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Teaching Wonder: Essays and Reflections from the National Parks System

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Teaching Wonder: Essays and Reflections from the National Parks System

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Abstract

In *The Sense of Wonder* (1965), acclaimed environmentalist Rachel Carson offers guidance for adults helping children explore nature and cultivate an enduring interest in the outdoors. Fondly drawing upon excursions in coastal Maine with her grandnephew Roger Christie, Carson illustrates the powerful impact of simply accompanying children in nature and letting their curiosity and questioning guide the adventure. Despite her immense knowledge in earth sciences, she made a concerted effort not to share technical vocabulary with Roger, believing that doing so might belittle his joy in their surroundings. Her work has inspired me throughout my career as a fourth grade teacher, and especially while designing an original social studies curriculum about the American national parks system. This memoir consists of essays and reflections about my travels to the Grand Tetons, Acadia, and the Boston Harbor Islands. It is written from the perspective of a traveler enjoying unfamiliar landscapes, but also of a teacher grappling with how to relate their experiences to young students. It depicts moments where my own sense of wonder emerged in these natural spaces, leading me towards deeper understandings of the natural and the human histories in each place. It includes accounts of my teaching, my travels, historical research, and connections with my school curriculum. I also reflect on how my teaching philosophy has shifted since immersing myself in the subject of national parks, and how I continue striving to provide opportunities for childlike wonder to emerge in my classroom. In a time where extreme weather patterns and the detrimental effects of climate change persist in the world, I believe it is more important than ever for young people to develop a relationship with

nature. It is my hope that fellow teachers will read this project one day, and that it can inform the outdoor experiences they share with their students.

Acknowledgments

The American nurse and activist Dorothea Dix once stated that, “The duties of a teacher are neither few nor small, but they elevate the mind and give energy to the character.” I believe that her statement was true in the nineteenth century, during her lifetime, and that it certainly rings true now. As an elementary school teacher, I know from personal experience that there are often countless demands on a teacher’s time. Bearing this in mind, I would like to express my deepest gratitude to Professor Barbara Kreiger, who served as my faculty advisor and first reader while I completed this thesis. She accommodated me in the midst of her own incredibly busy teaching schedule and read my work with the highest degree of care and support. Term after term, she pushed me to elevate my writing, think critically about my authorial choices, and comb over my sentences to ensure coherence. Thank you for always showing the utmost respect and support for my work.

I would also like to offer my sincerest appreciation to Professor Anna Minardi. In addition to serving as a reader and committee member on this thesis, she also directed my independent study in the fall of 2021 and recommended that I read Rachel Carson’s *The Sense of Wonder*. This thesis is a direct result of *The Sense of Wonder*, and it has helped me rethink the way I teach my fourth grade students about the national parks system. I could not be more thankful for Professor Minardi’s recommendation, and, most importantly, for her time and her guidance.

In addition, I would like to thank Professor David van Wie for serving as a reader and committee member as I completed this thesis. In his dedicated and thoughtful feedback, he pushed me to better represent natural history and human history as two

separate themes in my work. As a result, I believe that my writing is in stronger alignment with the National Parks Service's mission to preserve both natural and cultural resources.

This thesis would not have been possible without the time, effort, and patience of Professor Kreiger, Professor Minardi, and Professor van Wie. Thank you all for leading me through my writing journey, and for challenging me to represent myself and the MALS program in the strongest way possible. I will forever appreciate your assistance.

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Introduction

Wednesday, June 7, 2023 marked my ten year anniversary of teaching fourth grade, the last seven of which have been at Shore Country Day School in Beverly, Massachusetts. The administrators hired my teaching partner and me specifically to overhaul the social studies curriculum. That year also happened to be the centennial of the National Parks Service, and when President Obama launched the *Every Kid Outdoors* initiative to commemorate the anniversary, he did so with our grade level in mind, meaning that American fourth graders could access any sites in the national parks system free of charge. Through this sheer double coincidence, the program and the target age, we identified the perfect subject area for our curriculum.

I still feel that committed seven years later, but my reasoning has expanded, largely because of the independent study in young students' environmental literature that I did with Professor Anna Minardi, who encouraged me to read Rachel Carson's *The Sense of Wonder*.

When I first started teaching about the national parks system, I wanted to provide my students with the maximum amount of information that I could manage. I compiled countless resources from local libraries and the internet, pressuring myself to become an expert as quickly as possible. Five years later, I designed that independent study in order to further this aim. I examined a myriad of children's books with outdoor settings and information about natural features and American history. I yearned to expand my knowledge and include some of the new texts I read in our curriculum. But reading *The Sense of Wonder* made me reconsider these intentions, which I had held throughout years of curriculum building. It pushed my thinking beyond the walls of my classroom, past the

pages of books, and back to my happiest memories in nature. Carson's concept of child-like wonder represented a feeling that I wanted my students to experience for themselves. I realized that awe, curiosity, and joy were what I truly wanted my students to take away from studying the national parks system. Instead of merely exposing them to information, I now wished to help them cultivate those feelings towards landscapes, historic sites, waterways, and more. As a teacher, I generally complete assignments and lessons on my own before presenting them in the classroom. Following that logic, I needed to reconnect with my own sense of wonder about nature, on my own explorations, before I could effectively teach it. Writing this thesis was my attempt to do just that: to experience, to reexperience, to reflect, and then to convey.

Teaching Wonder is a memoir of my excursions to Grand Teton National Park, Acadia National Park, and the Boston Harbor Islands National Recreation Area. I selected Grand Teton and Acadia because my fiancée Kristina and I had already planned trips there during my school vacation in the summer of 2022. Those visits were my first time visiting those two parks. The Boston Harbor Islands was the site of a memorable childhood birthday party, but also the location of my first field trips while teaching about the national park system. I chose this site because I experienced it when I was a child, when I was designing the field trip with my teaching partner, and on three separate occasions with my fourth grade classes. Together, this memoir includes narratives of my visits to each site, as well as research about aspects of their human and natural history that I felt were most important for teaching.

While Carson's *The Sense of Wonder* emphasizes exposing children to natural features, I felt that it was necessary for me to explore some of the historical, social, and

political dimensions of my travel destinations as well. For better or worse, the national parks system is intended to reflect American history and society. Throughout my travels and my writing, there were times where my attention felt divided between nature and human history. But over time I came to realize that blending natural features and history is the precise aim of the National Park Service. Its mission is to preserve "unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations." With this duality, there is an opportunity for me to teach tangible lessons in history, social change, conservation, and respect for nature.

As I would learn, the experiences of a traveler and that of a teacher were often quite different. I was an individual enjoying and finding meaning in nature, and I was a teacher grappling with the best ways to teach about those experiences. In each chapter, I attempt to portray an internal debate that I waged with myself at each place.

As a traveler, I basked in these landscapes. The scenery, wildlife, and history instantly captivated me. Feeling this way wasn't hard for me, as I have enjoyed outdoor explorations throughout my life. Yet with each destination, the teacher in me felt increasingly uncertain about how to present these elements to young students. I began to feel that I was in over my head, and that weaving my experiences into our curriculum was too daunting a task.

The story of the national parks system encompasses over 150 years of American history, and its landscapes have evolved over epochs. With just under 180 days in every school year, it was ludicrous for me to think that we could cover it all. Fascinating people, places, and natural phenomena would certainly be left out of the curriculum.

What topics should I prioritize in the limited time I have in the classroom? Most importantly, would the topics that fascinate me interest my students even slightly? How would I make my travels interesting to ten year olds? What if they didn't care about how mountains were formed or how ocean waves shape rocky coastlines? What if, after hours of planning our field trip to the Boston Harbor Islands, all the kids wanted to do was run around? Questions like these swirled in my mind as I started researching and drafting this thesis. The questions chipped away at a curtain of certainty that I had possessed since my junior year of high school, when I first decided I wanted to be a teacher.

Teaching is a pastime in my family. I am one of eleven extended family members who have taught at some point in their lifetime, and one of three who is still currently teaching. This coterie includes aunts, uncles, cousins, and my fiancé. Several years ago, we even discovered that an ancestor of ours taught freed people in Atlanta and North Carolina throughout the Civil War. We cannot recall a time without any teachers in our family, and I cannot recall any year when I haven't set foot in a classroom. I have been exposed to the meticulous lesson planning, consistent organization, and detailed scheduling of teachers for as long as I can remember, and these habits have been a part of my own practice for a decade now. I have even learned to anticipate the unexpected moments that can occur on any given school day, like when a student loses a tooth or errant bees fly into the classroom. I did not expect that I would feel so uncertain this far along in my career. And for a short while, that feeling blindsided me. But I believe that a teacher is someone who accepts any question or concept that their students share as legitimate. Responding to my students with openness is one of my utmost priorities, whether they are certain or uncertain of themselves. Writing this thesis has helped me do

this for myself. It has shaped me into a more uncertain teacher, but also a more effective one. My questions no longer frighten me and I will continue asking them on future trips.

With that realization, I discovered that what I had to learn couldn't be found in historical research or scientific terms. My thoughts turned again to "teaching wonder." When I reconsidered Carson's words, I recognized that I was misinterpreting them. I believe she would have argued that while I could accompany my students outdoors, it is ultimately up to them to feel awe in their surroundings. It is up to them to decide whether or not they will engage in the natural world, and how they will do so. I could talk with a student for hours about the history of Mount Desert Island, and perhaps at the end of the day all they would be interested in is sand. Perhaps that interest will be as fleeting as the coastal winds, or it will persist throughout their lifetime. Or they might not be interested in anything that I share with them, and that is all right. I will still happily facilitate the experience for them regardless of their reactions. I am now content to step back and let them chart the trails we take outside, and to let them share their observations in their own words. Amazement can take place at any age. I do not think that we can truly plan for it in the same way that a teacher plans a lesson.

This thesis is the direct result of Rachel Carson's *The Sense of Wonder*. Although I will never have the privilege of meeting her, I feel that I owe her a debt of gratitude for her work. Her words stayed lodged in the back of my mind during my treks from Idaho to Wyoming, and from Massachusetts to Maine. They informed my observations of diverse natural features and unique histories. I reread them time and time again as I reflected on all that I had seen, and as I deliberated on how to strengthen my teaching about the national parks system. For these reasons, I have dedicated the first chapter of this thesis

to Carson and to *The Sense of Wonder*. Her book led me to consider my limitations as a teacher and the opportunities in my endeavor.

Is a sense of wonder something that can truly be taught? While Carson herself would likely say no, I ruminated on this for a considerable amount of time, and continue to. The final chapter of this thesis, titled "Assessment and Reflections," details my struggles with this question and my growth as a result of them. It takes place as I began planning to share my experiences with my students, and as I began to develop inquiry-based activities about the national parks system. Although my conclusions are not neat and tidy, learning and teaching are not either.

A Tribute to Rachel Carson and *The Sense of Wonder*

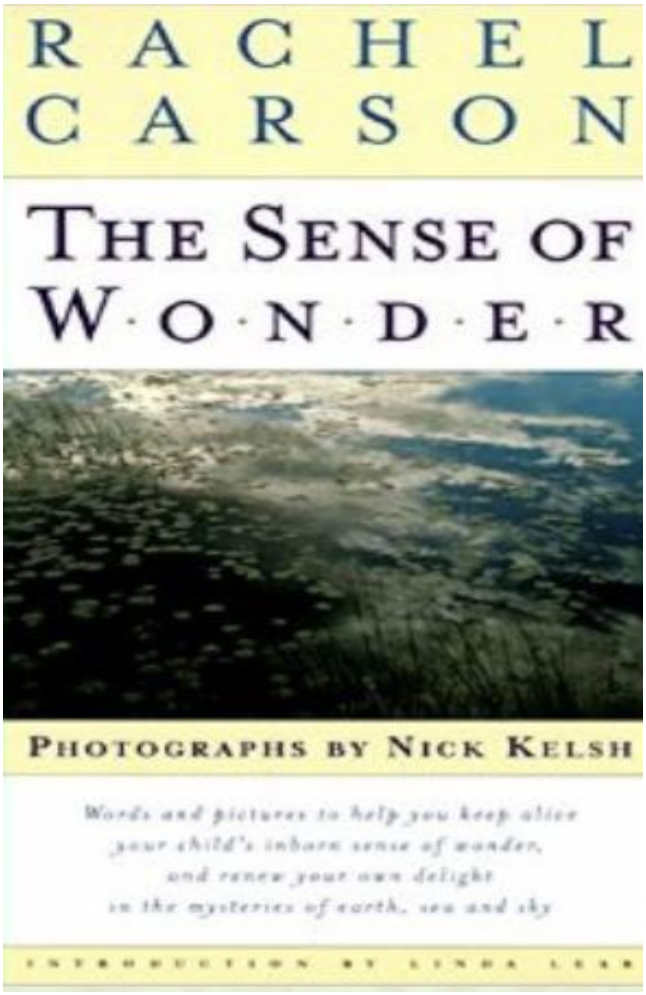


Photo Credit: *The Sense of Wonder* by Rachel Carson. Cover photo from website *The Life and Legacy of Rachel Carson* by Linda Lear. 1996-2023.

I wish that I could have seen Rachel Carson teach my fourth graders. Even better, I wish that Rachel Carson was *my* fourth grade teacher. For as long as I have known about her, I have mostly associated her with the adult world. *Silent Spring*, *The Edge of the Sea*, and many of her other writings are intended for adult readers. Her scientific research includes highly technical vocabulary exhibiting vast knowledge of the natural

world. At the same time, Carson also wrote about nature in accessible, descriptive, and imaginative ways. I feel that many passages of her most famous writing can appeal to readers with any level of scientific background knowledge. After reading *The Sense of Wonder*, her last publication, I believed she would have been more than comfortable outdoors with the nine and ten year olds that I work with. I started to imagine what field trips would be like with Rachel Carson as our guide. While conducting my independent study, and preparing a unit on famous conservationists for my fourth grade students, I read Sarah Fabiny's biography *Who Was Rachel Carson?* and researched how Carson's ties to the environment emerged throughout her childhood. Hers was a life truly lived in nature, and with my research, I wanted to identify the types of experiences that inspired her passion.

According to Fabiny, Carson's interest in nature and in writing began at around the same age of some of my students, while she was living on her family's farm in Springdale, Pennsylvania. For instance, when she was eight years old she became intrigued by the different bird species flocking around her home. After asking her parents questions about their flight patterns, she began writing a story about two birds searching for a new home. She walked around her family's property as often as she could, making careful observations about the different animal and plant species that inhabited it. When she wasn't filling the pages of her sketchbooks with these observations, she consumed books like *Wind in the Willows* and Peter Rabbit, where animals lived like humans in nature. As she grew older, her interest in the natural world started spreading far beyond rural Pennsylvania. She held onto a conch shell that her mother gave to her and listened

with rapture at the vibrations emanating from within, which fueled her dreams of one day exploring the sea.

Throughout her childhood, Carson spent a considerable amount of time in nature with her mother, Maria McLean. She fondly recalled how her mother did not force information upon her during their excursions. Instead, she accompanied her outdoors, answered whatever questions she could, and procured relevant literature for her when she couldn't. Decades later, Carson would provide similar adult companionship to her three year old grandnephew Roger Christie, following him amongst the coastline and forests around her home in Southport, Maine. Their adventures became the basis for *The Sense of Wonder*.

The Sense of Wonder is a slim yet powerful work of writing. It includes, in Carson's own words, "words and pictures to help you keep alive your child's inborn sense of wonder, and renew your own delight in the mysteries of earth, sea, and sky." While it details the benefits of connecting children with the natural world, it also portrays Carson's relationship with Roger. It includes vignettes of their explorations around the woods, tide pools, and coastline in Southport, Maine. Regardless of the ecosystems they explored, Carson avoided instructing Roger about the scientific terminology or the exact biological processes taking place in them. She wanted their time to be "based on having fun together rather than on teaching." Looking upon the Atlantic Ocean together, "[she] with the salt of half a lifetime of sea love," and he "a baby meeting for the first time the wild tumult of Oceanus," she recognized that they could not possibly have the same response given that they were at different stages of their lives. Yet they could still enjoy responding together.

At times, Carson identifies the various plant species surrounding the nearby forests and shoreline. In just one brief example, a mere two sentences read,

> Bayberry and juniper and huckleberry begin at the very edge of the granite rim of shore, and where the land slopes upward from the bay in a wooded knoll the air becomes fragrant with spruce and balsam. Underfoot there is the multi-patterned northern ground cover of blueberry, checkerberry, reindeer moss and bunchberry, and on a hillside of many spruces, with shaded ferny dells and rocky outcroppings…there are lady's slippers and wood lilies and the slender wands of clintonia with its deep blue berries.

Her writing instantly reveals the depth of her knowledge. Yet, whenever she was with Roger, she went out of her way *not* to classify the plants and animals that they encountered on their wanderings. She simply conveyed her delight in all that they saw together and responded to the things that captured his attention. During their walks, Roger often surprised Carson with the things he had learned along the way. And, later on in his development, Carson "[was] amazed at the way names [stuck] in his mind, for when [she showed] color slides of [her] wood plants it [was] Roger who could identify them." She believed that their friendly expeditions together ultimately deepened his understanding of natural phenomena and that acts of memorization would not have had the same enduring impact upon his learning.

According to Carson, "a child's world is fresh and new and beautiful, full of wonder and excitement." She then laments that "it is our misfortune that for most of us that clear-eyed vision...is dimmed and even lost before we reach adulthood." In her mind, an exploration outdoors is enhanced by the hope of discovering the joy, shock, and mystery of the world. We selected the national parks system as the overarching theme for our social studies curriculum thinking that it would provide plenty of chances for our students to foster interests in various aspects of the natural world. Meanwhile, its historic

sites, heritage sites, and monuments recognize human stories from every era of the American experience, whether they are celebratory or tragic. Thrills, surprises, and conundrums abound in the natural and cultural resources that the National Parks Service preserves. I have challenged myself to select topics that I think will elicit this range of sentiments, but doing so requires that I learn as much as possible about them for myself.

For several years now, I have dedicated countless summer breaks and school vacation towards discovering new information about the national parks system. As an individual, my ongoing pursuit of knowledge invigorates me. But as a teacher, there have been plenty of moments along the way where I have felt overwhelmed by the amount that I do not know, leading me to question whether I should be teaching about topics that I have so much more to learn about. Reading *The Sense of Wonder* helped quell these feelings, especially after hearing how many parents wrestle with self-doubt as they bring children out into nature for the first time. Carson detailed how,

> Parents often have a sense of inadequacy when confronted on the one hand with the eager, sensitive mind of a child and on the other with a world of complex physical nature, inhabited by a life so various and unfamiliar that it seems hopeless to reduce it to order and knowledge. In a mood of self-defeat, they exclaim, `How can I possibly teach my child about nature - why, I don't even know one bird from another?

Although I am not a parent myself, when I was first building our social studies curriculum, I occasionally felt a similar feeling of inadequacy as I compiled resources and designed lessons for my students. Yet reading *The Sense of Wonder* taught me that "it is not half so important to *know* as it is to *feel*." Our emotions and our senses inform how we observe and how we learn. When we encounter natural phenomena, or historic remains, any manner of response might take place. Depending on where we are, and what

we are seeing, we could feel inspiration, sympathy, apathy, pity, admiration, love, or even fear. Carson believed that emotional arousals imbue elements of nature with deeper meaning. Children will be inspired to learn about natural objects that evoke emotional responses. Thus, "it is more important to pave the way for the child to want to know than to put [them} on a diet of facts [they are] not ready to assimilate."

