“LIVING WEATHER” FOR SURVIVAL:
CULTIVATING LOCAL CLIMATIC KNOWLEDGE IN NEW BRUNSWICK,
CIRCA 1790-1870

By
Teresa Devor Hall

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Bachelor of Arts, St. Thomas University, 2008
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Supervisor:   Elizabeth Mancke, PhD, Dept. of History
Examiner Board: Donald Wright, PhD, Dept. of Political Science, University of New Brunswick
Michael Dawson, PhD, Dept. of History, St. Thomas University
Internal Examiner: Daniel Tubb, PhD, Dept. of Anthropology, University of New Brunswick
External Examiner: Daniel Samson, PhD, Dept. of History, Brock University

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Dean of Graduate Studies

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Abstract

Settlers of British American descent farming in the Wolastoq/St. John River Valley of New Brunswick in the late 18th and 19th centuries learned to ‘live weather’ – to negotiate variable and changing local weather conditions, moment-by-moment, day-by-day, season-by-season, and year-by-year. ‘Living weather’ is conceptualized as a way of being-knowing, which recognizes that settlers learned through constant multisensory awareness while undertaking the daily tasks of farm life, attentive to various opportunities and challenges, with the weather framing the context in most instances. Farmers cultivated their own Local Traditional Knowledge (LTK) of weather by integrating experiential knowledge of the local effects of weather on physical and social landscapes, with the traditions of Euro-American agriculture. These included crop and livestock choices, as well as methods and practices of observation, communication, and record-keeping. Settlers’ LTK was central to their success as farmers in the River Valley because of the highly seasonal climate and consequent narrow margins for error in agriculture.

This study reconstructs the learning processes of late-18th and 19th-century farmers through analyses of their household journals. It uncovers their adaptive strategies in response to the variable timing of seasons, diverse seasonal weather patterns, potentially devastating freshet floods, and the subsistence imperatives of settlement in colonial North America. Farmers were also influenced by an improvement imperative, which was often trumped by the ecological limits of their new homes. Farmers cultivated resilience in the face of vulnerability through strong relationships with one another, with
plants and animals, and with place. This study recognizes the significant cultural influence of literary media and methods on a predominantly rural society that continued to be steeped in orality.

As we contend with contemporary climate change and other ecological realities of life in the Anthropocene, works of climate history such as this one offer insight into practices of locality that can support the sustainable communities of the future.
Dedicated to Lucy

and to the Farmers who came before us

Especially

Helen and Charles Glenney, Marguerite and George Devor, and Ursula and Ambrose Hall
Preface

The spring flood of 2018 brought home to New Brunswickers, Mainers, and observers across Canada just how interdependent we are with the climatic factors that moderate interactions among snowpack, rainfall, personal and public infrastructure including homes and sewers, and the phenomena of the freshet. As the waters rose from the Aroostook River in Maine down the Wolastoq/St. John River to Saint John, New Brunswick, thousands of people were evacuated from their homes while thousands more on private wells were warned of potential drinking water contamination.\(^1\) The damages within New Brunswick may be almost four times greater than those incurred during the 2008 flood, with an estimated cost of $80 million.\(^2\) The catastrophic scale of the recent flood, which is now the highest on record for the Wolastoq/St. John in parts of the River Valley, has sparked propositions for new responses on the part of citizens, policy-makers, and insurers, alike. Instead of continuing to facilitate reconstruction – and new building projects – on floodplains, what if these lands were taken off the map for infrastructure of any kind? Recognizing the potential for higher floods to constitute the

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‘new normal,’ what if governments bought out home owners and others, and flood insurance was eliminated in known flood zones over a certain timeframe?³

This study recognizes the significance of attention to climatic factors to the ongoing experiential learning of Anglo-North Americans and their descendants who settled in the central and lower Wolastoq/St. John River Valley in the late-18th and early-19th centuries. It interprets settlers’ “everyday ecology of attention,” the processes by which they cultivated local knowledge of weather and climate, as central to their survival and their ability to thrive in their new homes.⁴ Settlers collaborated in their vigilance and responses to changes in the height and medium of the River and its tributaries over the course of each year. They planned and executed agricultural and commercial tasks in dynamic interrelationship with a highly variable and seasonal climate. “Living weather” required constant negotiation with the implications of temperature, precipitation, and other factors, on local and distant physical and social landscapes.

