cool, and power their homes<sup>27</sup>. Theoretically, geothermal energy could be used to power the Earth, but the main problem that stands in the way of this is price. While costs have gone down by 25% in the past two decades, drilling and exploration into the deep Earth are very expensive and success can be somewhat unpredictable with plate tectonics<sup>28</sup>.

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<sup>25</sup> “INSIDE EARTH: What Is Earth’s Crust, Core and Mantle?” Earth How.

<sup>26</sup> “INSIDE EARTH: What Is Earth’s Crust, Core and Mantle?” Earth How.

<sup>27</sup> Geothermal Basics - Basics. 2014.

<sup>28</sup> Geothermal Basics - Basics. 2014.



Wind power is another type of common renewable energy that generates power when large turbines spin as a result of wind. Turbines can be both offshore and onshore, with the Oakland wind plant from the town Duncan described earlier an example of the latter. Offshore wind power is typically more reliable and less of a sore sight on the eyes given the turbines are built out in the ocean where no human lives. While wind patterns are more typically more predictable and stronger offshore, it is considerably more expensive to build turbines rooted underwater than on land<sup>29</sup>. A typical turbine stands over 250 feet tall, almost the height of the statue of liberty, and each blade is just under 150 feet, almost the length of a football field<sup>30</sup>. Solar power is the other type of renewable energy Duncan's friend's house uses. Solar power harnesses on radiant heat and light from the sun and converts it into thermal and electrical energy. It is one of the more accessible renewable energy sources as any house can install solar panels on their roof or plug into a communal solar farm.

"People need power and they need it now," Kaitlyn tells me at a second meeting in Frontier café. "There would need to be a major change in lifestyle to actually reduce the amount of energy we are using, and people can't imagine a world without their car, heating, air-conditioning, iPhone, and you name what else." There were over 30 proposals when Massachusetts put out a bid for a renewable energy project. There were two other notable hydroelectric power projects, one going through New Hampshire and the other through Vermont. New Hampshire voted against the proposal faster than Massachusetts even had time to negotiate with them. Vermont's proposal was too expensive. "There were so many creative solar and offshore wind power proposals, but they were just too expensive. What are the drawbacks to

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<sup>29</sup> Cuffari, Benedette. "Offshore vs. Onshore Wind Farms." AZoCleantech.

<sup>30</sup> Cuffari, Benedette. "Offshore vs. Onshore Wind Farms." AZoCleantech.

wind and solar? Price and predictability. The sun doesn't always shine, the wind doesn't always blow. The problem with the corridor is also that we cannot plug future solar and wind power into the existing lines. We would need to build entirely new powerlines, so it trumps any way that renewable energy for the future could collaborate with the CMP corridor. The main problem we face is that hydropower companies like Hydro-Quebec and CMP are just too powerful."

Any renewable energy resource has its drawbacks to the environment. Wind turbines, for example, have been shown to be hazards to bats who have poor eyesight. Their echolocation has not evolved to navigate such large and strong moving objects hundreds of feet in the air. Solar power has also been shown to be dangerous to waterfowl who sometimes mistake large panels for bodies of water to land in. Geothermal energy can dig up entire microecosystems and displace habitats. "But none is more destructive than hydropower," Kaitlyn tells me. Dams flood entire ecosystems and alter the water chemistry above and below each site."

"Brunswick used to be known for its great salmon run" says John, the employee on staff at the Brunswick fish ladder. The fish ladder is just below Frontier café, so when Kaitlyn takes off, I stop by. The ladder was designed to allow river fish populations to migrate the Androscoggin as they pleased. In theory, that is. "In the 1600s and 1700s, people used to fish salmon out of the river by the barrel. That just ain't never going to happen again. They can't get up and down ladders here, heck I've watched some fish just try over and over again to get up the dam and they exhaust themselves until they give up and flop over dead."

In November, there are no fish migrating up this dam in the fish ladder. The viewing window just displays dark, yellowy-green, murky water. Apparently, during peak migration

periods you can see schools of fish that take up the entire viewing window. The window is almost five times the size of me.

There have been a few meek efforts to repopulate salmon populations in the Midcoast Maine region, but dam companies have few stakes in rebounding salmon populations.

Hydropower companies typically see conservation efforts as obstacles in maximizing profits. “I think we could get em here again if we took down this dam and reintroduced them. The only problem is that hydropower is just too dang big,” says John.

I ask John when the last time he saw a salmon was. “Three years ago, and that year I only saw two of em.”

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