I believe that *The Sense of Wonder* is not only a memoir, but also an educational philosophy. Reading it was as impactful as any professional development workshop that I have attended. It includes guiding principles that I now use to enhance my social studies curriculum, and that I drew from as I reflected on my travels within the national parks system. During my trips to Grand Teton, Acadia, and the Boston Harbor Islands, I became captivated by sights and stories that I did not expect to be. My curiosity in these aspects simply emerged. I tracked the emotional responses I felt as I trekked through familiar and unfamiliar landscapes, and as I learned about their stories. Venturing out into the field, conducting interviews, and researching natural and human history has helped me form a deeper understanding of these places. Visiting them has helped me define my own sense of wonder, and grapple with how I can help my students develop their own.

In so many ways, Carson put words to the way I feel when I am out exploring in nature. For instance, I agree with her that exploring nature is "largely a matter of becoming receptive to what lies all around you." At times, I feel myself needing to practice a sort of mindfulness that is necessary for using all the sensory powers of observation when in nature. Yet when I am able to do so, unnoticed beauty comes into focus and I find myself wanting to attend to all the elements of nature that accompany that particular day. Now that I am an elementary school teacher, I often find myself

believing that receptiveness to the outdoors is more instinctual for children than it is for adults. Some of my most joyful moments during a typical day of teaching come from watching my fourth grade students explore the natural features around our school's playground. I believe that their play comes with a unique perspective that is reflective of their developmental stage only. It is a perspective that I feel makes them the perfect candidates to learn about the national parks system.

Grand Teton National Park

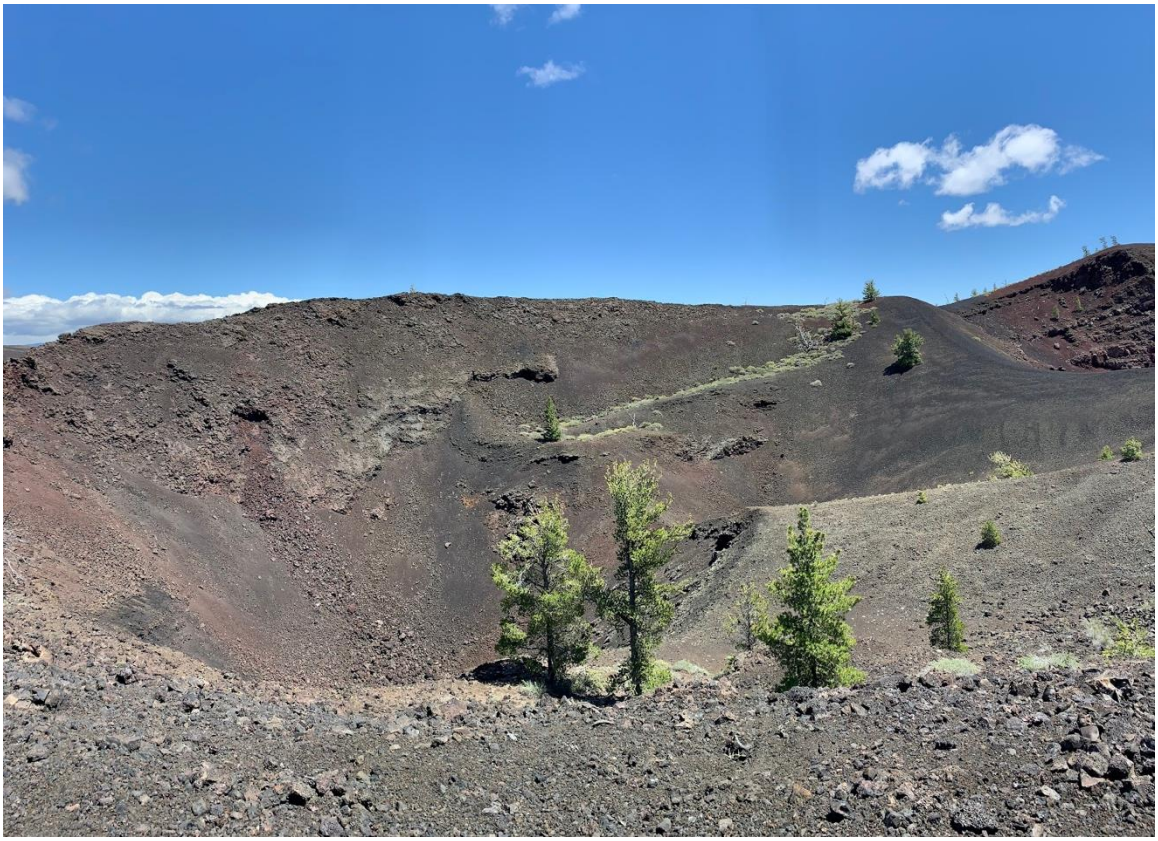


Photo Credit: Hiking the rim of the North Crater Trail at Craters of the Moon National Monument and Preserve, Idaho. Personal photograph. June 13, 2022.

Only one person was left ahead of me in line in the gift shop at Craters of the Moon National Monument and Preserve. My fiancé Kristina and I had just completed a hike on the preserve's popular North Crater Trail. Although the preserve is located in Idaho, between the two towns of Arco and Carey, its ashen undulations feel like they belong more to a lunar landscape as opposed to the American heartland. Circles of black and gray gravel crunched beneath our feet as we traversed four separate craters in a span of two miles. A sign in the parking lot stated that the North Crater Trail was one of the preserve's easier hikes, but I found myself nearly out of breath within the first several

minutes of our hike. After a few paces, we ascended a series of cinder slopes bringing us upwards to the crater's rim. The trail narrowed as we drew closer to the summit. Soon, my footsteps started scattering small clusters of gravel downwards towards the crater's mouth, far from where visitors are allowed. Wind pounded our faces the higher we climbed. I gasped for a few breaths once we reached the summit, staring at the gravel beneath my feet as I gathered myself. When I looked up, far off in the distance I could make out faint traces of orange snaking along the gray ground. After our hike, in the visitor's center, I learned that I was looking at a flat flow of *pahoehoe* lava. A consistent flow of this smooth lava courses throughout swaths of the preserve. Eight major eruptive periods shaped the landscape over the past 15,000 years,

During our five hour drive to the preserve, I viewed mile after mile of open plains and prairies. Fields full of wheat and corn stalks blurred together in countless shades of yellow. Now, as I stared at the glistening streak of *pahoehoe* meandering across the blackened landscape before me, I couldn't believe that I was in the same state. Not only did it seem like I wasn't in Idaho anymore, but it didn't even seem like I was on earth. If I showed my fourth graders pictures of Craters of the Moon, where would they think I was?

Many of my favorite moments in nature come from witnessing the unexpected, and our hike along the North Crater rim is now an indelible memory of mine. While seeing craters and lava fields in Idaho surprised me, it also brought my assumptions about American regions into focus. Because I was fixated on the area's agricultural identity, I couldn't even entertain the thought of the landscape containing any other type of ecosystem. My bias had shaped the shock I felt. How could I relate this experience to my

students? Could I provide a similar opportunity for them? I asked myself these questions and began brainstorming potential lesson ideas.

The first unit in our social studies curriculum is centered around major American regions. After creating a working definition for the word *region*, students examine a variety of landscape photography and informational texts representing places all over the country. They classify different regions according to a number of criteria, including natural features, flora and fauna, climate, and prominent industries. This set of lessons meets multiple requirements that are outlined in national social studies teaching standards. Yet this hike led me to question whether I could do more than meet a set of requirements. I wanted my students to understand that regions also contain aspects that defy expectations. A rich learning experience could begin with my students pinpointing what they already know about a region, or what they *think* they already know, and end with them confronting examples that challenge their assumptions. If a lunar vista can exist in south-central Idaho, what other oddities might exist within the America landscape? I realized that I needed to do a whole lot more research if I wanted to find out.

I continued to process my experience as we waited in line at the gift shop. We wanted to buy a magnet to commemorate our visit, continuing a tradition we started together during our visits to different parks and preserves. We also needed a break from the persistent winds blowing outside that would continue to follow us across the Snake River Plain on our way to the Grand Tetons. I was still taking delight in the smattering of sagebrush and cinder cones that surrounded us during our hike. The contrast of ash and greenery stretched as far as my eyes could see, across a vast distance that I now know

encompasses the entire Great Rift volcanic zone. Perhaps this would be the closest I would ever get to standing on the moon.

Two park rangers signaled to me that it was my turn at the register, snapping me out of my thoughts about moons and craters. They asked us where we were headed next, and I happily shared that Craters of the Moon was the first stop on our trip to the Grand Tetons and to Yellowstone. Two days had passed since the start of my summer vacation, and I am sure that my response conveyed my excitement about that. I was also delighted about finding inspiration for these writings, but my bliss abruptly ended when a nearby ranger shared some tragic news with us.

"Did you hear? Yellowstone just had massive rain storms and flooding. The whole park is closed indefinitely," the ranger revealed. "Some roads washed out and visitors had to evacuate. I'm not sure when it will reopen again."

This news shocked us. We were mostly without cell phone service before our visit, happily winding through central Idaho in a refurbished camper van that we had borrowed from friends in Boise. In that time, Yellowstone evacuated nearly 10,000 visitors after flash floods surged through the park. After leaving the gift store, we hopped back into the camper van and attempted to find as much information as we could.

A cursory Google search immediately led to NPR's coverage of the flooding, with terrifying aerial footage of a swath of Yellowstone's North Entrance Road eroding in a tumultuous deluge of churning water, mud, and concrete. Scrolling further down the report, we gasped upon seeing park employee housing slide into a roiling Yellowstone River. Army National Guard helicopters and rescue boats retrieved people from a natural disaster of historic proportions. We learned that the flooding had left families and

communities in much of southwestern Montana without power and clean water, or, in the worst case, without homes. Small towns in and around the northern entrance to Yellowstone were expected to remain inaccessible for around five months.

Photo Credit: "Yellowstone park reopens after flooding reshapes the landscape." PBS NewsHour. Photo provided by the National Park Service and obtained via handout from Reuters. June 15, 2022.

Photo Credit: "Yellowstone River Swallows Housing for National Park Employees." K2 Radio. June 13, 2022.

Mere moments after I had stood in awe at Craters of the Moon, I stood in dread at the devastation of America's preeminent national park. How long would it take to repair the damage? What national park would be next in line for this level of destruction? I am still asking these questions as I write these words, several months after our travels in Idaho. As extreme weather events continue to dominate much of the news, I doubt that I will ever feel fully at ease about the future of our country's national parks, as well as the global environment that they are a part of. Yet these stories encourage me to learn even more about them, and to keep asking questions about the different natural features that represent America's varied landscape. Most importantly, in sharing these questions with my students, I hope that they will one day develop a similar appreciation for all that the natural world has to offer. Maybe some of those students will develop an appreciation that is strong enough to compel them to action.

After our stop at Craters of the Moon, we drove our camper van through the stretches of Wyoming highway along Teton Range. Neither of us had ever traveled in a camper van before, let alone slept in one overnight. But we couldn't think of a more exciting way to experience our westward journey as our attention lingered on the jagged white mountain peaks that stayed in sight through all the ascents and descents of the road. As I marveled at the sheer scale of the mountains, and how they towered over the miles of landscape below, I started to think that sharing photos of them would not do them justice. I needed a different strategy for conveying their height, size, and range. Peaks in the Teton Range vary anywhere between twelve and fourteen thousand feet tall. Whenever we head into Boston for field trips, many of our students marvel at the height of the Prudential Center, which stands at 750 feet tall. The Grand Teton, the tallest

mountain in the Teton, stands at 13,775 feet. After using a calculator for some quick division, I determined that a little more than eighteen Prudential Centers would equal the height of the Grand Teton. Not a single mountain or structure in Massachusetts rivals it. The John Hancock building, another Boston skyscraper, is the tallest building in the state with a height of 750 feet. Mount Greylock, out in the northern Berkshires of western Massachusetts, is the tallest mountain at 3,489 feet. Both heights pale in comparison to the Grand Teton, and nothing near our school comes even close. Yet if I couldn't bring my students to Wyoming with me, to observe the magnitude of the peak in person, perhaps they could engage in a similar comparison exercise as I did with the Prudential Center, but with objects of their choosing. Maybe creating an activity like this would provide an opportunity for astonishment or questioning to emerge. I scrawled down jumbled ideas for this lesson in my planning notebook after returning from our trip, believing in them as a potential link between my travels and my teaching.

After about three hours of driving up and down the Teton Pass, we caught sight of the valley that would lead us to Jackson Hole. A sprawling vista of dude ranches, cattle, and green meadows unfolded before us, and I began observing a pattern as we drove further. Post and rail fencing with lacquered signposts displayed the names of various ranches, leading to expansive dirt driveways and grassy pastures. Cattle grazed and rested beneath the warmth of the sun. The Tetons loomed on the horizon through the windshield and to the sides of my sightline. They stayed in my field of vision all along the way to Jackson Hole.

A line of traffic began forming on the highway about fifteen miles outside of Jackson Hole, requiring me to slow down. Traffic usually feels tedious to me, especially

in the suburbs around Boston. Yet outside of Jackson Hole, with the Teton Range in front of us, our time in traffic passed quickly. Before long, we entered downtown Jackson Hole, with its blend of boutique shops, ski cottage rentals, and rancher pastiche. Shoppers browsed in crowded stores and sightseers dawdled at street corners as we inched through a bottleneck of cars, feeling far removed from the grassy and uncluttered ranches along the highway. Despite this contrasting scenery, I could still see the Tetons whenever I looked upwards, beckoning me closer and inspiring me to learn more of their history.

With the sweeping green of Jackson Hole valley lying below the Tetons, I wanted to understand the origins of the landscape we were passing through. How had the Tetons formed? How have they changed over time? My knowledge about Wyoming was mostly limited to Yellowstone, which was only about an hour or so away from Grand Teton. Yellowstone is the national park that my students ask about the most, perhaps because of its status as the first national park established in America. I had not dedicated much time in our curriculum for Grand Teton, and in my time teaching, only one student has asked to research the park for his annual research project. While I learned much about the Tetons alongside that particular student, the experience helped me recognize that there was so much more I didn't know. Now our time in Wyoming would be solely focused on Grand Teton given the unexpected cancellation of our visit to Yellowstone.

Before venturing out into the park, Kristina and I needed to check in to our campsite at the Gros Ventre Campground. While reading about the area, I learned that Gros Ventre is a French name that French fur traders assigned to indigenous people in the region and that translates to "big belly." Historians do not know why the fur traders used this particular name, and I have since learned that several other names were also set

Photo Credit: View from our campsite at Gros Ventre Campground. June 14, 2022.

for local indigenous tribes. With elk, bear, and bison roaming throughout the territory, there was no shortage of food for people living on these lands long ago. Perhaps the abundance of natural resources and the scope of the territory inspired them.

To reach the campsite, we needed to drive along Route 191 for about ten miles. On our way we saw the National Museum of Wildlife Art and the vast lands of the

National Elk Refuge. To our delight, we learned that Gros Ventre not only bordered the elk refuge, but also had clear views of the Grand Teton. Since the eastern side of the Teton Range lacks any significant foothills or lower peaks, we could see the Grand Teton from any part of the campground. Whether retrieving firewood from the campground's entrance, brushing my teeth at the water pump outside of the restrooms, or taking an early evening stroll along the banks of the Gros Ventre River, whenever we looked up we could see the Grand Teton. The gray boulders and shimmer streaks of snow around its jagged peak quickly became points of reference for us during our time at the park.

The Grand Teton is not alone, however. The Teton Range spans 40 miles, stretching from the southern boundary of Yellowstone National Park all the way to the Teton Pass, just west of Jackson, Wyoming. Some of its foothills reach just across the state border into southeastern Idaho. It includes 84 named mountains that tower anywhere between 5,000 and 7,000 feet over Jackson Hole valley. Since I had only ever hiked individual mountains before, I often think about them as isolated entities. But throughout our travels, I focused on thinking of them in concert with one another, like a family.

Sitting inside our van, reading through some of the guide books I brought with me from Massachusetts, I learned that the Grand Teton is one of several mountains making up the "Cathedral Group." The Cathedral Group also includes Mount Owen, Teewinot Mountain, Middle Teton, and South Teton. I wanted to know where the name's religious connotation came from, and started reading about some of the area's earliest English-speaking authors. The American geologist Fritiof Fryxell, one of the earliest researchers and writers on the Teton Range, as well as Grand Teton National Parks' first official naturalist, used religious overtones when describing the area in his 1938 text *The Tetons:*

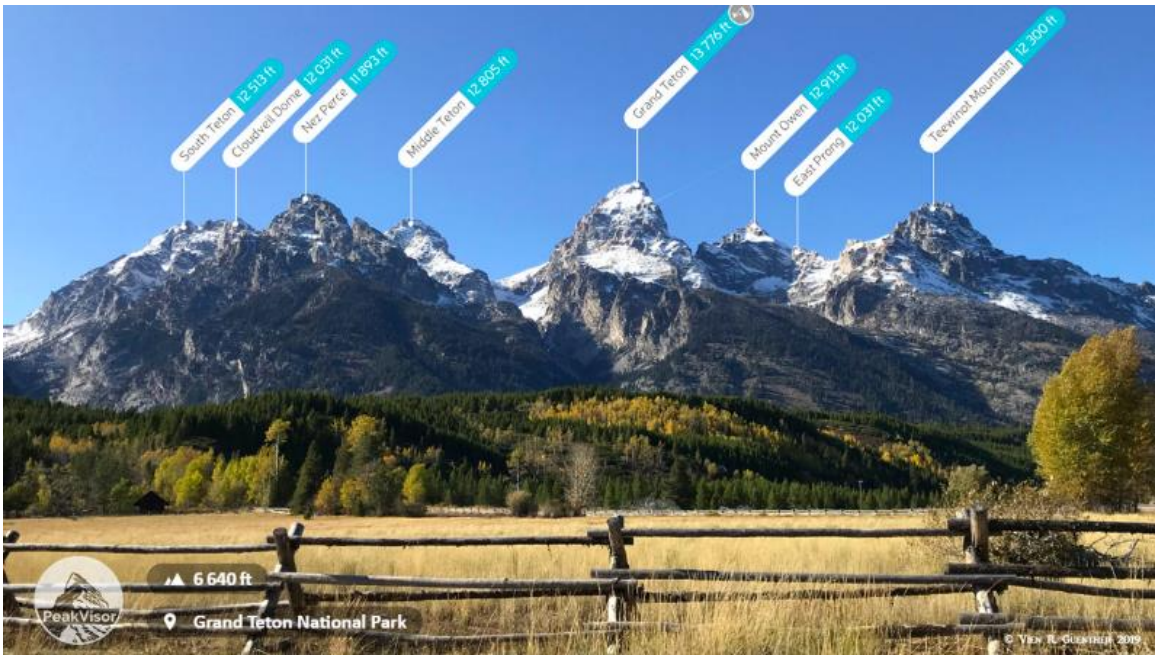


Photo Credit: Teton Range. *PeakVisor*, January 1, 2018.

Interpretations of a Mountain Landscape,

> These peaks have been called the Cathedral Group…more evident here than in many of the great cathedrals of men is the Gothic note. It is seen in the profiles of the countless firs and spruces congregated like worshippers on the lower slopes; it reappears higher in the converging lines of spire rising beyond spire; it attains supreme expression in the figures of the peaks themselves that, towering above all else, with pointed summits direct one's vision and thoughts yet higher.