Modern science and scientific agriculture have since encouraged collective habits of inattention among people who no longer have to live weather in North America and


around the world. Through the rise of the fossil fuel regime, coupled with specialization and professionalization, some humans became increasingly able to live in comfortable abstraction from weather conditions during most hours of any given day. Yet this personal inattention to weather continues to be untenable for many people living in the Wolastoq/St. John River Valley, especially in certain communities and at particular times of the year. As the freshet of 2018 inundated areas that had never experienced flooding before, and the scale of the damage has reached out to touch owners of home insurance and taxpayers across the province and the country, increasing numbers of people are recognizing that we are all “living weather” together. The responsibility lies with each one of us to contemplate and understand the implications of our personal choices as well as the choices of municipal planners, politicians, corporate decision-makers, and our neighbours.

Across Atlantic Canada and the country as a whole, as well as in places around the world, neighbours and complete strangers maintain the tradition of ‘weather talk,’ even when those involved in the conversation may only observe the weather in passing. This study reveals that we prioritize weather talk because we have needed to communicate about the weather to survive, no matter where we have lived around the world. This has been true for most of our human past. Our senses evolved over millennia to alert us to danger and allow us to find food, mate, parent, and form emotional bonds successfully,

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7 David W. Phillips, *The Climates of Canada* (Ottawa, Canada: Minister of Supply and Services Canada, 1990), 2.
so our abilities to perceive the weather are deeply entwined with our evolution as humans. People still talk about the weather in places where they remain cognizant of their reliance on it, no matter the cultural lenses through which they understand its processes.

Contemporary climate change has elevated the salience of everyday weather talk and introduced new dimensions to scholarship on human adaptations to unfamiliar or changing environments, policy regimes, and livelihoods. The rise of inquiry into responses to climatic change in particular places, times, and cultures is interrelated with questions of why people with different political perspectives and socioeconomic, ethnic, and geo-cultural backgrounds receive and respond to communication about climate change so differently today. Climate change communications, as well as effective adaptation and mitigation strategies, require that those involved in their design and implementation understand the human dimensions of these tasks. How do people cultivate knowledge and what kinds of challenges, including the influence of different worldviews on cognitive biases, do people face when seeking to reach shared understandings and take collective action? What factors influence people’s conceptualization of risks and vulnerabilities and their adaptive strategies? One of the

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goals of this research is to understand learning processes in the context of relationships among people, animals, plants, and places. We are all local to a particular place and have a degree of understanding of the implications of the winds, waters, and seasons for the life of our homes, even if it is as simple as knowing that “April showers bring May flowers,” and that Canada geese migrate in the fall and return in the spring. How might we embrace the responsibility of being local to our home places, given the changes to our homes and in some cases, threats to their viability, in the current ecological, climatic, and economic era?

Industrialization, urbanization, and the globalization of food systems have transformed the ways of life of the majority of the world’s people in this new era that has been dubbed “the Anthropocene.” In the year 2000, Nobel award-winning chemist Paul Crutzen and marine scientist Eugene Stoermer began to popularize the term in reference to the epoch in which human activities have so influenced the composition of the biosphere that we have become the most significant geological force on Earth. They note that various time frames could be assigned to the Anthropocene, but they chose the epoch beginning in the late 18th century to reflect the increasingly noticeable evidence of human influence on the lands, waters, and atmosphere of Earth from that time on.\footnote{Paul Crutzen and Eugene Stoermer, “The ‘Anthropocene,’” \textit{IGBP Newsletter} 41 (May 2000): 17-18, in Paul Warde et al., eds., \textit{The Future of Nature: Documents of Global Change} (New Haven, CT: Yale University Press, 2013), 483-85.}