Personally, I saw the mountains not as a group of lofty and imposing officials, towering over a congregation of human and natural worshippers, but rather as umbrellas sheltering the wide territory beneath them. According to environmental scientists, both Grand Teton and Yellowstone National Park are part of the Greater Yellowstone Ecosystem. Here, a vast array of animal and plant organisms interact with the biome that surrounds them. Spanning nearly 3,500 square miles, its expansiveness accounts for a high degree of biodiversity. Did the Teton Range play a role in shaping the area's biodiversity? I searched for answers as I continued my research.

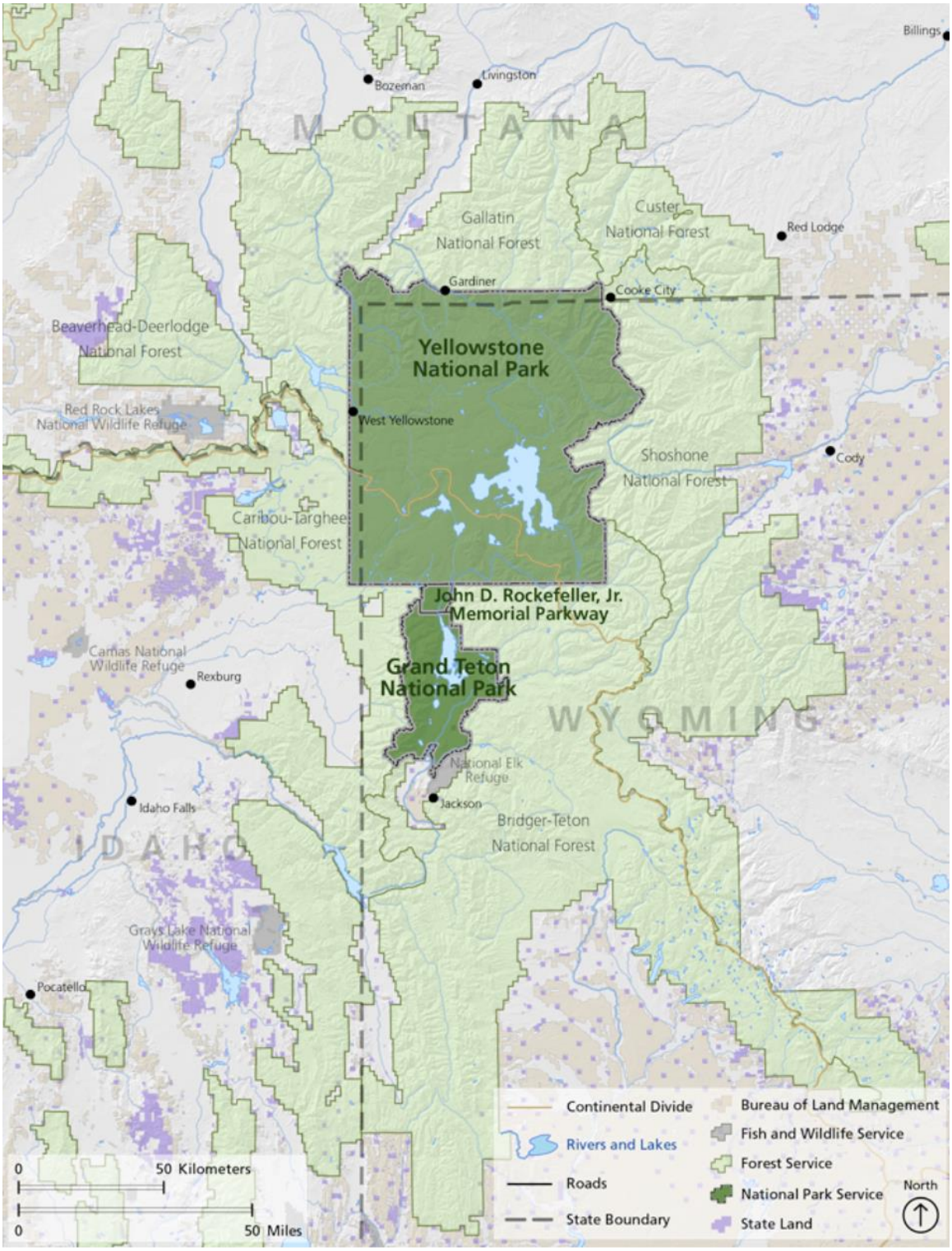


Photo Credit: "Greater Yellowstone Ecosystem - Yellowstone National Park (U.S. National Park Service)." *NPS.Gov Homepage (U.S. National Park Service)*.

In a geologic sense, The Tetons are a young mountain range. Teams of "geochronologists," or, geologists who specialize in calculating the age of mountains and mountain ranges, use a variety of methods to study the age of the Teton Range. Most commonly, geochronologists analyze fossils within mountain rocks, or measure the decay of radioactive elements such as uranium, potassium, or carbon. While reading more about this process, I imagined flipping over a sand timer and trying to figure out the exact amount of sand present in each half of the timer after it had been flipped. Geochronologists make similar calculations when they determine the rate at which uranium decays in mountain rock samples.

According to the National Park Service, mountains in the Teton Range have been uplifting for fewer than 10 million years, "making them 'adolescent' mountains, as compared to the 'middle-aged Rockies' (50-80 million years old) or the 'elderly' Appalachians (more than 300 million years old)." In comparison to the Rockies and the Appalachians, the forces of erosion, such as gale force winds, lightning strikes, extreme temperatures, and torrential snow, hail, or rain, have had significantly less time to wear down the Tetons. This is why their alpine summits stand as high as they do today. Time, and its ensuing patterns of erosion, split up rocks and weather the peaks of the Tetons into new shapes and new heights.

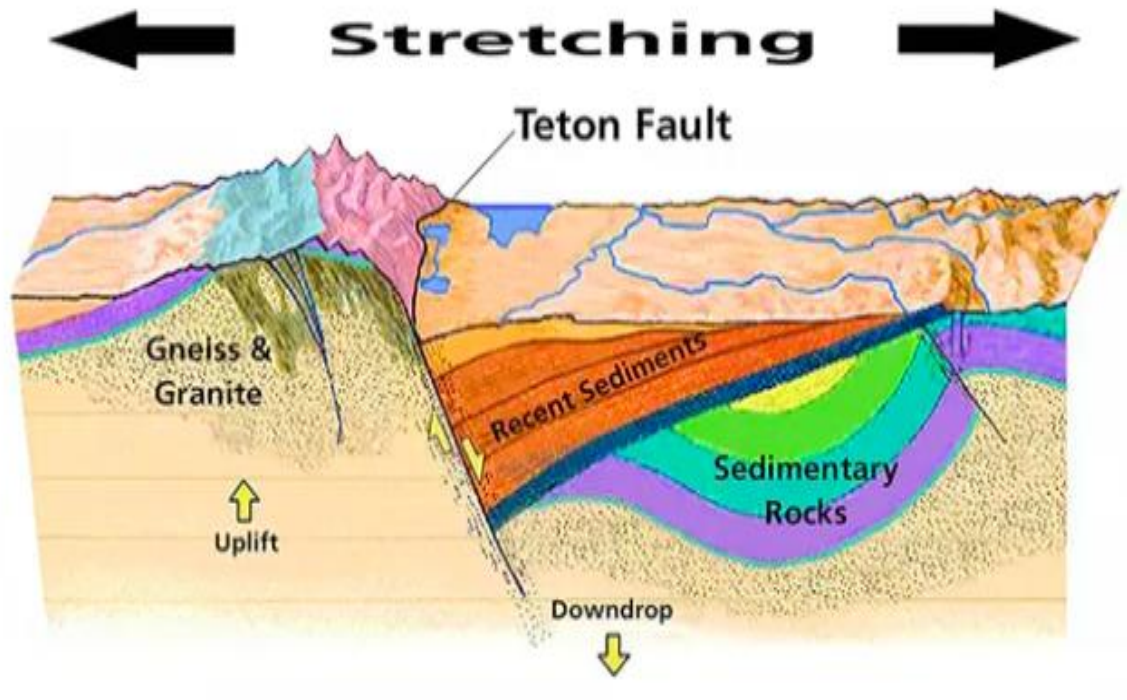
I had not read in detail about rocks since an introductory geology course that I took as a freshman at Colby College, almost fifteen years ago, back in the fall of 2008. However, I did remember that there are three major rock types: igneous, sedimentary, and metamorphic. Igneous rocks form when lava cools or hardens, often leaving behind crystals, air bubbles, or a glassy sheen. Sedimentary rocks form when small pieces of

rock are pressed together over time, and can often include fossils or other small rocks. Metamorphic rocks are formed deep in the earth from the forces of heat and pressure. The gneiss of the Grand Tetons are metamorphic, and, at 2.7 billion years old, are some of the oldest rocks in North America. They were formed when colliding tectonic plates nearly eighteen miles beneath the Earth's surface buried sediments from the seafloor. Varying levels of heat and pressure transformed the seafloor sediments into the Teton rocks that we see today, which differentiate minerals into lighter and darker layers. Around the same time, nearly 2.5 billion years ago, molten magma from the Earth's crust and mantle seeped into cracks in the gneiss, eventually cooling and crystallizing it into igneous granite. Enmeshed crystals imbue the rocks of the Teton Range with their speckled hues and zebra-esque patterns of color. I could see the black, white, and gray hues of different mineral bands patterns in the small number of samples closest to our campsite. Crystals and minerals also harden the rocks that exist at the highest peaks of the Tetons, peaks in the Cathedral Group such as Grand Teton and Mount Owen. Geologists have discovered that the eastern side of the Teton Range includes layers of sedimentary rocks such as limestone, sandstone, shale, and dolomite that exist above the igneous and metamorphic core within the mountains.

The mountains of the Teton Range all uplifted along the Teton fault, which is a 40-mile fracture in the Earth's crust stretching from north to south. It remains active and, several thousand years ago, produced earthquakes with magnitudes between 7.0 to 7.5. When the earthquakes occurred, blocks of mountain rose as the valley floor dropped downward. According to the National Park Service, each earthquake moved the Teton fault an average of 10 feet, adding up to a total displacement of about 25,000 feet

Ages, Peaks, and National Parks of Notable American Mountain Ranges (Shown in Descending Order)

Mountain Range	Age of Mountain Range	Tallest Peak	National Park
Appalachian Mountains	480 million years	Mount Mitchell (6,684)	Great Smoky Mountains Shenandoah Mammoth Cave
Great Smoky Mountains	200-300 million years	Clingmans Dome (6,643')	Great Smoky Mountains National Park (North Carolina & Tennessee)
Guadalupe Mountains	250 million years	Guadalupe Peak (8,751')	Guadalupe Mountains National Park (Texas)
Rocky Mountains	50-80 million years	Mount Elbert (14,439')	Rocky Mountain National Park (Colorado)
Cascade Range	45 million years	Mount Rainier (14,411')	Mount Rainier National Park (Washington)
Chisos Mountains	35-44 million years	Emory Peak (7,825')	Big Bend National Park (Texas)
Olympic Mountains	35 million years	Mount Olympus (7,979')	Olympic National Park (Washington)
Alaska Range	25 million years	Denali (20,310')	Denali National Park (Alaska)
Wrangell Mountains	25 million years	Mount Blackburn (16,391')	Wrangell-St. Elias National Park (Alaska)
Teton Range	10 million years	Grand Teton (13,375')	Grand Teton National Park (Wyoming)



Geologic cross section of Teton Fault

Reproduced with permission from Windows into the Earth by RB Smith & L. Siegel

Photo Credit: Geologic cross section of Teton Fault. "Geologic Activity - Grand Teton National Park (U.S. National Park Service)." *NPS.Gov Homepage (U.S. National Park Service).*

throughout its ten million years of existence. While it was highly unlikely that we would ever witness the forces of erosion, uplifting, and tectonic plate collision in action, we saw evidence of the Teton fault from both our campsite and the van windows. This most visible evidence exists in the form of a *scarp*, which, by definition, is a small step or offset on the surface of the ground where one side of the fault has moved upwards and the other has dropped down. We had to look carefully, but after squinting our eyes for a minute or two we could see a point on Rockchuck Peak where a seemingly gradual slope suddenly steepens in an abrupt dropoff.

As I took in the mountainside, I thought about the floods that engulfed this area less than a week before our arrival. How would the mountains change with extreme

weather events such as those becoming more common, and what would the consequences be for the life around it? I closed my books and put away my journal with this

Photo Credit: Teton Fault scarp. "Geologic Activity - Grand Teton National Park (U.S. National Park Service)." *NPS.Gov Homepage (U.S. National Park Service).*

question in mind. Kristina and I departed the campsite for a hike on the Ski Lake Trail, our first hike in Wyoming and our first around Grand Teton National Park.

We planned our hike thinking that Grand Teton would be more crowded than usual. Other visitors who were originally intending to visit Yellowstone were likely forced to rearrange their plans just like we were. If we were taking an additional day or two at Grand Teton, then others were probably doing so as well. We used the AllTrails iPhone app to look for hikes that did not typically attract large crowds. After scrolling through several possibilities, we decided upon the Ski Lake Trail, a five mile out and back pathway located in the nearby Bridger-Teton National Forest. Ski Lake is one of many alpine lakes in the Teton Range, and the images we saw of its clear, shimmering

waters, entrenched within Phillips Canyon, immediately piqued our interest. Before visitors even set foot on the trail, they are treated to a steep incline which spans the entirety of a sanded parking lot. When we parked we lifted the van's emergency brake just to be safe, worrying that otherwise it might roll into the main road and down the mountainside while we were away hiking.

After packing our backpacks and lacing up our hiking boots, we took some time to read information from a large rectangular sign posted at the trailhead. Among other tidbits, it revealed that we were standing amidst stands of aspen, fir, and pine trees. Still speckled with the remnants of winter snow, they surrounded the gently sloping trail and followed hikers through pockets of forest, small creeks, clusters of wildflowers, and eventually to Ski Lake.

Several days before, when we were in Boise, I baked in dry air and high temperatures anytime we stepped foot outside. The climate felt similar to what I had experienced at home in Massachusetts earlier that June. Hotter temperatures would not arrive until the middle of July, long after we flew back east. Climbing higher and higher along the Ski Lake Trail, it did not feel at all like June to me. Melted ice and slushy snow surrounded the path. A temperature somewhere in the thirties ensured that Kristina and I could both see our breath anytime we spoke to one another. Later I would read about how alpine portions of the Teton landscape such as Ski Lake Trail rely upon a slow winter melt that stretches into the summer months. The entire landscape is the product of a long, plodding, and gradual glacial melt.

The curves and undulations of the Teton landscape are ultimately a product of the Ice Age. Long ago, over a span of more than two and a half million years, glaciers

sculpted the Teton range into the series of U-shaped canyons, towering mountains, and sprawling valleys that exist today. I felt small and insignificant as I pondered this glacial activity. The story of the Tetons takes place over epochs. Every natural feature in front of me resulted from glaciers that are long gone. The waters of Ski Lake are contained in a depression of the Earth that was hollowed out by glaciers. Glaciers sharpened the jagged mountain peaks above us, causing a steady cascade of loose rocks to slowly wash out over mountain sides and line the floor of Jackson Hole valley. Overtime, this debris loosened the soil and eased the way for water to seep through, quickly hydrating the lengthy roots of the native sagebrush plants that are so emblematic of the Mountain West.

Photo Credit: My fiancé Kristina at Ski Lake. June 14, 2022.

Our out and back hike on the Ski Lake Trail piqued my interest in the many alpine lakes that are nestled within the Teton region. Now Kristina and I were ready to enter the national park, join the crowds, and walk along another alpine lake. For this hike, we headed to Jenny Lake, one of the most popular trails in Grand Teton.

It was becoming harder for me to ignore the increasing number of people around us the closer we came to Jenny Lake. Cars and RVs with license plates from all over the country lined either side of the road. We didn't even attempt to park in the main parking lot, figuring that we had arrived in the peak hiking hours of the day. Although I enjoyed the quiet and the solitude of the Ski Lake Trail, a part of me grew excited seeing the groups of people walking down the main road leading to the visitor's center, and eventually to the Jenny Lake Loop Trail. The clamor of the crowds signaled to me that we were walking on highly acclaimed territory, raising my anticipation even further than before. The trail is a premier attraction of Grand Teton National Park, and, at almost eight miles around, we expected to be walking for just about three hours. We expected that the high volume of foot traffic would force us to slow down. Yet with so much activity surrounding us, and mile after mile of mountain scenery to look at, I didn't mind the prospect of walking at a leisurely pace.

Before the start of our hike, we stopped in the busy pavilion next to the trail's two entrance points. It hosts bathrooms, the Grand Teton Association Store, and a log cabin visitor's center that was originally built in the 1920s. The building was once the home of Harrison Crandall, the park's unofficial photographer at the time. In honor of his work, a section of the visitor's center is reserved as a studio for artists receiving grants and residencies from the National Parks Service. A series of metallic interpretative panels

stand before the two trailheads, exhibiting information about the history and the wildlife of Jenny Lake. Kristina and I stopped at the panels to learn about the area's past.

We learned that Jenny Lake is named after a Shoshone woman named Jenny Leigh. The Shoshone and the Bannock tribes are the primary indigenous tribes located in and around Grand Teton and Yellowstone. While historians do not know her indigenous name, they do know that she received the name Jenny Leigh after marrying a British fur trapper named Richard Leigh. Jenny was sixteen and Richard was thirty-one when they wed. Together, the couple assisted geologist Ferdinand Hayden on two separate expeditions throughout the lands surrounding Jac. While sharing inside knowledge about the area, Jenny and Richard found themselves amongst a traveling cohort of biologists, botanists, painters, and photographers. Hayden and his expeditionary team brought geological research, detailed maps, photographs, and landscape artwork back east to inform the American government and its citizens about the natural wonders and beauty of the Yellowstone area. Their findings played a significant role in persuading President Ulysses S. Grant to establish Yellowstone as a national park in 1872. The Tetons, however, were overlooked.

Grateful for their assistance with his expedition, Hayden and his team named two lakes at the base of the Tetons after Jenny Leigh: Jenny Lake and Leigh Lake. After their work on the expedition, Jenny and Richard continued building their family and their homestead west of the Tetons. Jenny gave birth to six children after first arriving in the area with Richard in 1863. As the family grew bigger, they raised cows and buckskin horses, and went on hunting trips together throughout the surrounding forests and mountains. Sadly, between Christmas Eve and December 28, 1876, smallpox claimed the

lives of Jenny and all six of her children. In a span of four days, Richard became the only surviving member of the Leigh family.

I was fascinated by the overlapping indigenous and American stories of the Tetons, and would continue to research them long after our walk around Jenny Lake. Months later, I learned how bands of Shoshone and Bannock people would gravitate towards the forests and waters of Jenny Lake long before Jenny Leigh was born. The terrain contained all that they needed, including medicinal herbs, water, and game.

Kristina and I walked down a small stone staircase and decided to turn left onto the loop trail, thinking we would take a quick peek at the boat launch station that is located there. We learned from signage that a variety of boating is allowed on Jenny Lake, including kayaking, canoeing, and even motorboating to a small extent. The park charters small pontoon boats that arrive at the boat launch every hour, taking ticketed tourists on a cruise throughout the lake. When we were initially planning our trip, the prospect of a boat ride piqued our interest. However, upon seeing a lengthy line with expected wait times up to ninety minutes, we agreed that sticking to a hike would be much more enjoyable.