Some commentators have critiqued the concept of an ‘Anthropocene’ because it proposes that an undifferentiated (and therefore, nonexistent) humanity has reached the status of geological force. Postcolonial and climate historian, Dipesh Chakrabarty, proposes an exploration of the history of climate change as the history of
industrialization, capitalism, colonialism, and post-colonialism, on the one hand, and as a species history of humanity, on the other. The shift from the organic to the mineral energy regime allowed humans to harness concentrated energy from the buried solar reserves of the Earth. The bonanza on cheap fossil fuels now nears its close, in part because we as a species (albeit an essentialized “we”) understand that the true costs of producing energy from any fossil medium include climatic instability and accompanying social and economic upheaval.11

The current study contributes to the history of humanity’s changing relationships with the biosphere and thus participates in a local- to global-scale conversation about climate change, community resilience, food security, sustainability and limits to economic growth, and just public policy. As a work of climate history, it seeks to understand how farmers cultivated Local Traditional Knowledge in the late 18th and 19th centuries for their own purposes grounded in time and place. This study also explores a work process; what does it mean to watch the weather, to create local knowledge, and make a record of it? These are skills that no longer characterize human practice in many parts of the world, including urban areas and much of the “Global North.” They also have a crucial role to play in a changed and changing world of unstable climates, dwindling freshwater resources in areas of high population density, population growth, population growth, population growth.


Historians can make a valuable contribution to the present and the future by illuminating the legacy of human wisdom and creativity that have allowed our species to dwell in partnership with the rest of life on Earth. Just as historical archaeology reconstructs Acadian dyke-building in the Maritimes, this study reconstitutes the mental and cultural skill-sets of colonial farmers tasked with surviving and thriving in an unfamiliar climate and unpredictable watershed. Theirs was also a time when a combination of self-reliance and cooperation marked the line between life and death.\footnote{13 J. Sherman Bleakney, \textit{Sods, Soil, and Spades: The Acadians at Grand Pré and Their Dykeland Legacy} (Montréal: McGill-Queen’s University Press, 2004).} Although the partnerships these farmers forged with the rest of life were neither completely harmonious nor stable, they represented a far more collaborative way of life than that which is practiced today by many people in the River Valley, and the broader “Global North.” During an era in which multiple challenges faced by our species appear to be coming to a head, we have this opportunity to learn from the humble human past.
To begin, I must offer my gratitude to the Universe, the Sun, and the Earth: the true sin qua non of all nourishment, life, and research.

The dissertation that follows centres on the learning processes of Anglo-American farmers in the Central and Lower Wolastoq/St. John River Valley in the late 18th and 19th century. These farmers and their descendants cultivated Local Traditional Knowledge (LTK) of weather and climate by amalgamating traditional knowledge of agricultural peoples in the British Isles and beyond, with the knowledge their ancestors had gleaned from Indigenous people, and had cultivated themselves, in Northeastern North America. Anglo-American farmers in the River Valley had to nuance or transform their forebears’ knowledge from former home places. Only through experiential learning in place could they adapt to the vicissitudes of a highly seasonal and variable climate. This dissertation also relied on a powerful confluence of tradition and experience.

Winds of tradition blowing through this work include distinctly different “jet-streams.” The scholarly traditions whose currents carried the project aloft include climate history and historical climatology, and environmental history, world history, regional history, and local history. I am also indebted to Tim Ingold, Donna Haraway, practitioner-theorists of popular education including Paulo Freire, and the Coasts Under Stress Project Team, for basing their own praxis on the interconnectedness of life experience, perception, and knowledge. The value they have placed on the journey of
knowledge cultivation dignifies the relationships that sustain human ingenuity and multispecies communities. Anthropological studies of the LTK, Traditional Ecological Knowledge (TEK) and Local Ecological Knowledge (LEK) of peoples with different lifeways around the world also explore entwined ecological and cultural influences on knowledge. “Citizen science” projects such as the Fundy Biosphere Reserve’s local knowledge-holder research (conducted in tandem with the documentary film, *Climate Change in Atlantic Canada*), dovetail with academic perspectives as they highlight the interdependence of humans and the larger ecological communities of which we are a part.

I had the opportunity to support the local knowledge research of the Fundy Biosphere Reserve in 2013, when I was hired to consult on drawing climatic data out of qualitative descriptions of weather over time. It was also my sleuth-mission to track down the historic records of lighthouse keepers in the Bay of Fundy. Despite locating numerous repositories, I found very few extant records. The Coast Guard office that had housed a number of these diligently recorded observations had recently disposed of them. Storms weathered, stern winds withstood, lonely hours of keeping the light and sounding the fog horn: gone. Working with farmers’ journals has illuminated just how important such weather observations are. They were embedded in the daily lives of those who kept them and thus furnish 21st-century researchers with an understanding of the mental and physical skill-sets required to live weather. Such records also represent hours of painstaking observation and labour, reflecting the importance of accurate weather perception, appraisal, and response, throughout the human past.
Like the farmers whose journals I studied, my own experiential learning has been rooted in human communities. The LTK of my ancestors inspired and informed this work. My grandparents were farmers and members of rural communities before moving to town and joining organizations with religious, economic, and civic purposes. From childhood rhymes and stories to family trips, their life experiences and related values of family, mutual aid, hard work, self-reliance, and generous hospitality, have richly nourished my life. Their history makes our family who we are. This research has brought me closer to them in spirit, as well as illuminated some material and experiential aspects of their lives. I am grateful to my ancestors, and to all who continue to share their stories and practice their values.

In addition to my biological family, my in-laws and the greater community of Johnville, New Brunswick, embraced me and welcomed me to rural living in the Upper Wolastoq/St. John River Valley. Not only have my outdoorsman husband Jason Hall and I sunk our hands into the soil of gardening, tending a vineyard, and tapping trees in a small sugarbush, we are also involved in the lives and labour of our human neighbours and larger multispecies community. Haying parties, quilting bees, and work frolics at the church are still a part of our lives. We gather and store wild foods. For the past 13 years, Jason and I have learned to recognize and use plant medicines, to identify bird and frog species, and to adapt to the fluctuating climatic regime of our home. Like Benjamin Crawford, one of the journal-keeping farmers in this study, we recognize multiple phenological indicators and often savour the changing of the seasons. In a profound way, Johnville and New Brunswick have become home. I am deeply grateful to Jason, the Hall family, and our entire community, for taking me in.
My appreciation for being at home here requires that I cast my attention to times prior to Johnville’s 1860 settlement, and the 18th- and 19th-century arrivals of members of my family in the lands now referred to as North America. Without the LTK, hospitality, and displacement of Indigenous people in the places we refer to as Pennsylvania, Missouri, Colorado, Ontario, and New Brunswick, my ancestors would never have been able to make their homes here. I would never have come to this river valley to love, live, and study. The research contained within this dissertation would have been impossible. I am humbled by the magnitude of my debt. I am also honoured, grateful, and relieved to be alive at this time of Truth and Reconciliation between the First Peoples and the colonial peoples of this land. As Alma Brooks, Wolastoqey elder living at Sitansisk (St. Mary’s) says, the truth has to come before reconciliation. The paradox of physical and cultural genocide carried out by colonial peoples under the guise of Christian mission and productive use of the land is staggering. Knowing our history demands that we who would tell it speak humbly and make amends in the ways we are able. This study is clear that only through settler colonialism were Anglo-American farmers able to establish roots in the River Valley, and thus cultivate the understandings and practices at the centre of this tale. At the same time, respecting their embeddedness within their own temporal, ecological, and cultural context requires that I acknowledge these farmers’ struggles to establish homes here, as well as my literal and figurative kinship with them. While the past is a different place, it is also the place through which we have come. May we continue to grapple with our complex inheritance.
I am grateful to the farmers and other settlers and sojourners whose journals, letters, and memoirs were foundational to this study. Their desire to communicate their experiences and insights for their own purposes, including the knowledge of future generations, has allowed me to engage in this work. Their commitment to their own LTK, and to the future of their families and communities, made it possible for me to delve into the intersections of weather, climate, and rural life in colonial New Brunswick, in meaningful and revealing ways.