A canopy of trees enveloped us for about fifteen or twenty minutes of uninterrupted walking, with the slight sound of lapping water serving as the only tangible evidence of Jenny Lake. While the dirt trail stayed relatively level, it was only as wide as two people standing side by side. With ample foot traffic in front of us, behind us, and walking towards us from the opposite direction, our goal became gaining some separation from the flow of people. We walked carefully in order to avoid tripping on the exposed rocks and roots stretching throughout the path. Soon, we emerged from underneath the

treeline and out into the open skies, with clear views of the lake and the Tetons all around us.

Looking ahead and to our left, we could now see that we would be following a mountain base for a significant portion of our hike. Jagged rocks of varying sizes dotted as far upwards as our eyes could see. Boulders seemed to balance delicately, with little surface area to rest upon, while fist-sized stones stayed together in clusters that seemed to blanket almost all of the soil. Apart from a few downed tree trunks and branches strewn about the mountainside, and few shrubs here and there, swaths of granite and gneiss vastly outnumbered the surrounding vegetation. Glaciers, winds, and storms moved these rocks into the exact locations before us now. How much would they move after we left? How much would they move a year from now? Compared to the relative calm of the lake to our right, I felt that these rocks and plants existed together in a precarious and unequal balance.

The elevation of the trail gradually began to increase, with the lake below us fading farther the higher we trekked. Before long, we walked beneath another canopy of trees that looked similar to the one we passed through at the start of the trail. It was not quite as dense, however, and every several paces we could sneak gazes back up into the mountainside. We came across a couple standing together in silence, scanning a small and slanted grove of trees standing twenty yards or so above us.

While driving through various stretches of highways in the Tetons, I learned that whenever people were standing by the side of the road in front of an open plain, they were almost certainly observing some species of wildlife. I assumed the same there on the trail. My heart skipped as I guessed about the animal they were looking at.

"There's a moose resting up there," one of the hikers quietly shared.

The shade of the trees cast a slight darkness in the area, which, combined with the array of gray mountain rocks, made it hard for me to see in detail up above. Then a rustle of grass and quick shake of brown startled me, bringing the area into focus. I could see an adult moose lying with its two front legs stretched to the front and its hind legs splayed out to the side, grazing in peace.

We watched the moose for several minutes before moving forward, curious whether we would see any more wildlife that day. Moose have always been my favorite animal, but I had never seen one up close in person before. I was surprised that it was not standing next to any water. Jenny Lake was an easy tromp away, and swampland existed in nearby spaces, but the sight of one resting so comfortably amongst rocks felt strange to me. Further up on the trail, I quickly learned that the mountainside in fact contains plenty of water sources, benefiting both the wildlife and the lake below.

Soon after encountering the hungry and peaceful moose, we came upon a turnout trail leading to Hidden Falls. A trail sign indicated that if we walked half a mile down the turnout, we could see a cascading waterfall that is 100 feet long. We had committed to being at Jenny Lake for the whole day, so we quickly agreed that the extra distance was worth traveling.

Granite and stone lay scattered all throughout this short yet surprisingly difficult trail. The sight at the end did not disappoint us, however. Stopping somewhere alongside the bottom half of the waterfall, we could no longer hear the voices of other people or the wind rustling through the trees. The sound of surging water was all we could hear. It felt both peaceful and pervasive. While Hidden Falls seemed to drop dramatically the

Photo Credit: A glimpse of Hidden Falls. Personal photograph. June 17, 2022.

higher up I looked, at ground level the descent felt much more gradual. A combination of rocks and branches guided the water down the lake. It resembled a maze. Yet, from my research about glaciers, I understood that snowmelt at the peak of the mountains provided significant fuel for this waterfall and others. Hidden Falls and its fellow Teton waterfalls, in turn, shaped the mountainsides and rocky canyons around them. Moose, elk, bears, and other wildlife could depend on these waters, as well as the surrounding lakes and

swamps, to quench their thirst whenever they needed. All of these elements of nature depended on one another.

We held these sights in mind as we passed during the rest of our hike. Our conversation turned to all we had seen that day, and, shortly afterwards, fatigue crept into our bodies. We quickened our pace, and, eventually, we could see pockets of parking lots. The snatches of pavement signaled to us that both the visitors center and our exit were nearby. Suddenly, a small crowd of people stood together in silence. Many of them had phones out, and a few were shushing passersby in a gesture that was now familiar to us. A moose calf and its mother wandered the woods in front of the crowd at a safe distance. Kristina and I both smiled at the sight despite how tired we felt. The roaming of these moose felt in keeping with the story of the Tetons, a story whose history, both human and natural, is steeped in movement. Glaciers melted and moved to shape the landscape long before wildlife began migrating with the seasons. In a span of time far more recent than glacial activity, indigenous people, fur trappers, and homesteaders moved about the Teton Range seeking the best possible locations for prosperity.

Acadia National Park

My summer adventures began in the Grand Tetons and they ended in Acadia. For years I had dreamed of visiting there, and now I could put sights, sounds, and smells to those dreams. Kristina and I left for the park the Friday morning of Labor Day weekend, knowing that heavy waves of traffic awaited us yet feeling too excited to care. We recognized familiar sights after crossing the New Hampshire border into Maine, including Ogunquit, Portland, and Waterville. But once we hit the three hour mark of our car ride, the terrain became increasingly unfamiliar to us.

Before long, stands of pine trees dominated my field of vision and the highway signs became increasingly more scattered. We turned off Interstate 95 and the pines yielded space to homes and small businesses. A short and narrow causeway led us to Mount Desert Island and its coastline. I felt as if we were skimming along the water's surface, grateful for the clear skies and absence of rain for our arrival. At the same time, experiencing such closeness between the road and the sea level felt somewhat precarious, like a gateway to something special that could be taken at any moment's notice. If flooding could wash away some of the higher roads outside of Yellowstone, then it could surely submerge this causeway entirely.

It was challenging for me to look away from the Atlantic Ocean and the rocky narrows to our right. Guardrails protected us from small jagged cliffs on our right, and wet, stringy seaweed covered the rocks at the ocean's edge. Captivated by these sights, I almost drove right past the North Ridge trailhead to Cadillac Mountain, the starting point of our first hike in Acadia. We chose it as our first stop knowing that we would be able to see almost all of Mount Desert Island from atop its summit.

Photo Credit: Acadia National Park - Cadillac Mountain North Ridge Trail. Maine Trail Finder.

Cadillac Mountain is synonymous with Acadia National Park. Located on the eastern side of Mount Desert Island, it stands at 1,530 feet tall and is the highest mountain peak on the eastern seaboard. From October through March, scores of early risers flock to the summit by car and by foot to see the sunrise before anyone else in the United States. Unlike the Grand Tetons, which tower over sprawling verdant plains, Cadillac and its neighboring mountains overlook swaths of blue ocean that stretch as far as the eye can see. Geologic and oceanic forces shaped the surrounding landscape. Five hundred million years ago, molten hot magma cooled and created the mountain's gray igneous granite, as well as the pink granite which makes up part of the coastline. Massive glaciers wore down the mountains while carving valleys, rivers, and lakes. For millions of years, the landmasses sank beneath the weight of the glaciers, allowing ocean water to rush in and transform the mountains into islands. Now, Atlantic waters criss-cross through the separate landforms that encompass Acadia, including Mount Desert Narrows, the Schoodic Peninsula, Isle au Haut, and a handful of other neighboring islands.

The North Ridge trailhead is situated right beside the street and with little room for parking. Hikers arriving by car have a span of about fifty yards to find a spot on the side of the road. Thankfully, only a few cars were there when we arrived. I pulled into a spot towards the end of the road and came to an abrupt stop, criticizing myself for not noticing the trailhead sooner. The Acadian coastline and the Atlantic Ocean had distracted me for the previous twenty minutes of driving, but from the car window it was also hard for me to see any indication of Cadillac Mountain. Forest was all I could see in my peripheral vision, and its towering trees obscured any sign of the summit.

After parking, we laced up our hiking boots and stretched out some lingering stiffness from our five hour car ride. A small wooden staircase led into a forest of pine and spruce trees. Scores of green needles blanketed the forest floor. Up above, pockets of sunlight poked through openings in the branches, warming our faces and brightening patches of the ground. The majority of trees stood in shade, while others basked in warm rays of sunlight. Browned needles dotted the ground beside the bases of these toastier trees, their colors transformed by the summer heat. We kept watchful eyes on the ground in order to avoid tripping on the web of tree roots and mud puddles at our feet. Blue blazes on the trees made it easy to identify the trail, despite the open forest surrounding us. Soon we stepped onto a wooden boardwalk winding around dozens of trees. Walking above the forest floor helped me shift my focus from worrying about tripping to closely observing the landscape.

After a half hour, the boardwalk led us out from the forest and towards bare granite rock faces stretching upwards to the summit. Free from the trees, we now depended on rock cairns as our trail markers. These miniature towers included stones of

varying composition, colors, and sizes. Each cairn served as a checkpoint on our ascent up Cadillac, and keeping a watchful eye on them helped me to recognize the particularities in the mountain's geology. Some of the cairns featured rounded towers of circular rocks, while others were composed of rectangular stones resembling a miniature Stonehenge. Patches of faded lichen speckled what I found out later were the mountain's older cairns. Later, a ranger told me that park staff and volunteers reposition them every week, and that during stretches of stormy weather, they are rebuilt on a daily basis. How had the trail shifted over time? This new knowledge made me feel as if I was walking a trail that was evolving in real time.

As we ascended further up Cadillac Mountain, I noticed a colorful contrast between the granite at my feet, the arboreal greens of the forests below, and the infinite ocean vista behind us. I felt exposed despite the elevation and the mileage lying between us and the cars gently circling the coastal roads below.

While lobsters, crashing waves, carriage roads, and other Maine insignia mostly come to mind when thinking of Acadia, I have learned that barrenness is an essential element of its history and its origin story. When the French navigator Samuel de Champlain sailed through the area in September 1604, he fixated on the rock faces peering out at him on the ocean waters. He wrote in his journal that:

> …we passed near an island about four or five leagues long…it was very high, notched in places, so as to appear from the sea like a range of seven or eight mountains close together. The summits of most of them are bare of trees for they are nothing but rock…I named it the island of the Desert Mountains.

Using his native French, Champlain called the island *Ile de Monts Déserts,* which translates into English as "Island of the Barren Mountains," leading the way to the Mount Desert Island name that is used today.

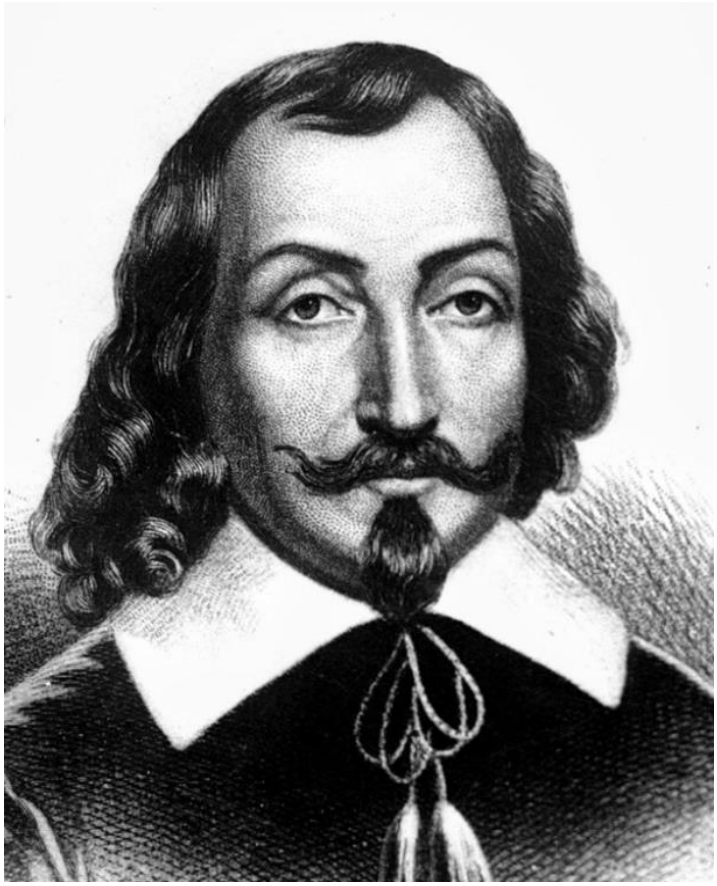


Photo Credit: Samuel de Champlain, as painted by the 19th century Canadian artist Théophile Hame. National Parks Service.

We stepped along rock faces throughout the rest of our ascent, never once scrambling and turning often to see the water behind us. If I looked closely enough at the ground, I could spot tiny clusters of wild Maine blueberries that would soon be out of season. Picking blueberries is one of my favorite pastimes, so I felt tempted to take a handful home with me, or at least as an impromptu snack for the rest of our hike. But I recalled the National Parks Service's motto of "Leave No Trace" and how it asks visitors not to take anything from their surroundings or leave anything behind. My fourth graders and I unpack what the motto means when we discuss trends in tourism at different national parks, and it is an expectation that I always set for them before embarking on

field trips. If I was going to ask them to abide by this protocol, then I had to ensure that I was as well. Snack time would have to come later.

After passing along the scattered blueberry bushes, small groups of stunted juniper trees appeared beside us along the path. None of them ever reached higher than my chest. Since granite is a nonporous rock, it cannot hold the levels of water that trees need to retain moisture. In addition, persistent Atlantic winds dry out the leaves and needles of the small number of trees that can grow there. With time, these powerful winds can even twist and shape low-lying tree branches into gnarled contortions.

After an hour and a half of climbing, the sounds of cars and people overwhelmed the sounds of the mountain breeze. They signaled that we had reached the summit. We headed along a series of pebbled trails stretching away from the tourist noise. Our afternoon arrival meant that we could not see one of Cadillac's fabled morning sunrises. We were even too early to catch a sunset. Yet none of that mattered to me, for in one panoramic glimpse I could observe what makes Maine special to me. Forests and mountains coupled with lakes and oceans. Looking around my feet, I could detect sparkles of white, pink, and grayish black from minerals such as quartz, feldspar, and hornblende. Glancing upwards, I could see birds lilting in the breezes and circling over the ocean. We climbed as high as we could in Acadia. The unimpeded views atop Cadillac's barren summit once allowed surveyors to map the coastline and plan pathways towards the sea. Looking out at the Atlantic waters, I wanted to see the strength of the ocean as closely as possible.

Besides a smattering of families, couples, and hiking partners, we had most of the North Ridge trail to ourselves. We delighted in the sounds of distant waves, rustling

branches, and the crunch of the ground underneath our feet. We had received a relatively quiet welcome to America's sixteenth most popular national park, but our solitude would not last for long.

Photo Credit: Thunder Hole in Acadia National Park. "Thunder Hole (U.S. National Park Service)." *NPS.Gov Homepage (U.S. National Park Service)*.

For a few traffic-less minutes, the only cars we saw were clustered in small bunches next to some of Acadia's less populated trails. Trees dominated my peripheral vision. Hues of green and brown blurred at the corners of my eyes as I drove. Before long, the hues changed into the blues and whites of ocean waters and cresting waves. When we stepped out of the car, the clapping of the waves mixed with the buzzing chatter of people. Crowds of people stretched all along the Ocean Path Trail running parallel to the road. A part of me wished for a quieter atmosphere so that I could walk the ocean trails with as few distractions as possible. I worried that sharing the space with so

many others would distract me from observing the terrain around me. Yet my worries subsided when I began to notice smiles on the faces of other visitors. Young kids dashed along the guardrail looking for the perfect spot to see the ocean, their parents standing behind them and gazing out at the glimmering coastline. I thought about how I would act if I brought my students here, soon feeling ashamed about how I reacted upon seeing the crowds. If my students were here with me, I would encourage them to share the trail and create room for one another to stand together. I would encourage them to discuss their surroundings and point out their favorite aspects to each other. I would ask them if they would consider bringing others here, and perhaps how the stewards of national parks can bring in new demographics of visitors. Well-trafficked parks such as Acadia are popular for many reasons. I set aside my previous worries about traffic, noise, and crowding and paused to celebrate that fact.

Soon, a medley of splattering water blended with loud "ooohs" and "ahhhs." We couldn't see exactly where the sounds were coming from until we reached the top of a metal staircase. A staircase that descended into Thunder Hole.

We joined a crowd lining the right side of the staircase, comfortably enclosed within an inlet amongst ocean cliffs. For a moment, I imagined what it would be like to scramble down this rock face instead of carefully stepping down stairs. I observed different shades of brown on the rocks surrounding us. Lighter tones shone bright on the ones around the top of the staircase, warm from the sun and free from persistent spray of ocean waves. The rocks closer to sea level contained darker browns and the green stains of seaweed, the colorful results of their proximity to surging tides. At one point, workers laid these rails and these steps without the security I was enjoying now. Here, the forces

of water collide against rock in dramatic fashion. Loud reverberations clap up and down the inlet's rocky walls when the tide rolls in. Although it was a windless day, the crashing waves sent a small spray that cooled us. These sprays can reach over 40 feet on stormier days, rendering the staircase inaccessible to visitors. I tuned out the crowd noise and focused on the crashing waves and jagged cliff walls in front of me. Depending on the moment, Thunder Hole can range from quiet to deafening. It receives the constant ebb and flow of ocean waves, waves that are part of a rich history.

Thunder Hole is a significant site in indigenous folklore. It was originally named *Putuwewiw* in Wabanaki and is derived from the smaller word *putuwe*, which means "it blows air." Both words share roots with *Putep*, which is the Wabanaki word for whale. Not only do whales blow air, but they hold immense spiritual significance in Wabanaki culture. In Wabanaki folklore, Thunder Hole is the site of an ancient treaty between *Putep* and *Koluskap*, the first member of the human race. Over time, tribal members settled across a wide range of territory, ranging from Newfoundland to mid-Maine and even parts of Quebec. However, in Wabanaki folklore, Mount Desert Island is often cited as the site of the tribe's origin. In his article "Naming the Dawnland: Wabanaki Place Names on Mount Desert," Wabanaki historian George Neptune writes that:

> Putep agreed to carry Koluskap across a body of water during his pursuit of the witch, Pukcinsqehs, as long as Koluskap promised Putep that she would be allowed to return to the ocean. Although Koluskap apparently broke his promise, he was able, being a giant, to push the whale back into the bay. As a sign of their agreement, Koluskap gave Putep his pipe, and she swam away, smoking as she went. Eventually, Koluskap left the Dawnland to prepare for a great battle, which had been foretold to occur after the arrival of foreign visitors from the east (Europeans). Before leaving in his stone canoe, he left images of himself in rock formations so that his children, the Wabanaki, would recognize him when he returned. Today, when viewed from the right location on the platform, a stone likeness of a man's face can be seen in the rocks overlooking Thunder Hole.

I struggled to glimpse *Koluskap* in the rocks, despite staring at them to see if I could discern any whale-like shapes. Yet I could see the sheer strength of the rocks and the water before me. Each crashing wave stirred a thrilling blend of awe, fear, and glee in me. I imagined the waves carving new shapes in the rocks, and wearing the coastline away with each collision. How much longer will the cliffs be able to withstand the force of the tides? Will there come a day where they crumble and fall to the ocean floor? I kept these fearful questions in mind as we left Thunder Hole, with the first shades of half-light dimming the sky. The crescendo of crashing waves we first heard had gradually receded to quieter lapping sounds, yet their respective rhythms remained consistent. Water and rock would softly clash throughout the night as we slept, and would be colliding with renewed vigor by the time we returned to Acadia the following morning.