I am also grateful to my peers in the “cadre of the curious,” those who have shared and supported my journey down the rich pathways laid by the imaginations and lives of countless others. Thank you to Jason Hall, Christy Grey, Anne Dance, Gil Steeves, David Bent, Mark McLaughlin, Katherine MacDonald, Alanna James, Keith Grant, Kimberly Bittermann, and other fellow students in the academy and beyond, for challenging me to seek out new landscapes as well as new eyes. Thank you to my supervisor, Elizabeth Mancke, for your support and hard work in the process of bringing this dissertation to fruition. My gratitude to professors, archivists, and librarians, especially those at the Harriet Irving Library, who have welcomed me warmly for years. Heartfelt thanks, as well, to all the people who care for our campus and for the members of our campus community, including but not limited to custodial staff, staff of the coffee shops and restaurants, and those who work at the UNB Health Clinic, in Counseling Services, and for the offices of Financial Services, Graduate Studies, and others.

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Mike Dawson, Catherine Gidney, Margaret McCallum, Brad Cross, Bill Parenteau, Steve Turner, Don Wright, Alasdair Ross, Elizabeth Mancke, Erin Morton, Sasha Mullally, and others. For sharing their transcriptions of diaries, unpublished manuscripts, and raw research materials, I am grateful to Liza Piper, Gail Campbell, Matthew Hatvany, John Reid, Danny Samson, Anya Zilberstein, Alan MacEachern, Jason Hall, Dagomar DeGroot, Zach Tingley, Cody P. Miller, Keith Grant, and Katherine MacDonald. For insight into Wolastoqey culture, weather knowledge, and more, I thank Andrea Bear Nicholas. Thank you to the Social Sciences and Humanities Research Council of Canada, the Network in Canadian History and Environment (NiCHE), The O’Brien Foundation, Bernice & W. Stewart MacNutt, the contributors to the Magee Merit Award, Leslie E. Bruce, David Folster, Michael Smith, Hugh John Flemming, Dr. William S. Lewis, and their families and other donors.

For life, love, and personal history, thank you to Margaret, Phil, and Truman Devor, Mary Hall, Andrew Patterson, and our families. For so much that I cannot put into words, thank you Jason and Lucy.
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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>CNBHS</td>
<td>Collections of the New Brunswick Historical Society</td>
</tr>
<tr>
<td>DCB</td>
<td>Dictionary of Canadian Biography</td>
</tr>
<tr>
<td>HIL SPECAR</td>
<td>Harriet Irving Library Archives and Special Collections, University of New Brunswick, Fredericton</td>
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<tr>
<td>LC</td>
<td>Loyalist Collection, University of New Brunswick, Fredericton</td>
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<tr>
<td>NSARM</td>
<td>Nova Scotia Archives and Records Management</td>
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<tr>
<td>OED</td>
<td>Oxford English Dictionary</td>
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<tr>
<td>PANB</td>
<td>Provincial Archives of New Brunswick</td>
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<tr>
<td>PARO</td>
<td>Public Archives and Records Office of Prince Edward Island</td>
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<td>WP</td>
<td>Winslow Papers</td>
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Chapter 1
Introduction

In 1783 and 1784, the place now known as New Brunswick received thousands of new settlers from the thirteen erstwhile colonies. Those refugees found the ecological systems of their new home dangerously strange.¹ Growing seasons were shorter. The Wolastoq/St. John River’s flood regime was unpredictable from one year to the next. Some years spring floodwaters rose so high as to sweep away fences as well as livestock and barns, and at least once, swept away a child.² Heavy rains in the fall could lead to disastrous flooding. Winters were colder and longer than the Loyalists, as this group of settlers became known, had anticipated, and periodic thaws could challenge or prohibit travel and the transport of goods.³

To compound the shock attending the heart-wrenching losses and backbreaking work of initial settlement, their first two years were even colder than was usual for the province as a result of volcanic eruptions in Iceland. Between June 1783 and January 1784, Laki, a 25 km long volcanic fissure, erupted multiple times, covering 580 km²

¹ I use the word “home” instead of “environment” to convey a set of relationships and a care ethic between families and the places that sustain them. I use the term “refugees” in recognition of the fact that the Loyalists were also Planters whose settlement was part of the ongoing process of dispossessing Indigenous and Acadian inhabitants of the Wolastoq/St. John River Valley. Some of these Euro-Americans had the resources to decide where they settled once they moved North, hence a number of families departed New Brunswick and Nova Scotia immediately for Québec, other parts of the British Empire, or returned to the United States.
with basaltic lava. Grímvötn, a nearby volcano, also spewed gases during this time. The fallout from noxious gases created conditions known as the Móðuharðindin or “Mist Hardships” in Iceland, and killed over 10,000 people (one fifth of the population) and 60% of grazing livestock. Volcanic aerosols in the upper atmosphere wreaked havoc with weather patterns around the world. The Inuit of Northwest Alaska tell of a disaster known as “The Time Summer Time Did Not Come,” when their ancestors died of starvation and cold; researchers believe it was in 1783 or 1784. The prevailing weather conditions in New England led Benjamin Franklin to proclaim in 1784 that the previous winter may have been “more severe than any that had happened for many years.”

‘Volcano weather’ would in fact become common during the late 18th and early 19th centuries. Yet settlers in New Brunswick had no context for understanding it at the time, and it only compounded the disconcerting environmental differences of their new home. All they knew were the stark realities of settlement in what were, to them, predominantly frontier conditions. In the 1760s, a wave of settlers from New England had also been challenged by the weather and the Wolastoq/St. John River’s flood

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patterns. In their first year, settlers at Maugerville lost many crops due to a frost that came early – by their estimations.\(^9\) They originally built their homes on islands and along the river bank, but quickly learned that spring and fall freshets would flood and destroy their homes and outbuildings. It would take decades of lived experience with local weather in particular locations within the River Valley for settlers of British subjecthood to understand the weather patterns and variability in their new home.\(^{10}\) Yet even fortified by decades of lived knowledge, there would be weather ‘surprises.’

To survive, and through survival, settlers learned to ‘live weather’ – to negotiate variable and changing local weather conditions, moment-by-moment, day-by-day, season-by-season, and year-by-year. ‘Living weather’ is conceptualized herein as a way of being-knowing, in that settlers learned through constant multisensory awareness, while undertaking the daily tasks of farm life, attentive to various opportunities and challenges, with the weather framing the context in most instances. Farmers lived weather by integrating experiential knowledge of the local effects of weather on physical and social landscapes, with the traditions of Euro-American agriculture. These included crop and livestock choices as well as methods and practices of observation, communication, and record-keeping.

\(^9\) Thomas Miles and Charles A. Miles, editor and compiler, “Copied from Calvin L. Hatheway Esq.’s History of New Brunswick,” pp. 19-20 in The Diary of Thomas Miles, transcribed by Celia Munro (2002), MC 451, 1815 – 1866, MS 6, PANB; Hill, Maugerville, 1763 – 1963, 2, notes several reasons that it is possible the settlers who came in 1763 dwindled radically in numbers from 800 in 1764 to 261 in 1767. These include the failure of a provision sloop to arrive and “a scourge of smallpox” brought by three soldiers who had abandoned ship and found the Maugerville settlement.