We re-entered Acadia shortly before nine a.m. and set course for Jordan Pond, seeking its calmer waters as a contrast to our oceanside stroll at Thunder Hole. Instead of circling the coastline, as we did the day before, our new route took us into the heart of the park along its historic carriage road network. After checking in at the main entrance, we ambled along the forested Park Loop Road and crossed underneath a few of its famed arched bridges. We drove for several minutes before finding a parking spot about a hundred yards away from Jordan Pond. It is here where I saw the first traces of Acadia's aristocratic history, beginning long after Wabanaki treaties and first contact with Samuel de Champlain. We gazed at the colorful blend of granite, brick, and timber of the Jordan Pond Gatehouse, an architectural relic of the Gilded Age.

Titans of American industry including the Rockefellers, Morgans, Fords, Vanderbilts, Carnegies, and Astors all felt an attachment to this place in the nineteenth

Photo: Jordan Pond Gatehouse. National Park Service.

century. What led them here? Researching answers to these questions led me to the artwork of this period.

I am fascinated by the role that artwork plays in the National Park Service. Artistic expression has informed its past and present and it will help shape its future. Travel to almost any national park, or national park unit, and there will most likely be an artist in residence finding inspiration in their surroundings. The Department of the Interior finances these endeavors. Many of the first visitors to national parks became interested in visiting them only after observing paintings and photography.

In the mid-1800s, landscape painters from the Hudson River School began capturing American scenery across the country. Artists such as Thomas Cole and Frederic Church shifted their focus from the Catskills and Adirondacks towards landscapes that much of the American public had never seen before. Cole and Church, in

particular, ventured to Mount Desert Island. Their artwork was steeped in the traditions of Romanticism. It emphasized an awe of nature and a sense of grandeur. Cole and Church rendered Mount Desert Island with sweeping vistas and welcoming colors, quickly inspiring new painters to bring their talents to the island. They eventually exhibited their works in major American cities such as Boston, New York, and Philadelphia, inspiring wealthy patrons to sail to Mount Desert Island and see it for themselves.

Diverging vacation patterns began to play out amidst this new wave of visitors. "Rusticators" dwelled in the cottages of local fishermen or the barn houses of local farmers. They didn't mind staying in smaller accommodations or eating simpler food. And for a few summer months, they forged relationships with their hosts. Many returned every year to reconnect with new islander friends and recreate throughout the mountains and waters.

Photo: Mount Desert Island, Maine (1864-1865) by Sanford Robinson Gifford. National Gallery of Art.

Positive feedback about the area inspired more and more visitors. As a result, the local tourism industry boomed. Hotels sprouted across Mount Desert Island and beyond. By 1880, the area claimed thirty hotels, in addition to countless fishing cottages and farms now overflowing with guests.

Some of New York City's wealthiest families, including the Rockefellers and the Vanderbilts, became enchanted with downeast Maine but desired their own experience and their own property. Sensing real estate opportunities, many enlisted architects to construct lavish estates. Visiting together at what they called their "cottages," they built up an elite network of residences that showcased the opulence of their class. Many historians now call this era the "Gay Nineties." Over time, several members of this vacationing class banded together in many of the conservation efforts that helped establish Acadia National Park.

For nearly 40 years, rusticators and eastern elites alike enjoyed summer retreats filled with hiking, fishing, and boat rides along the coastline. However, their adventures slowly began fading amidst the historical turning points of World War One, the Great Depression, and World War Two. In 1947, a catastrophic fire hastened this social trend even further.

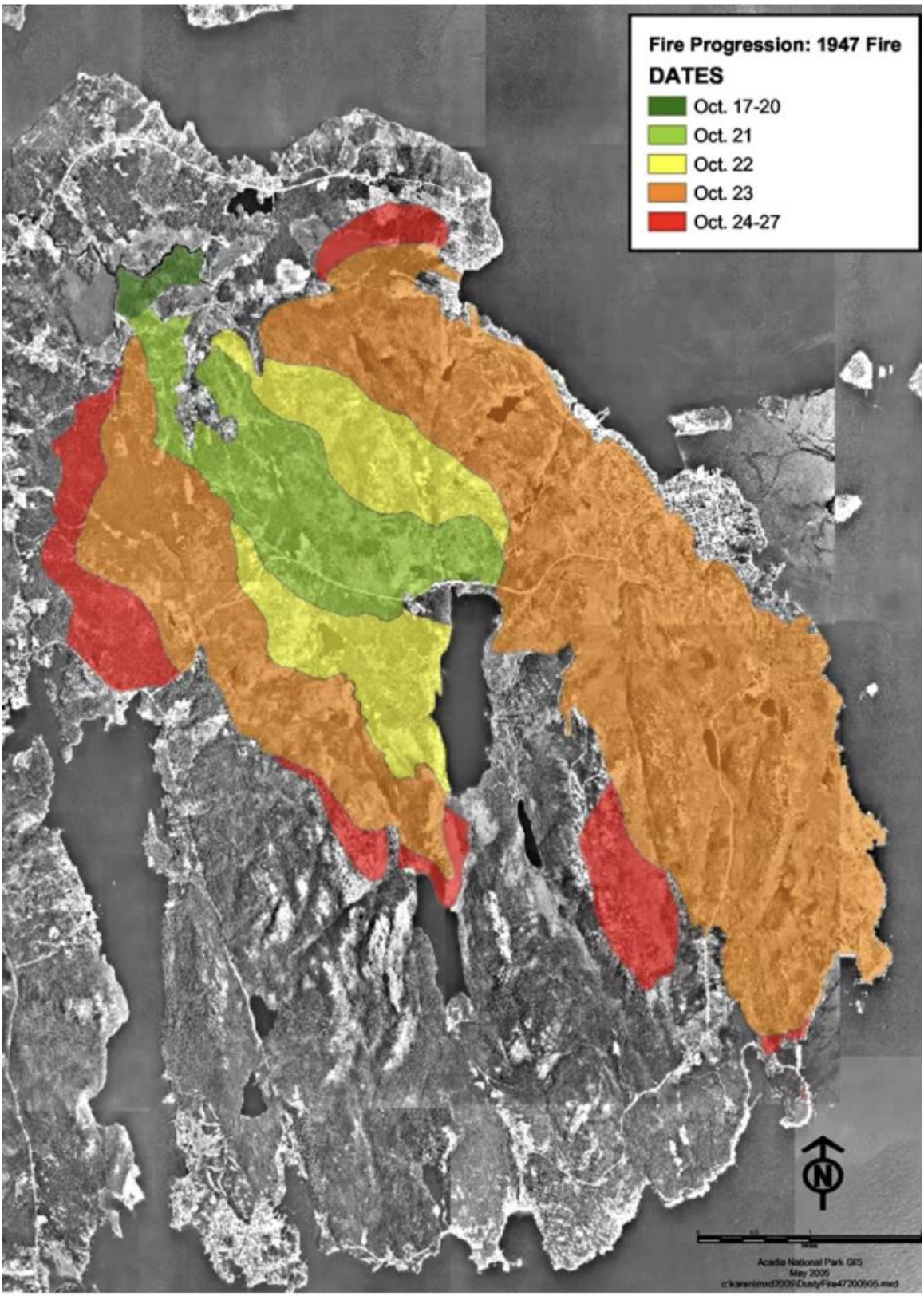


Photo: Fire progression across Mount Desert Island. "Fire of 1947 - Acadia National Park (U.S. National Park Service)." *NPS.Gov Homepage (U.S. National Park Service).*

A Park Reborn: The Great Fire of 1947

Hiking past the Jordan Pond Gatehouse and its environs felt vastly different then our climb up Cadillac Mountain or our descent into Thunder Hole. The mountain and the coast left me feeling exposed to the Atlantic Ocean and the sprawling sky above. To access Jordan Pond, we drove along carriage roads in a cocoon of tightly packed trees. They provided shelter in a way that I hadn't felt during our visit. Although they all blended together to me at first, taking closer looks allowed me to see the differences before me. Swaths of speckled white birch bark stood close to maple trees with leaves that had just started to turn into a blend of oranges, reds, and browns. I could also make out spiky green fir needles on mazes of branches, enshrouding their sturdy auburn trunks within. Standing inside this vast network of trees, I felt removed from the patterns and routines of my everyday life. Later that evening, while researching about this part of the park, I was shocked to learn that this entire forest had survived a fire and regrown completely.

After a particularly long and cold winter in the first few months of 1947, Maine experienced an unusually rainy spring and one of the hottest summers in state history. Steamy temperatures continued well into autumn, alongside an extended drought that brought only 50% of the area's typical rainfall. Plant life dried up all over Mount Desert Island. Locals and lingering vacationers began conserving their water supplies. The conditions couldn't have been better for a wildfire.

At 4 p.m. on Friday, October 17, 1947, the fire department received a distress call from a resident who had observed smoke rising from a nearby cranberry bog. Nobody knows exactly what started the ensuing fire, apart from the dry weather conditions of the

previous months. Perhaps it was the errant embers of a cigarette belonging to a local cranberry picker. Maybe shards of littered glass absorbed the scorching sunlight and passed heat into incendiary remains. We do know that what started as a quiet burn turned into a destructive inferno. By the fire's end, almost half of the eastern side of Mount Desert Island lay in flames, as well as several estates belonging to the elite vacationing class.

169 acres of land burned within the first three days of the fire. On the fourth day, gusts of winds spread the flames across another 2,000 acres. Local firefighters joined forces with members of the Coast Guard, Navy, Army Air Corps, along with students from the Bangor Theological Seminary and the University of Maine forestry program. National park rangers traveled from Shenandoah, Great Smoky Mountains, and other eastern parks to lend their services, with their western counterparts remaining on standby as well.

An additional 300 acres of land burned on the fifth day as the fire intensified. It soon traveled across Route 233 and through the western shore of Eagle Lake. Strong winds continued to contort the flames in new directions, including the community of Hull's Cove. Yet when the firefighting force redirected its efforts there, the winds rose to gale force levels and pushed the flames towards the more populated town of Bar Harbor. Needing only three hours, the inferno destroyed 18 square miles of land and swept through an extravagant neighborhood known as Millionaire's Row, razing 67 properties in its wake. Although its business district miraculously remained intact, downtown Bar Harbor ended up losing five hotels and 170 year-round residences belonging to local citizens.

At a particularly frightening juncture, the fire blocked all of the roads in and out of Bar Harbor, forcing any citizens not fighting the fires to flee to the athletic field and the local pier. Fishermen from nearby Lamoine, Winter Harbor, and Gouldsboro began bringing their boats to evacuate nearly 400 townspeople. By the day's end, local construction workers were able to bulldoze safe passage through the wreckage on Route 3. This allowed 700 vehicles to transport nearly 2,000 residents to the neighboring town of Ellsworth. Their efforts ended a tragic day in which 11,000 additional acres of land were ruined.

Despite the efforts of emergency forces, the fire still had a small yet potent amount of life left. Blazing outward from Bar Harbor, it took down the Jackson Laboratory and stretched down the coastline towards Otter Point. Eventually, Atlantic winds blew out the fire for good, but it would not officially be declared under control until October 27. In the days that followed, dirt, soil, and deep tree roots continued to fan underground flames and keep the fire alive. A merciful arrival of snow and rain helped permanently expunge the fire on November 14.

The Great Fire of 1947 burned away an Acadian era marked by luxury, refinement, and extreme wealth. The flames eviscerated more than 10,000 acres of park land burned, as well over 7,000 acres within the surrounding communities. Property damages cost almost $23 million, equating to over $300 million today. There were remarkably only a few human casualties, and park rangers believed that the majority of the area's wildlife had survived. The Rockefeller family partnered with the National Park Service and hired two logging teams that cleaned timber and restored as much wood as

possible. While much of the surviving wood was either milled or burned, a small portion of it was left to prevent soil erosion and can still be seen today.

While nature dictated the course of Acadia's destruction in 1947, it would also play the biggest role in its recovery and revitalization. Winds scattered seeds throughout devastated areas and birthed new clusters of deciduous trees through suckers and stump sprouts. Today, visitors can see healthy aspen and birch trees in these areas. As they continue to grow they will provide invaluable shade for the forest floor, allowing newborn spruce and fir trees to grow beneath them.

Fire is a terrifying and tantalizing force. It devastates, inspires fear, and can end life. Wildfires westward and beyond continue to spark concerning questions about the future of the environment. At the same time, fire also replaces mature plant growth with new species that feed animal life and provide oxygen. It erases underbrush, removes debris from the forest soil, and opens areas to sunlight. Without the Great Fire of 1947, the assemblage of plant life in Acadia's forests would not be as diverse as it is today. Before the fire, evergreen tree species such as spruce and fir dominated the forest landscape. Afterwards, hardwood species such as birch and aspen stand in once depleted areas. Both species develop autumn foliage that attracts hordes of visitors each fall. The entrance fees from these visitors provide revenue that conservationists can use for the preservation efforts. Without the fire, evergreen would most likely dominate Acadia's foliage, as opposed to the vibrant tapestry of red, brown, green, and orange I observed during our visit.

Eventually, the bulk of the area's year round citizens were able to reconstruct their homes. However, much of the wealthy vacationing class from the Gay Nineties

never returned. Many of their lots are now occupied by the hotels and motels that host the nearly four million people who visit Acadia each year. Visitors like me aren't allowed to step inside the gatehouse, where Acadia's elite once stayed, but park staff can rest there after long days of stewardship. Bikers and hikers can travel along carriage roads that were once reserved for Rockefellers and Vanderbilts. It is now a place for everyone. I am excited to see who I will encounter as I step towards the crowds gathered on the path ahead.

Names of Acadia: A Reflection

One of the most common questions that fourth graders ask is how national parks are given their names. We discuss how Yellowstone is named after the yellow sandstone running along riverbanks, or how the name Yosemite was inaccurately translated from the Miwok word for grizzly bear. These discussions have occurred year after year. To me, they prove that names hold immense powers. Names can endure the tests of time, reflect distinctive identities, and obscure the past. A name carries different meanings depending on the person reflecting upon it, just as a place can evoke any manner of emotions depending on the person observing it. Samuel de Champlain viewed Acadia as barren, where, for thousands of years, the Wabanaki Confederacy viewed it as plentiful.

Acadia has been home for the Wabanaki tribe for almost 9,000 years. Inspired by the sunrises atop Cadillac Mountain, the name Wabanaki means "people of the dawn land." They divided their time between coast and forest, often naming areas for their natural resources. For example, *Ktopeqonuk* means "the place of the cold spring," signaling a key water source that is now referred to as Sieur de Monts. In their view, Mount Desert Island was not a barren place, but an essential outpost for activity and trade. Indigenous traders exchanged deer meat and hides from the forests, clams and shellfish from the ocean, and birch bark for wigwams and canoes.

When Champlain landed on the island shores he brought the forces of colonialism with him. Other French explorers followed on his heels, soon exposing the Wabanaki to war, famine, and disease. Unlike the scores of indigenous tribes who were forced westward, the Wabanaki largely remained in their traditional territories. There are still

tribal members throughout Maine who speak Wabanki as their primary language, retaining an essential element of Wabanaki identity in the process.

I feel that names provide a link between people and cultures. The mispronunciation or misspelling of a name can wither that power, or place it in someone else's possession. Acadia's Schoodic Peninsula serves as a case in point. The neighboring Passamaquoddy tribe use the word *skutik* to refer to the area, with a similar pronunciation yet altered spelling. In the Passamaquoddy writing system, the word *schoodic* refers instead to the St. Croix River, spanning 169 miles between Wisconsin and Minnesota. The word *skutik* refers not only to a different natural feature, but a different geographic location altogether. While use of the name Schoodic Peninsula acknowledges an aspect of Passamaquoddy culture, the acknowledgement is ultimately weakened due to the misattribution of the word.

Photo Credit: Drawing depicting Wabanaki men spearing porpoise from a birchbark canoe. Illustration by Milton J. Burns, *Scribner's Magazine*, 1880. *Courtesy of the Abbe Museum*.

After reading Wabanaki historian George Neptune's work, I learned that many indigenous place names have been misrecorded in archival records. For instance, the name Passamaquoddy stems from two words with the same root: *peskotomuhkatiyik,* which means "the people that spear pollock," and *peskotomuhkatik*, which means "the pollock spearing place." The word for pollock is *peskotom* and *uhkat* represents the act of spear-fishing. The ending *iyik* refers to people while the ending *ik* refers to a location. Put together, these linguistic parts illustrate an indigenous naming tradition rooted in natural resources.

The meaning of the word *Pesamkuk,* the Wabanaki name for Mount Desert, is largely unknown. Etymologists believe that the ending *amkuk* means "sandy place," alluding to the many beaches scattered around Acadia's coastline. The beginning *pes,* however, is shrouded in mystery. Other than the fact that the island was a hub for trading, hunting, and spearfishing throughout summers, it is unclear if the name has been altered over time.

Many Wabanaki historians believe that the word *Wapuwoc* could have been the original indigenous name for Cadillac Mountain. *Woc* is one of the many indigenous words for "mountain," and is included in the ending *uwoc*. The prefix, *wap,* denotes "light," and is frequently used to describe things that are white, like the whitish gray rock faces clustered up and down the mountain. For example, the Wabanaki name for the snowy owl is *wapikuhkukhahs*. Using these derivations, native speakers believe *Wapuwoc* means "the first light white mountain," a testament to the summit's unique position for witnessing sunrises and the spiritual significance that the experience holds in Wabanaki culture.

Boston Harbor Islands

My tenth birthday was one of my happiest birthdays. On August 4, 2000, my mother brought several friends and me on an outing to Georges Island, one of thirty four islands and peninsulas in the Boston Harbor Islands National Recreation Area. To get there, we drove to Boston's Long Wharf and boarded a ferry that would bring us to the island.

Recently, I had the opportunity to ask my mother about her memories of that day.

She reminisced that, "It was the best birthday party we ever organized for you. First, we needed to make sure we didn't lose anyone in the harbor, and it was a little tricky getting you all to sit still on the ferry. But once we were on the island, we could finally sit back and watch you all *run*. You really tired yourselves out by the end of the day."

After our ferry departed Long Wharf, we scurried up and down its three levels to seek out the very best spot, hardly sitting and undoubtedly exhausting our chaperones. Before long, we were asked to settle in one location. We could enjoy the cushioned seats of the first floor and ride closer to water level, plead for treats at the snack bar on the second floor, or sit on the third floor deck and feel the harbor winds on our faces. We quickly chose the third floor.

Nestled together towards the bow of the boat, we watched the water taxis, channel markers, and other sights of Boston Harbor as the city slowly faded from sight behind us. We swapped jokes and craned our necks over the guardrails to glimpse the choppy waters cresting outward from the ferry's wake. I couldn't get enough of the crisp harbor breeze, salty scents, and churning thrum beneath us that enveloped my friends and me.

Three of the islands emerged as we began feeling the urge to stretch our legs. Now I know that they are Thompson Island, Spectacle Island, and Georges Island. The party and I started to feel antsy as we sailed past Thompson and Spectacle, growing antsier whenever we realized that we weren't stopping. Finally, one of the crew members announced that we were nearing our destination. We shuffled out of our seats and scurried as far to the bow of the boat as we could. We fell in line with dozens of other passengers departing the ferry, and we scanned the island for a spot where we could play together.

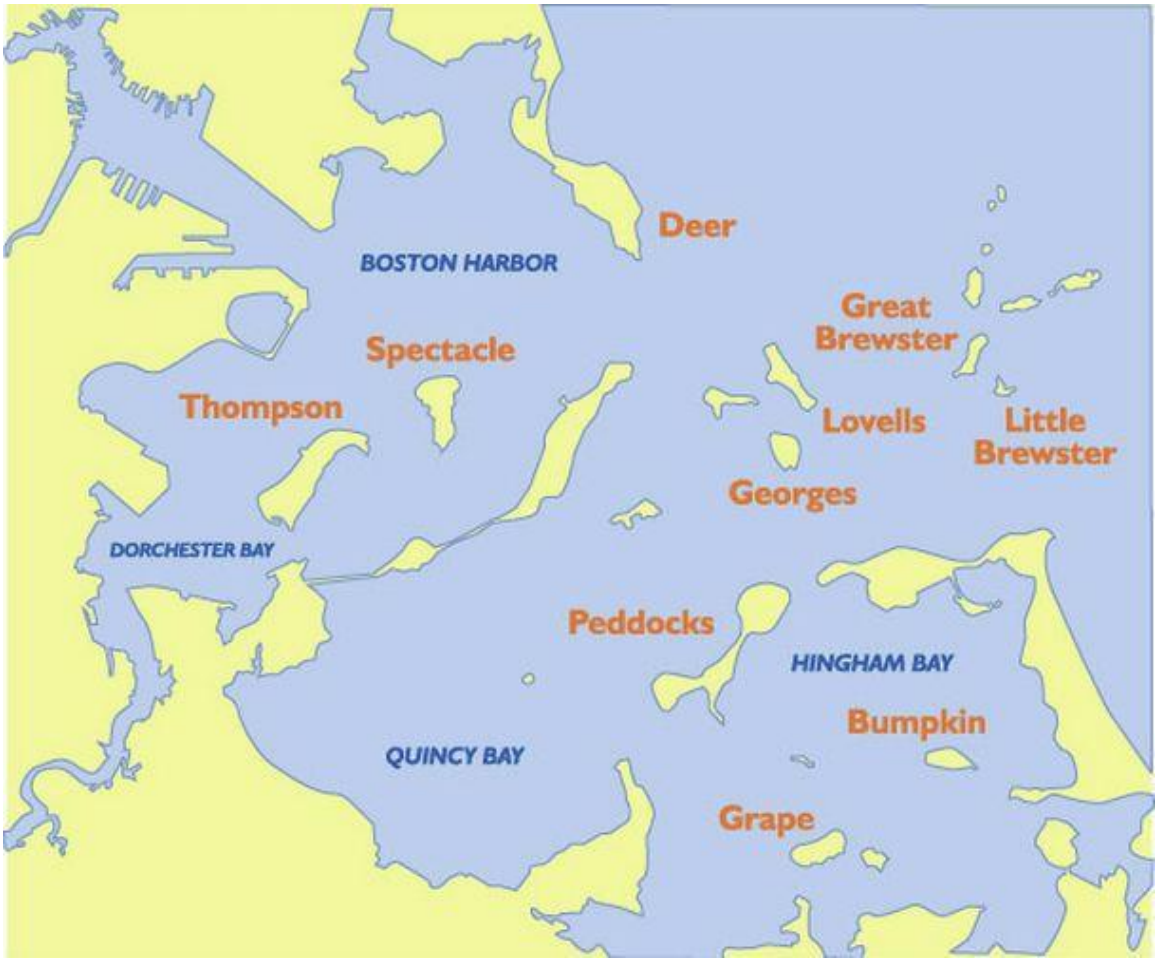


Photo Credit: Map of Boston Harbor Islands. "Explore Boston Harbor Islands," https://www.bostonharborislands.org.

Beachfront areas are located on the shoreline below the docks where visitors arrive. That day, we were more interested in the stone walls, staircases, and barricades directly across the island. They are the stony remnants of Fort Warren, commissioned in 1847 and designated as a Union training site, defensive patrol ground, and prison to Confederate soldiers throughout the Civil War. For a group of ten-year olds, it is an immediate invitation to climb, run, and hide. The staircases felt like small mountains, leading us towards views of vast open water. We ran along weathered military barracks, stopping every so often to peer at the Boston skyline. For hours, we played tag in fields between the fort structures, taking short breaks here and there to eat, or to kick around a soccer ball for a little bit. We crept into dim and sparse corridors for lengthy games of hide and seek. We tiptoed through one particular passageway in complete darkness and attempted to spook each other with jump scares. That birthday remains an indelible memory of mine. My family, friends, and I have visited Boston on countless occasions since then. I have ascended the narrow, winding staircase inside the Bunker Hill monument, cheered for the Red Sox in rickety, antiquated seats at Fenway Park, and walked along the cobblestone streets outside of Faneuil Hall. But I did not visit the Boston Harbor Islands again until I was twenty-seven, four years into my teaching career.

My teaching partner and I wanted to plan a local outdoor field trip for our students to celebrate the launch of our study of the national parks system. To successfully excite our students about this topic, we felt it necessary to bring them out of the classroom as early in the school year as possible. I recalled my fond memories from Georges Island and suggested that we look into it as a possibility, noting that I was the

Photo Credit: "DCR and the Boston City Council Approve Funding for Georges Island." Boston Harbor Now.

same age as many of our fourth graders when I visited there for my birthday. While nearby historic sites such as Adams National Historic Park, Salem Maritime National Historic Site, Saugus Iron Works National Historic Park, and Lowell National Historic Park offered reputable educational programs, we felt that a ferry ride would be especially fun for our classes. The island also included the largest amount of space for our children to roam and to play. We agreed upon Georges Island as our destination, and, with a little over a week before school started, set out to plan the best field trip possible. Unbeknownst to us, accidental discoveries would come to define the story of our planning.

For me, the fun of planning a field trip comes from attempting to experience the destination as a child, yet with the situational awareness of an adult. It consists of

anticipating student needs and noting bathroom locations, areas for snack breaks, and contingency plans in case any activities run short. You must also always keep your arrival and departure times in mind, and continuously check your watch to ensure you are not running behind schedule. My teaching partner and I learned that the hard way.

After exploring the grounds and visitor's center at Georges Island, we had compiled enough notes to submit a field trip proposal. Unfortunately, we completely lost track of time in the process, and realized this just as the ferry home was boarding passengers. We raced around Fort Warren and skimmed down staircases that Union soldiers once descended towards their training grounds, ultimately finding ourselves five minutes too late. A ranger informed us that, for the quickest opportunity to return home, wait for forty-five minutes there, and board another ferry back to Long Wharf.

We waited in silence for the first of our two ferry rides back to the mainland. When it arrived, we climbed to the top level and agreed to make the most of our unexpected circumstances. We approached Spectacle Island twenty minutes later, curious about what we would see there in forty five minutes. I knew very little about the island at this point, but wanted to learn as much as I could since I was there. We started to stroll around the perimeter of the island and imagine what it would be like to bring our classes there.

At first, we had trouble determining what would hook young students into an outing here. The shoreline included scattered shells and seaweeds, and beautiful flowers bordered many of the island's trails. Perhaps we could detect some of the different bird species known to rest there, such as red-winged blackbirds, double-crested cormorants,

and black-backed gulls. But would these few animal and plant species keep the attention of ten year olds?

We noticed a ranger walking at a trailhead by the docks and asked them about what is typically taught during school visits.

"Do you know why this place is called Spectacle Island?"

We confessed that we did not.

"Well, take a few steps back and focus on the shape of the island."

I stepped backwards so that I could keep the whole island in my field of vision. I considered two moderately sized hills occupying the northern and southern halves of the island, as well as the flat gravel trail linking them. After a few moments of silence, the park ranger informed us that we were looking at North Drumlin and South Drumlin. He directed us to the visitors center. A variety of signage, informational pamphlets, and models of the island taught us about where we were standing. Derived from *droimín*, the Gaelic word for "little ridge," a drumlin is a glacial deposit that is different from a typical hill because it is often shaped like a spoon, a half-buried egg, or, in this case, a pair of spectacle lenses. The entirety of Boston Harbor and Cape Cod represents the culmination of the glacial expansion in Massachusetts. At 155 feet, North Drumlin is the highest point in the city harbor, allowing visitors spectacular views of other islands, shipping channels, and the city skyline. The low ground making up the trail between North and South Drumlin is referred to as a spit, making up 49 of the island's 105 acres of land.

While it is fun to think of Spectacle Island as an earthly pair of glasses, my curiosity grew stronger when I read about the multitude of changes that the island has experienced at the hands of Bostonians. Old *Boston Globe* articles captured the radical

transformation of the island between the nineteenth and twentieth centuries. Before receiving protection from the National Park Service, it served as a farming site, a quarantine hospital, a glue factory, resort hotels, and a garbage dump. Reading David Kale's work *The Boston Harbor Islands: A Story of Urban Wilderness* helped me learn about Spectacle's history during the nineteenth century. More recently, Pavla Simková's outstanding 2021 book *Urban Archipelago: An Environmental History of the Boston Harbor Islands* illustrates how Spectacle and its neighboring islands have changed alongside the needs and values of the city.

Photo Credit: North and South Drumlin at Spectacle Island. *Boston Harbor Now*.

These shifting purposes indicate that adaptation is an essential theme in the story of Spectacle Island. It has also served as the setting for tragic, important, and little-known episodes in Boston's history, as well as the history of New England itself.

When I first started researching Spectacle Island, I focused on the indigenous people who inhabited Boston Harbor. Before the 1600s, the Massachusett tribe at Ponkapoag, the Nipmuc Nation, and the Mashpee Wampanoag tribe lived on Spectacle Island between spring and fall. Deer abounded across the island, and the surrounding waters were full of striped bass, bluefish, flounder, cod, and soft shell clams. Tribes cleared fields and forests in order to harvest corn, beans, and squash. They ground vegetation and wild berries into different medicines. Human remains and artifacts from dig sites have proven that Spectacle Island served as a site for tool manufacturing and religious ceremonies. For instance, large piles of shell pieces, known as shell middens, reflect the countless ways that indigenous peoples utilized local marine life.

Not long after European settlers arrived in Massachusetts, indigenous tribes became embroiled in King Philip's War. Led by the Wampanoag sachem Metacom, whom the English dubbed King Philip, they began resisting the oncoming wave of colonization. While tensions boiled between many indigenous and English communities, a handful of towns throughout the Massachusetts Bay area became designated as "praying towns," where indigenous people and their new European neighbors lived in tolerance of one another. As Europeans built more settlements across the region, many indigenous people moved to praying towns, leaving behind their traditional communities. At the height of King Philip's War, Spectacle Island and several other nearby islands became sites where settlers forced indigenous people to move.

In 1676, political leaders of the Massachusetts Bay Colony began forcibly removing indigenous peoples to the Boston Harbor Islands. They even forced this displacement on those living peacefully in praying towns. In a particularly heinous

episode that October, a band of indigenous people were shackled aboard three ships departing from the Charles River. The majority of these prisoners were transported to Deer Island and burned at the stake. According to indigenous oral histories, even more islands were used for imprisonment during King Philip's War.

Historians are still continuing to learn how indigenous people were removed to the islands. Since many of the Boston Harbor Islands were transformed for military and institutional facilities after King Philip's War, archaeologists have found it challenging to determine the location of indigenous burial grounds and prisons. Written records indicate that between 500 and 1,100 people remained in captivity or perished at the islands during this period. They also indicate that in the winter months alone, around one half of these captives died of starvation, exposure, or inadequate medical treatment. A document from The General Court of Massachusetts, the prevailing legal body at the time, decreed "that none of the sayd indians shall presume to goe off the sayd islands voluntarily, uponn payne of death." There are still harrowing truths that remain to be discovered.
For instance, it is likely that non-Christian indigenous prisoners were not documented in colonial manifests. The historical record also struggles to account for indigenous people who were enslaved or sold into indentured servitude to English families after King Philip's War. After the war, many converted indigenous relocated to Christian Indian settlements to the south and the west, and even northwards into Canada.

The arrival of European settlers not only ushered in an era of war against the indigenous communities around the Boston Harbor Islands, but a smallpox epidemic as well. In 1717, city officials constructed a quarantine hospital on Spectacle Island. Harbor waters served as a protective cocoon from highly contagious disease. It is interesting to

me that the concept of quarantine stems from the medieval era, when the common practice was for arriving ships to wait for 40 days before docking at port. With mercantile vessels hailing from the Caribbean and beyond, Boston port officials felt an urgency to prevent smallpox from infecting cargo shipments. Any boats sailing into Boston Harbor were required to quarantine on Spectacle before docking at the city's piers. Eventually, even Boston residents who were ill were required to stay at the hospital on Spectacle Island. The hospital there existed for two decades before being moved to nearby Rainsford Island, and then to Gallops Island soon after that.

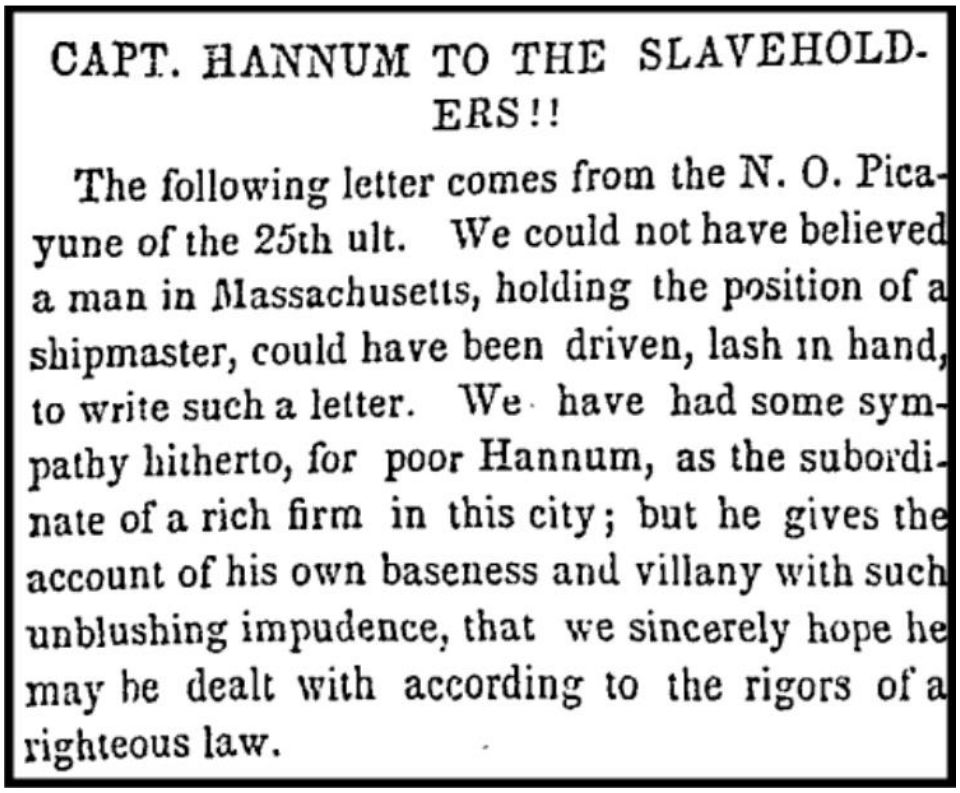
Almost a century later, Spectacle became an unexpected stopping point in a highly publicized story about a freedom seeker. I came across this story after learning of Ranger Shawn Quigley's webinar series entitled *Safe Harbor: The Maritime Underground Railroad in Boston.* Before I watched his work, I did not appreciate the scope of the Underground Railroad and the variety of ways in which enslaved people attempted to secure their freedom. I also felt that learning this history, and sharing it with my students, would help them expand their understanding of this period. As third graders, our students spend a portion of their year learning about the Underground Railroad, with a primary focus on the life of Harriet Tubman. The curriculum does not include much about the Underground Railroad's impact in Massachusetts. Therefore, I felt that sharing this history could connect some of their work in third grade with their study of the national parks system.

The story of one freedom seeker in particular captured my attention, which Ranger Quigley outlines in the second episode of *Safe Harbor*. In September 1846, a man named George hid below deck on the ship *Ottoman*. The *Ottoman* came from New

Orleans and was captained by a man named James Hannum. After discovering George, Captain Hannum placed him under guarded supervision and set sail for Spectacle Island. Hannum and his detail brought George out on a small skiff and arrived at Spectacle as night was just starting to fall. While the captain searched for a drink at an island hotel, George eluded his captors, stole the skiff, and began rowing his way towards South Boston. After learning of George's escape, Captain Hannum found another skiff that was docked at the hotel, gathered the guardsmen, and took off after him. The chase shifted from sea to land as Captain Hunnam and his men pursued George "through cornfields and over fences [until] finally after a chase of two miles [they] secured him just as he reached the bridge."

Before long, abolitionists in Boston heard about the chase. Pressing for kidnapping charges against Captain Hunnam, they secured a warrant for his arrest and pursued him just as he recaptured George. The fleeing captain escaped with George and tracked down the *Niagara*, which was destined for New Orleans. Somehow, the abolitionists chartered a boat in pursuit of them and quickly gained ground on them upon the harbor waters. According to a testimony from Hunnam in the abolitionist newspaper *The Emancipator*, "No sooner had [he] left the dark than [he] discovered a steamer making directly for us. Knowing she could chase but one, [he] steered a course opposite the *Niagara*." In sailing the *Niagara* directly alongside the *Ottoman*, his own ship, in the darkness, Hunnam successfully manipulated the abolitionists into pursuing the wrong boat. As a result of following the *Ottoman* instead of the *Niagara*, the Boston abolitionists were unable to rescue George and obtain his freedom.

George would not be the only enslaved person to seek safe haven at the docks of Boston Harbor, or to flee captors out on the open water. Their stories, like the stories of Massachusetts' indigenous communities, represent some of America's greatest atrocities.



CAPT. HANNUM TO THE SLAVEHOLDERS!!

The following letter comes from the N. O. Picayune of the 25th ult. We could not have believed a man in Massachusetts, holding the position of a shipmaster, could have been driven, lash in hand, to write such a letter. We have had some sympathy hitherto, for poor Hannum, as the subordinate of a rich firm in this city; but he gives the account of his own baseness and villany with such unblushing impudence, that we sincerely hope he may be dealt with according to the rigors of a righteous law.

Photo Credit: Letter from Captain Hunnam published in *The Emancipator*. *The Emancipator*, New York, New York, October 7, 1846.

They are episodes in two of America's greatest and most tragic periods of change. Spectacle Island would continue to experience its own transformation, with a continuously revolving shuffle of sights and smells.

Starting in the 1850s, the story of Spectacle Island became defined by waste. In 1857, an entrepreneur from nearby Roxbury named Nahum Ward bought Spectacle Island with the express intention of building a processing plant. Ward's business opened after the end of the Civil War, with the express purpose of rendering scores of deceased horses inland from Boston. Each day, plant workers repurposed horse hides, bones, and

hooves into consumer products like glue, fertilizer, and leather softener. By starting his business on a nearby island, Ward helped the city of Boston steer clear of any public health issues that would likely arise from holding so many dead horses in such a highly populated area. Not far from Spectacle's beachfront, visitors can still see the four granite piers that supported Ward's plant.