\(^{10}\) Although some of the settlers known as Loyalists were indisputably part of a culture that had gathered many unique inflections since their ancestors emigrated from (typically Western) Europe, I highlight their European ancestry in contrast to the Indigenous residents of the River Valley and the region.
The Local Traditional Knowledge (LTK) that settlers developed over the years was a unique conglomerate, very different from the LTK of the Wolastoqey, Indigenous people who have lived in the Wolastoq/St. John River Valley for millennia.\textsuperscript{11}

Indigenous knowledge of the weather was adapted to seasonal adjustments and practices that were foreign to the new arrivals. The LTK of Euro-American settlers was an amalgam of traditional knowledge brought from other societies, combined with direct experience in their new homes, and is thus understood as the result of their praxis of observation. Settlers’ praxis was central to their success as farmers in the River Valley because of the narrow margins for error in agriculture and, relatedly, the highly seasonal climate. As a province with a predominantly continental climate, New Brunswick has the most extreme ranges of high and low temperatures that can be reached in the same place over the course of a year, as compared to the rest of Atlantic Canada.\textsuperscript{12} As multiple storm paths arc over the region, Atlantic Canada is also the stormiest part of Canada.\textsuperscript{13}

To study farmers’ praxis of observation is to study relationships – between people and place, among people in families, communities, and in far-flung networks, between elements of local weather and ecosystems, and between people and flora and fauna. The learning processes and the development of wisdom are embedded in these meshworks of

\textsuperscript{11} There are multiple ways to spell the names Wolastoqey and Wolastoqwiyik. I have followed the orthography in use by Wolastoqey language instructors at the Mi’kmaq-Wolastoqey Center at the University of New Brunswick. The term “Wolastoqey” refers to the people as a Nation, to their traditions, and language. “Wolastoqwiyik” is used to refer to a group of Wolastoqey.

\textsuperscript{12} The Fundy shore is the only part of the province that has a climate dominated by a marine influence; Phillips, \textit{The Climates of Canada}, 16, 82-83; P. A. Dzikowski et al., \textit{The Climate for Agriculture in Atlantic Canada}, Agriculture Canada Publication, no. ACA 84-2-500, Agdex no. 070 (Fredericton: Atlantic Advisory Committee on Agriculture, 1984), 4.

\textsuperscript{13} Dzikowski et al., \textit{The Climate for Agriculture in Atlantic Canada}, 4.
relationships. This study attempts to reconstruct the praxis of observation of late 18th- and 19th-century farmers through analysis of their household journals, to understand their learning processes, the ways they developed local – and soon, traditional – knowledge. Historians, scientists, and other scholars have used farmers’ journals or diaries to reconstruct historic climates, as well as to understand human adaptations and cultural attitudes to weather and climate.

This study of weather and climate knowledge-making by Euro-Americans and their descendants is focused on reconstructing and analyzing farmers’ praxis as an entry point into understanding a human community’s history of weather and the interactions among weather, climate, farm households, and rural communities. As such, it is predominantly oriented towards understanding the cultural dimensions of climate history more than the scientific dimensions. This study, however, is also conscious of the fact that local people used systematic observation, consultation with others, and experimentation, at the same time as their ‘colloquial meteorological’ skills went unrecognized by elites urging scientific approaches to farming and meteorological observation.

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14 For a description of meshwork as a concept of dynamic interrelation that more aptly captures reality than the cybernetic analogy of a network, see Tim Ingold, *Lines: A Brief History* (London; New York: Routledge, 2007), 80-81.
Settlers throughout New Brunswick necessarily learned local weather for agricultural and other subsistence and economic purposes, and thus interpreted ecological dynamics through these priorities, while also facing the requirement to adapt. Adaptations, or immediate- to long-term responses to challenges posed by weather and climate, were implemented at scales from the individual and household to the community, parish, and colony. Factors inhibiting or facilitating effective adaptation—in other words, factors related to the adaptive capacity of an individual or collective—included the level of LTK (to support accurate perception and interpretation of challenges or opportunities), material resources (from basic nutrition and warmth to the materials required for a particular response), social networks, and relative health or disease.17