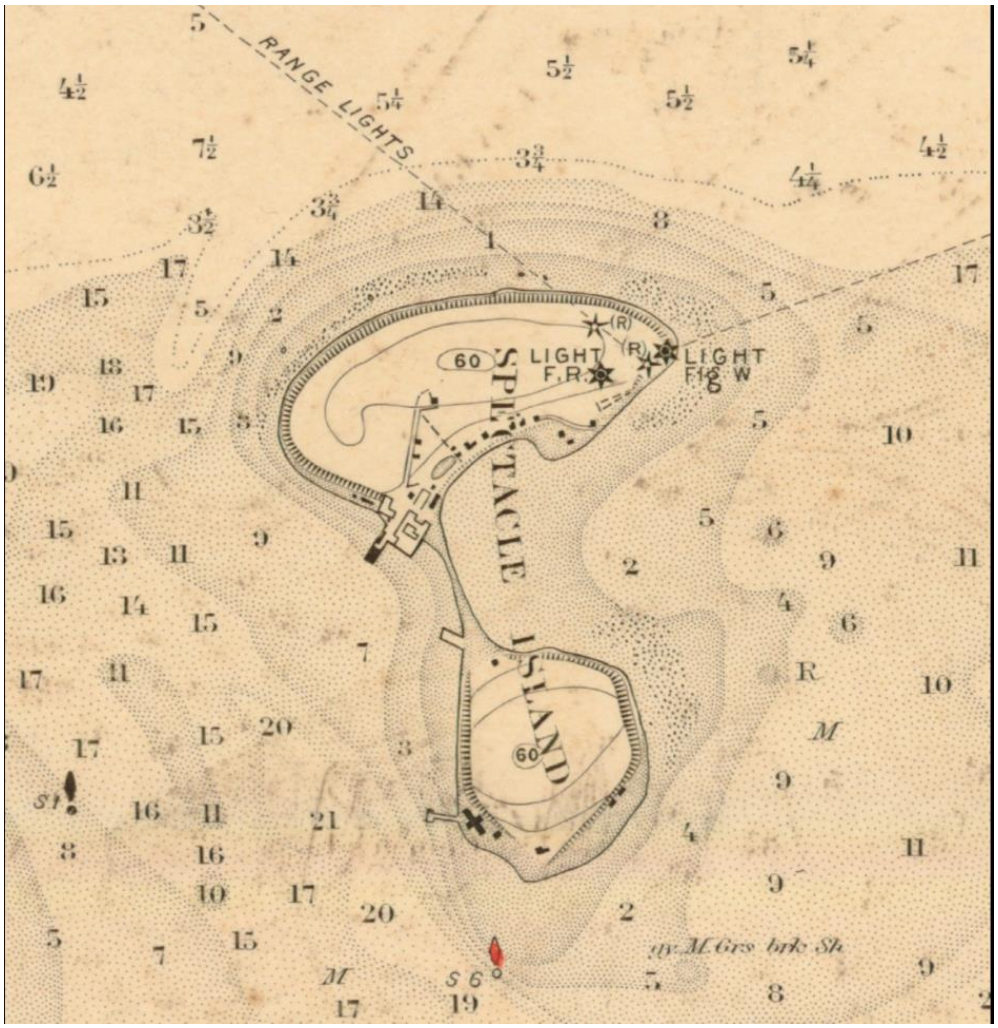


Photo Credit: Map of Spectacle Island (1909), "The Hub's Archipelago: The Connected Histories of Boston and Its Harbor Islands." *Environment & Society Portal*, 20 Feb. 2020.

Shortly before the start of the twentieth century, Ward welcomed a fertilizer and a glue company next to his plant. He hoped this would streamline the horse-rendering process. This growing surplus of businesses relied upon manual labor in order to

function. Before long, many workers started living on Spectacle Island, with some moving their families there as well. What started as a small band of employees and their families grew to a thriving community. The island housed 30 workers and thirteen families in 1889. The population ended up growing to over 100 residents by the early 1920s, necessitating the construction of a school for the island's children.

As America neared closer to the Great Depression, the businesses in Ward's island empire gradually shut down one by one. Only a grease reclamation factory remained. Boston needed places for its garbage, and the factory welcomed it so that workers could extract grease from the trash and render soap from it. After extracting the grease, workers filled designated spaces on the island with any remaining garbage. Over time, the need for grease started to dwindle. However, the city still needed a safe place to dispose of its trash. Spectacle Island continued to fulfill that need.

Between 1935 and 1959, almost 350 tons of trash arrived at Spectacle per day. It was now officially the dump of Boston. Frequent fires blazed due to the methane gasses being repressed underneath the ever-increasing tonnage of trash. Waste and pollution slowly dripped into Boston Harbor for nearly 25 years before city officials decided that enough was enough. In 1959, they commissioned the building of the South Bay Incinerator back on the mainland, which, coincidentally, is now the site of the Greater Boston Food Bank.

My fellow tourists and I are only allowed to visit Spectacle Island because of Boston's seminal "Big Dig" project. I can faintly recall my parents discussing the magnitude of the "Big Dig" sometime in my pre-teen years, evaluating how the rerouting of I-93 would impact their commutes to work. At that time, it was the most expensive

highway construction project attempted in the United States. After construction workers broke ground on the project in 1992, nearly 3.7 million cubic yards of excavated dirt was transported to Spectacle Island in order to clear up the landfill and transform it into a national recreation area. It took five years and nearly 4,400 barges full of excavated dirt to effectively resurface the island. And it took years after that for workers to plant the thousands of shrubs and trees before me now, shrubs and trees that were not open to the public until 2006.

After speaking with the park ranger, and reading informational materials at the visitors center, I could not stop thinking about Spectacle's history. As we made our way to our return ferry, I recognized that my surroundings did not have the type of visible historical remains that Georges Island does. Spectacle does not have the cement batteries, stone corridors, and towers of Fort Warren. Yet I felt that was precisely what makes its story so compelling. Apart from its visitor's center, the island shows no signs of the years that it was immersed in waste. What better way to show our students what is possible in our environment than by showing them Spectacle Island? We may have arrived by accident, yet by the end of our visit we were eager to return with our students and see them experience it for themselves. Thankfully, we boarded our third ferry of the day on time, ensuring that we could do so.

Since our day of accidental island-hopping, several students have shared that our field trips to Boston Harbor Islands were one of their favorite memories from fourth grade. We have visited Spectacle Island once and Georges Island twice. The stories of their pasts caught many of my most attentive students by surprise, not knowing that a dump could be transformed into a scenic park, or that a Massachusetts island could play a

small role in a way largely fought in the South. While my more indifferent students might not have fully absorbed much of their history, they still seemed to enjoy the change in routine and opportunities for recess by the water. Many students recalled our ferry rides as the highlight, chatting happily with friends and trying to hear one another over the sea breeze. A few have reminisced with me about peeking over the ship railings at the waters below, counting the airplanes flying around Logan Airport, or trying to find the buildings where their parents work. The highlight I hear about the most, however, is from within a pitch-black tunnel on the eastern half of Georges Island. Both times we arrived there, my classes could not wait to explore the old military structures of Fort Warren. I imagined that, to my fourth graders, the cement ramparts and staircases resembled a playground of epic proportions. Each time, a park ranger told us a short ghost story about the "Lady in Black," a spirit rumored to haunt Fort Warren's corridors and tunnels.

The legend of the Lady in Black takes place in 1862, shortly after the beginning of the Civil War. According to island folklore, a woman named Melanie Lanier sailed to Fort Warren in the dead of the night to free her husband, a Confederate soldier named Andrew, from prison. She cut her hair, packed a pistol and a pickaxe, and disguised herself in a stolen Union uniform. After eluding a pair of guards at the fort's entrance, she ran to the walls outside the prison barracks. She started softly whistling a song that she and her husband often sang to one another. She went from window to window and kept whistling the tune, eventually hearing it repeated back to her from a cell on the corner of the prison barracks. Andrew tied together his bed sheets and dropped them down the side of the walls, pulling Melanie to his cell as quickly as he could. Together, they began digging their way out from underneath Andrew's cell door, hastily planning to shoot their

way out of the fort and down to shore. A guard heard the clanging of the pickaxe and alerted his commanding officer to the situation. The officer rushed into Andrew's cell, and, panicking, Melanie fired her pistol in what she thought was the direction of the Union officer. Once the smoke cleared from her shot, she discovered to her horror that she had shot and killed her husband instead.

The next day, Union leaders at Fort Warren charged Melanie of treason and sentenced her to death by hanging. She accepted her fate, but shared one request before her execution. She asked if she could wear a black dress in mourning for her beloved husband Andrew. Union officers found black fabric amongst their supply stores and gave them to Melanie. She sewed a black dress and wore it to the gallows on the day of her execution. Union and Confederate soldiers alike swapped ghost stories about Melanie for weeks and months afterwards. Some soldiers claimed that they could feel a presence brushing past them, or sometimes even attempting to grab them, in the darker corners of the fort.

The park ranger informed both of my classes that they might encounter the Lady in Black inside one of the fort's tunnels. Unbeknownst to them, a second park ranger hid in one of the rooms off of the tunnels, whistling a tune intended to startle passersby. The kids shrieked after hearing the eerie whistling, and rushed back out into the light. They talked about this jump scare for the rest of the day. Before leaving, the rangers made up for their prank and awarded our students with Junior Ranger pins, thanking them for visiting.

Visiting the Boston Harbor Islands with my classes felt vastly different than my trips to Acadia and the Grand Tetons. During each field trip, three adults and over thirty

children accompanied me, as opposed to just my fiancé. Any time I spend outdoors is time well spent, in my opinion, whether I am with a single companion, a large group, or only myself. Having this mentality, I knew I would enjoy every field trip even before stepping on our buses to Boston. But each time we returned to campus, sun-kissed from a day on the island and windburnt from harbor breezes, I experienced a sensation unlike any from other outings. Recollections of the joy I felt from my tenth birthday merged with the pleasure of seeing my students experience the islands for themselves. A measure of relief also blended with these sentiments, having successfully planned and executed a safe day trip away from the classroom. Although I had seen Georges Island and Spectacle Island before, experiencing them with fourth graders was like seeing them anew. When it was their turn to visit the islands they forged our path, some asking for a map and others following their intuition. The way differed from class to class, yet all were filled with twists, turns, and stops, just like a school year is. With practice, I have learned to sit back and pause in those moments, for I find they are where I learn the most about my students. They are the moments where personalities shine, interests manifest, and curiosities emerge. I may not be able to predict exactly when they will happen, or if they will at all, but I will be ready to embrace them when they do, no matter the place.

Assessment and Reflections

My travels to the Grand Tetons, Acadia, and the Boston Harbor Islands all took place during summer vacations, when school was out of session and I was free from my daily teaching responsibilities. These spaces exposed me to unfamiliar natural features and history. They enriched my understanding of the national parks system and inspired me to plan new journeys in years to come. Detailing my experiences has brought me immense personal gratification. But what parts should I share with my fourth grade students? Are there any aspects of my adventures that can deepen their understanding of the environment? Better yet, are any that could inspire them to plan adventures of their own? Having completed my road-tripping, hiking, and ferry-riding excursions, I needed to figure out how to tie what I had learned and what I had felt back into the classroom. These are the words of a teacher grappling with the rigors of unit planning.

Several topics, lessons, and concepts have endured throughout my teaching career. For instance, there will never be a year in which I do not teach long division or paragraph structure. Not unless I leave fourth grade. But *how* I teach those concepts has changed from year to year. I have revised or rewritten multiple units almost every year that I have been teaching, because I believe that curriculum should continue to change, evolve, and grow. Flexibility has been a constant variable throughout my experience building our academic program, and especially while designing our social studies curriculum. These experiences have allowed me to consider new trends in education and to implement teaching strategies in my daily practice. Pedagogical trends shift constantly alongside an educational landscape that is continuously changing as well.

I could tell my students about the natural features and human history that I had

learned, but standing at the front of the classroom and lecturing has never appealed to me. I want them to develop their own curiosities and fascinations about the world outside their classrooms and homes. But can that truly be assessed? As with many teachers, my process for planning curricular units involves mapping out every learning objective. They are pooled together in a scope and sequence, and are generally aligned with many of the objectives that are outlined in the Common Core. Could I really measure the awe of my students with this traditional process?

Many of the concepts that I thought were essential during my first year of teaching about national parks now seem surface-level in nature. I valued being able to regurgitate as many tidbits of information as possible, like the exact order in which the first ten national parks were established, or which ones receive the most tourists each year. While I have highlighted the historical episodes and natural phenomena that fascinated me during my travels, and that I feel *might* intrigue my students, I cannot assume that they will. Just because *I* did not know about them before my visits does not mean that *they* will want to learn about them. I also surely can not presume to teach fourth graders all of the history in each unit of the national park system. There is simply not enough time, and even an adult brain could not possibly absorb all of that information in one school year. I am nowhere close to knowing it all, and I doubt that I ever will be. This experience has helped me realize that it is okay for my students to know that too. Perhaps being an effective teacher and engaging my students does not mean that I have to be an expert, or a sage on the stage. Maybe there is value in modeling the fact that I am still learning, and that I will continue learning for as long as I can. Traveling to these destinations has gifted me with newfound knowledge, but it has also led me to reconsider

what it means to be a teacher. Reflecting on my position has led me to realize that my students have to play a bigger role in charting the paths of our social studies curriculum. Our exploration of the national parks has to start with their questions, not mine.

Recently, I took a break from drafting this chapter while sitting at my desk in my classroom. I decided to clean and reorganize a messy cabinet labeled "Parks Posters" in thick black permanent marker. After tossing aside several old national parks calendars, I unearthed a giant chart that my class and I made at the beginning of the school year. We wrote it shortly after reading Evan Turk's *You Are Home*, a lavishly illustrated ode to the national parks system with tributes to different animal species, natural features, and episodes of American history. I believe that the writings and portraitures in this book capture the essence of what students can learn while investigating national parks. I also felt that it could spark discussion about what my students already knew about national parks, and what they wanted to discover during our year together.

I unfolded our *KWL* chart and smoothed out the creases. To elicit my students' background knowledge and curiosities, I divided our chart into three separate columns. Each column represented one of the letters in the acronym *KWL*, a metacognition strategy designed to activate prior knowledge, generate questions for inquiry, and document the new knowledge that results from learning. A prominent educational scholar named Donna Ogle invented the *KWL* strategy in 1986. Since then, it has been used in elementary school classrooms across the globe as a tool for unpacking complex topics.

I had used a bright blue marker to fill in the first column of our chart, the *K* column, which was dedicated to listing the information that my students already knew about the national parks. Students were also allowed to say what they *thought* they knew.

I recalled a steady stream of hands shooting up like popcorn kernels as students shared a wide variety of facts. Among other aspects, the statements included thoughts about naming traditions, to indigenous history, to activities that visitors could try at various locations. They ranged from concrete facts, such as *"there is a big rock named Half-Dome at Yosemite*," to broader ideas, such as *"national parks are spread out in different landscapes and parts of the country."* Rereading this column, I could not help but delight in the spectrum of thought captured on the page. While any age of childhood comes with its own particular characteristics, I believe that fourth grade is a year of significant transformation. I find that, at the beginning of the year, most fourth graders tend to think in concrete and literal ways. Yet, over the course of the year, they begin to think more abstractly and draw more of their own inferences about the things they learn. I felt that this column of the chart was a snapshot of this transformation in its earliest stages.

The middle column of our chart, the *W* section, contained a similar mix of both broad and highly specific thinking. I had used a hot pink marker to transcribe the various questions my students had. Some of their questions could be answered in quick Google searches, such as, *"How many national parks are there?"* and *"Where is each park?"* Together, we referred to these questions as *thin* questions, to designate that they only contained one answer. Several of their questions could not be answered in a single class period, let alone a Google search. Four questions in particular made me pause as I reread them:

1) *How are parks named?*
2) *How do people treat national parks?*
3) *Why did people change the names of national parks?*

4) *Why were national parks created on indigenous lands*?

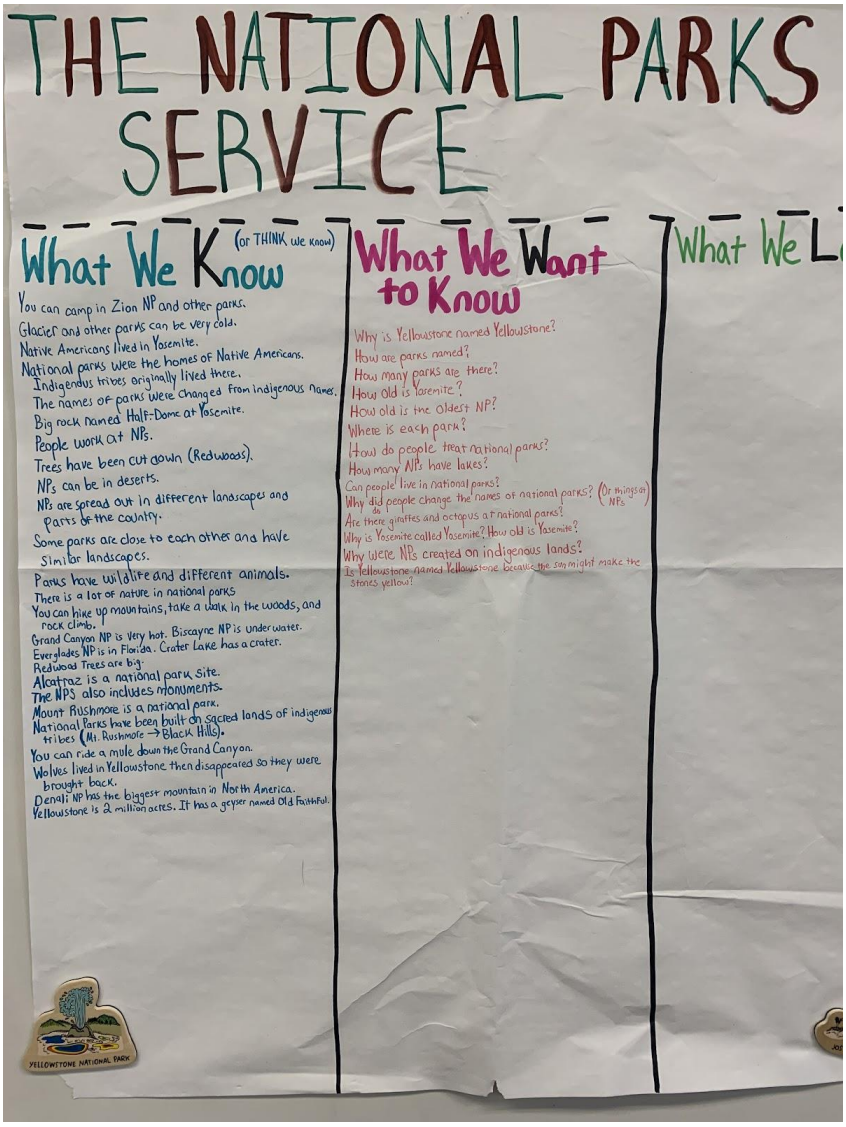


Photo Credit: Classroom *KWL* chart. June 9, 2023. Personal photograph.

My students and I referred to these questions as *think questions*, for they could not be answered in a single response. Each of them contain a multitude of answers, and the answers are wrapped up in age-long imbalances of power. The answers will also almost certainly differ depending on the perspective of the person responding. Among other developmental traits, fourth graders are also often highly focused on fairness, both in the situations that pertain to themselves, but also in the events happening in the world around

them. They can immediately call out the unfairness of careless tourists littering hiking trails, just as they can call out the occasional indiscretions of their classmates. They are capable of naming the historical injustices that indigenous tribes have experienced on park lands, just as they are whenever their friends are excluded from playground games. These inclinations are among the many reasons why I feel that fourth graders are the perfect candidates to learn about the national parks system.

The third and final column, the *L* column, remained blank. I knew that I had intended to return to this column before the last day of the school year. My students had already prepared research, presentations, and projects for our annual "Parks Palooza" exhibition. They had already showcased their learning in front of their families and teachers. Yet, for some reason, I could not find the time for us to meet together one more time to document their new knowledge on our chart. Between field trips, celebratory assemblies, and scrambling to finish other curricular units, I failed to find opportune moments within our busy end of year schedule.

I reassured myself that I would complete the chart with next year's class, hopefully with new questions and new ideas listed across the columns. Then I had two new ideas of my own. First, what if, in addition to the *L* column, or perhaps in place of it, we tried an *F*? Instead of emphasizing factual information, what if I guided my students towards identifying what they had *felt* as they traveled together in outdoor spaces, and as they conducted research about different aspects of the national parks system? Second, we could conduct this exercise on two separate occasions, one for nature and another for human culture. After looking through our responses, we could discuss how humans and nature intersect throughout the national parks system. I knew that I could assess the

information that my students had learned, but could a simple change such as this help me measure their curiosity and interest?

Reflection has always been an integral practice in my classroom. My students and I rely on it in countless ways. For instance, after every math test I ask my fourth graders to complete a brief survey of short answer questions in order to gauge how prepared they felt, or how confidently they understand the concepts being assessed. Meanwhile, during our first few reading classes, students draw several of the most captivating scenes from their favorite stories. This helps me identify the authors and genres that appeal to each young reader in my classroom, and begin preparing recommendations for their consideration. Above all else, reflection is a powerful tool for building rapport with each student, getting to know their interests and personalities, and, ultimately, helping them to find their voices.

I believe that whenever people form sensory observations outdoors, they are engaging in a form of meaningful reflection. I see children make observations outside on a daily basis, whether they themselves know it or not. Naming the five senses of touch, taste, sight, smell, and smell is a skill that my students begin practicing long before they reach fourth grade. They have continued to use these primary senses during our field trips to the Boston Harbor Islands and local conservation areas. Do these physical senses exist to help us form a sense of wonder? Is that their overarching purpose? I asked myself if these were questions worth asking my students, or if they were too over their heads. Looking at the empty *L* column, I deliberated on whether or not I could find an accessible way to present these ideas in the classroom.

As I continued my unit planning, I reminded myself that I was surely not the first educator to ask about the connection between feelings and physical senses. In fact, I had already come across relevant pedagogical examples years ago, while I was participating in professional development at my first school. A colleague introduced me to the book *Making Thinking Visible* by Mark Church, Karin Morrison, and Ron Ritchhart, three professors at Harvard University's Graduate School of Education. All three authors are leaders of Project Zero, a research center at the School of Education with the mission of explicitly teaching different thinking dispositions. Their book includes a variety of thinking routines that teachers can immediately incorporate into lesson plans. I tried a number of their thinking routines after I finished reading it. However, I had not used any in recent years, and I could not pinpoint the reason why. Now seemed like the perfect time to return to them, and one in particular felt relevant to my questions.

In *Making Thinking Visible*, Church, Morrison, and Ritchart outlined distinct classroom routines to help students think for specific situations. For example, they have developed routines for introducing concepts, organizing ideas, examining systems, and taking multiple perspectives of events. They have also created over twenty routines for exploring art, images, and objects. I believe that each of them could be used with students out in nature, and could help them think deeply about natural phenomena. Their *See Think Wonder* routine seemed especially pertinent to this project, and to helping my fourth graders jump start their thinking about the national parks system.

See Think Wonder is a similar exercise to *KWL* in that it requires three separate steps to be divided amongst three columns. When faced with an image, be it living or inanimate, students are first asked to list what they see. After closely observing the image

for several minutes, they must then write what they believe is happening in and around the image. For their final step, they pose questions about what the image makes them wonder about. Let's use the ashen and undulating terrain of Craters of the Moon as an example, the very site where I began these writings. Looking at one of my photographs, I can *see* that the color of the ground is dark and that many rocks are scattered across the landscape. I can also see shrubbery sprouting in small pockets here and there. These sights make me *think* that it is hard for vegetation to grow there. They make me *wonder* why the vegetation is scarce, and how the craters were formed. While thinking and wondering required steps for this routine, we could easily substitute seeing with any of the other physical senses.

After proceeding through these thinking steps myself, I realized that it would be essential for me to present them one at a time. While my fourth graders are hard-working and industrious, at times they equate success with how fast they can finish an assignment. I could envision them shifting quickly between step to step if presented with all of them at once, and I wanted them to add depth to each stage of the routine. I could present them with countless photos of parks and monuments, both from my lesson planning and from my own travels. However, I felt that if I wanted their thinking as authentic as it could be, and borne out of the most excitement, we had to be outdoors together.

I printed *See Think Wonder* templates and began delving through photos of Acadia, Grand Tetons, and the Boston Harbor Islands that I had archived after my visits. I searched for an assortment that would hopefully intrigue my fourth graders, and elicit as many observations and questions as possible. As I scrolled through my snapshots, I started to recall specific memories from my travels. Before long, the feelings I

experienced there began fluttering upwards through my chest. A mother moose and her calf evoked the slight tinge of fear and the fixation I felt at Jenny Lake, but this time I was sitting hunched over my laptop. I viewed the glistening and jagged angles of Thunder Hole from my screen, but somehow I could conjure the damp mist that brushed

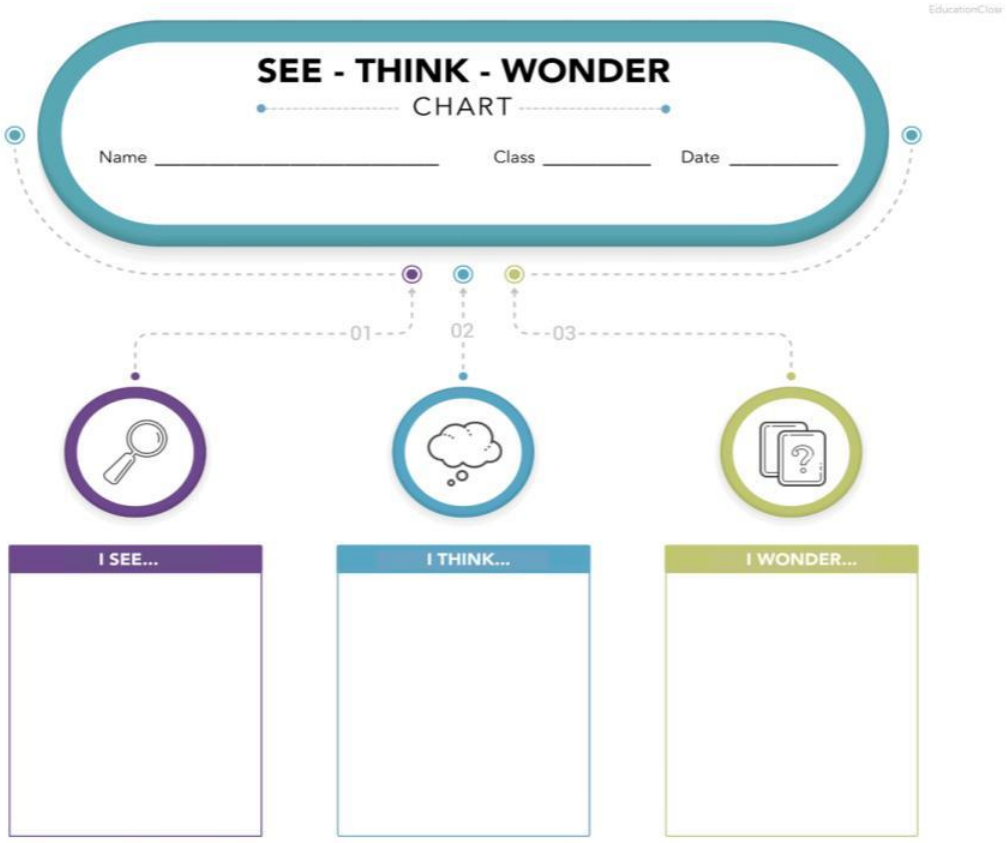


Photo Credit: *See Think Wonder* template. Photo from The Institute for Arts Integration and STEAM website by The Vision Board LLC. 2010-2023.

against my skin that day in Acadia. With these sensations came questions about the state of my unit planning.

If I were to implement a thinking routine such as *See Think Wonder* during one of our field trips, would I be forcing my fourth graders to intellectualize their explorations in nature? Would I be compromising the authenticity of their experience? When I revisit my earliest memories in nature, I find myself focusing on the playfulness that I experienced

as a child. The rock face that still protrudes out of the hill beneath my childhood elementary school invited me for climbs each morning before school. One of my earliest fascinations with water came about when my mother and I stood together on a small wooden bridge in Minuteman National Historic Park in Concord, Massachusetts. We each held a small branch in our hands and dropped sticks into the water at the same time, keeping watchful eyes on them to see if one of them could travel faster than the other. Around that same time period, I can recall being in Maine with different cousins and hiking up Mount Tire'm, a small mountain with an elevation of only 1,060 feet. I never learned, or really cared, about its elevation until only recently. Two years ago, someone carved the number into a log at the trailhead. In fact, there weren't even any signs for this mountain until recently either. I simply knew its name because members of my family shared stories about it. On our childhood hikes I never thought about exact measurements like the mountain's elevation because all I wanted to do was race to the top with my cousins and tiptoe around the rock outcroppings where bears were rumored to hibernate in winter.

Now that I am a teacher, every day I see my students enjoy their own playfulness outdoors beyond the walls of our classroom. I have seen individual children lost in their own imaginations, trudging up the small dusty hill on our playground but pretending to scale the walls of a castle. I have seen a cheerful trio of girls play together around the trunk of the "Fairy Tree," their favorite tree on our campus. They delighted in a variety of activities together, from staging imaginary weddings underneath branches to choreographing elaborate dance rituals around its trunk. Fellow students joined this group in remembrance after the Fairy Tree needed to be removed as a safety precaution.

Together, they decided to memorialize its stump as a school monument. Having the privilege of planning field trips allows me to witness these types of moments away from our campus too. During our past visits to Georges Island, I have happily shielded my ears as my students shriek with thrill in the darkened tunnels of Fort Warren. At Crane Beach in nearby Ipswich, Massachusetts, I have directed a group of boys' attention to the encroaching tides as they feverishly build fortifications to their sand castles. I might be able to share information about the history of Georges Island, or the composition of the dunes at Crane Beach, but my fourth graders are able to create amusements within those spaces that I could never have schemed of.

Teaching about the national parks system will continue to be a passion of mine for the foreseeable future. Writing this thesis has invigorated that passion even further. I will continue to visit parks, historic sites, and monuments whenever I can, and after my visits I will compile research and resources to share with my students. There is no shortage of teaching strategies at my disposal to help my students generate observations and questions. I am eager to incorporate more of them into our work in the classroom. But outside it is ultimately up to each of my students to find the objects of their awe and fascination. If I have taken anything away from Rachel Carson, it is that my power as an adult lies in providing opportunities for those feelings to emerge on their own timeline. They might surface while we are together, later on in their lives, or perhaps not even at all. That realization is a gift to me. It has unburdened me of the pressure I placed on myself during years of curriculum building, when every concept and topic felt like a puzzle piece that had to be inserted in the perfect spot in our program. Now I believe that the joy of showing children nature does not lie in learning outcomes, but in simply being

a companion and seeing where my students take us. The path will differ between each class that I teach, but my classroom door will still be open every September, ready and eager to embrace the outdoors.

Works Cited

Books

Carson, Rachel. *The Sense of Wonder*. Harper Collins, 1998.

Fabiny, Sarah, and Who. *Who Was Rachel Carson?* Penguin, 2014.

Fryxell, Fritiof. *The Tetons*. Grand Teton National History, 1938.

Kales, David. *Boston Harbor Islands*. History Press (SC), 2007.

Leaf, Christina. *Acadia National Park*. Bellwether Media, 2022.

Ritchhart, Ron, et al. *Making Thinking Visible: How to Promote Engagement, Understanding, and Independence for All Learners*. Jossey Bass, 2011.

Sanger, David. *An Island in Time: Three Thousand Years of Cultural Exchange on Mount Desert Island*. Abbe Museum Publication, 1984.

Simková, Pavla. *Urban Archipelago: An Environmental History of the Boston Harbor Islands*. University of Massachusetts Press, 2021.

Film

A History of Spectacle Island. Boston Harbor Islands, 2012.

Quigley, Shawn. *Safe Harbor: The Maritime Underground Railroad in Boston*. 2023.
"Samuel de Champlain (U.S. National Park Service)." *NPS.Gov Homepage (U.S. National Park Service)*, https://www.nps.gov/people/samuel-de-champlain.htm. Accessed 7 Mar. 2023.

Online Articles

"DCR and The Boston City Council Approve Funding for Georges Island Pavilion - Boston Harbor Now." *Boston Harbor Now*, https://www.bostonharbornow.org/dcr-and-the-boston-city-council-approve-funding-for-georges-island-pavilion/#:~:text=Boston%20Harbor%20Now%2C%20The%20Massachusetts,Boston%20Community%20Preservation%20Act%20Fund. Accessed 7 Mar. 2023.

"Explore National Park | Boston Harbor Islands." *Boston Harbor Islands*, https://www.bostonharborislands.org/#. Accessed 7 Mar. 2023.

"Geology of Acadia National Park | U.S. Geological Survey." *USGS.Gov | Science for a Changing World*, https://www.usgs.gov/geology-and-ecology-of-national-parks/geology-acadia-national-park#:~:text=Molten%20rock%20below%20Earth's%20surface,(~420%20million%20years%20old). Accessed 7 Mar. 2023.

Hunnam, James. “Captain Hunnam to the Slaveholders!!” *The Emancipator*, 7 Oct. 1846.

“Jenny Lake - Jackson Hole Historical Society & Museum.” *Jackson Hole Historical Society & Museum*, 14 Aug. 2016, https://jacksonholehistory.org/history-of-jenny-lake/.

Lear, Linda. “Rachel Carson, The Life and Legacy.” *Rachel Carson, The Life and Legacy*, https://www.rachelcarson.org/Default.aspx. Accessed 6 Mar. 2023.

Miller, Kevin. “Fire Had Profound Impact on Bar Harbor and Acadia.” *Portland Press Herald*, 21 Oct. 2017.

Neptune, George. “Naming the Dawnland: Wabanaki Place Names on Mount Desert Island.” *Chebacco: The Magazine of the Mount Desert Island Historical Society*, 2015.

Ogle, Donna M. “K-W-L: A Teaching Model That Develops Active Reading of Expository Text.” *The Reading teacher* 39.6 (1986): 564–570. Dartmouth College Library.

Press, Matthew Brown, Associated. “Yellowstone Park Reopens after Flooding Reshapes the Landscape | PBS NewsHour.” *PBS NewsHour*, https://www.facebook.com/newshour/, 22 June 2022, https://www.pbs.org/newshour/nation/yellowstone-park-reopens-after-changes-wrought-by-flood.

“Project Zero’s Thinking Routine Toolbox.” *PZ’s Thinking Routines Toolbox | Project Zero*, pz.harvard.edu/thinking-routines. Accessed 12 June 2023.

Riley, Susan. “See, Think, Wonder!” *The Institute for Arts Integration and STEAM*, 31 July 2020, artsintegration.com/2011/10/14/see-think-wonder/.

“Spectacle Island - Boston Harbor Islands.” *Boston Harbor Islands*, https://www.bostonharborislands.org/spectacle-island/. Accessed 7 Mar. 2023.

“Teton Range.” *PeakVisor*, PeakVisor, 1 Jan. 2018, https://peakvisor.com/range/teton-range.html.

“The Hub’s Archipelago: The Connected Histories of Boston and Its Harbor Islands | Environment & Society Portal.” *Environment & Society Portal*, 20 Feb. 2020, https://www.environmentandsociety.org/arcadia/hubs-archipelago-connected-histories-boston-and-its-harbor-islands.

“The Legend of the Lady in Black - Boston Harbor Islands.” *Boston Harbor Islands*, https://www.bostonharborislands.org/event/the-legend-of-the-lady-in-black/. Accessed 7 Mar. 2023.

Wood, Eleni. “How Old Is a Mountain Range? - OpenLearn - Open University.” *How Old Is a Mountain Range?*, https://www.open.edu/openlearn/science-maths-technology/geology/how-old-mountain-range. Accessed 7 Mar. 2023.

“Yellowstone River Swallows Housing For National Park Employees.” *K2 Radio*, https://k2radio.com/watch-yellowstone-employee-housing-washed-away-by-severe-flooding/. Accessed 6 Mar. 2023.

National Parks Service Articles

“Art, Rusticators & Early Tourism - Acadia National Park (U.S. National Park Service).” *NPS.Gov Homepage (U.S. National Park Service)*, https://www.nps.gov/acad/learn/historyculture/rusticators-tourism.htm. Accessed 7 Mar. 2023.

“Fire of 1947 - Acadia National Park (U.S. National Park Service).” *NPS.Gov Homepage (U.S. National Park Service)*, https://www.nps.gov/acad/learn/historyculture/fireof1947.htm. Accessed 7 Mar. 2023.

“Geologic Activity - Grand Teton National Park (U.S. National Park Service).” *NPS.Gov Homepage (U.S. National Park Service)*, https://www.nps.gov/grte/learn/nature/geology.htm. Accessed 7 Mar. 2023.

“Greater Yellowstone Ecosystem - Yellowstone National Park (U.S. National Park Service).” *NPS.Gov Homepage (U.S. National Park Service)*, https://www.nps.gov/yell/learn/nature/greater-yellowstone-ecosystem.htm. Accessed 7 Mar. 2023.

“Jenny Lake - Grand Teton National Park (U.S. National Park Service).” *NPS.Gov Homepage (U.S. National Park Service)*, https://www.nps.gov/grte/planyourvisit/jennylakeplan.htm. Accessed 7 Mar. 2023.

“Language of Slavery.” *National Parks Service*, www.nps.gov/subjects/undergroundrailroad/language-of-slavery.htm#:~:text=The%20labels%20fugitive%2C%20runaway%2C%20and,take%20away%20their%20individual%20agency. Accessed 20 July 2023.

“National Park System (U.S. National Park Service).” *National Parks Service*, www.nps.gov/aboutus/national-park-system.htm#:~:text=Units%2FParks,of%20Columbia%2C%20and%20US%20territories. Accessed 12 June 2023.

“Native Americans and the Boston Harbor Islands - Boston Harbor Islands National Recreation Area (U.S. National Park Service).” *NPS.Gov Homepage (U.S. National Park Service)*, https://www.nps.gov/boha/learn/historyculture/native-americans-and-the-boston-harbor-islands.htm. Accessed 7 Mar. 2023.

"Thunder Hole (U.S. National Park Service)." *NPS.Gov Homepage (U.S. National Park Service)*, https://www.nps.gov/places/thunder-hole.htm. Accessed 7 Mar. 2023.

"What We Do (U.S. National Park Service)." *National Parks Service*, www.nps.gov/aboutus/index.htm. Accessed 26 July 2023.