As settlers grew to understand the processes at work in local winds, waters, and soils, they built relationships with places as they were; when such relationships allowed persistence of human and ecological well-being over time, they were adaptive.18 Furthermore, adaptive adjustments in settlers’ subsistence strategies, tested within the fluctuating context of weather conditions over a given season from year to year, permitted families to maintain balance between production and reproduction.19 Farmers

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18 Settlers’ practices could also be adaptive when they were integrated with spirituality. People related to place and one another through religious lenses that were like connective tissues, bonding the lives of farmers to place, family, and community.
developed responses in the moment, as well as over the long-term, and effective responses were integrated into local culture.

The settlers whose journals are central sources for this study came to farming in the Wolastoq/St. John River Valley through various routes. The timing of their emigration from the South, or of their birth, influenced the local knowledge circles into which they entered, and thus the “everyday ecology of attention” into which they were enculturated.20 Henry Nase (1752-1836), Edward Winslow (1746-1815), and Frederick Dibblee (1753-1826), arrived as adults, and Azor Hoyt (1770-1842) and Benjamin Crawford (1777-1859) came as a youth and a child, respectively, in 1783 or 1784. It is unknown whether any of these men aside from Azor (A.) Hoyt had engaged in farming before moving to New Brunswick. Henry (H.) Nase and Dibblee and his wife set their energies to farmsteading almost as soon as they arrived, the former at the mouth of the Nerepis, and the latter at newly established Kingston.21 Winslow added farming to his administrative career only when his family moved to Kingsclear around 1790. In 1788, H. Nase married into the Quinton family, members of whom had first settled on the River in the 1760s. A. Hoyt was 12 or 13 years of age upon immigrating to the lower River Valley from New York City; having moved from a farm in Connecticut to Long Island at the age of six or seven, he apprenticed himself out in New Brunswick “to learn the secrets of farming, forestry and carpentry.”22 Thus A. Hoyt, like H. Nase, cultivated

21 Refer to “Figure 3.1: Situating the Journal-Keeping Farmers Within the Watershed of the Wolastoq/St. John River,” on page 95 herein, for the locations and names of the farmers whose household journals were used as the central primary sources for this study.
LTK with the assistance of people whose experience augmented that which his own immediate social contacts could furnish. The Hoyts settled along the Kennebecasis River, close to a number of neighbours from their former home. Crawford arrived as a child of six or seven, and he grew up farming with his family in one or more counties before accepting the invitation of Upper Canadian Lt. Gov. John Graves Simcoe to establish a homestead on free land for loyal British subjects. Having fulfilled the terms of his land grant in Upper Canada at the turn of the 19th century, Crawford rejoined his family in New Brunswick and settled at Long Reach on the lower Wolastoq/St. John River.

Each of these settlers became a member of a fledgling rural community in which elder members did not have substantially deeper LTK than younger members. While Loyalists carried with them a cultural imperative for agricultural improvement, including the dictum to transform forested ‘wilderness’ into orderly and productive agrarian landscapes, most of these settlers were out of their league with regards to the labour of homesteading. As well, not only did they have to adapt to a climate whose vicissitudes were unlike those to which they were accustomed at home, these were also years of climatic upheaval.23 The late 18th and early 19th centuries were punctuated by short periods of volcano weather, and longer periods of lower than average solar radiation reaching Earth. These factors exacerbated the severity of some winters, as well as shortened some growing seasons or rendered them cooler than they otherwise would have been. This period was therefore a very unstable time for the LTK of recent

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23 Refer to “Appendix I: Seasonal Commentaries,” following the body of this dissertation, for a sense of the high variability in potential weather conditions during a given season in the Wolastoq/St. John River Valley.
Euro-American immigrants. Many leaned on providential weather beliefs, understanding climatic upheaval to be connected with human sin. Others responded to the challenges of these years by moving on to warmer and more economically inviting locales.  

The journals of H. Nase, Dibblee, and Crawford reflect their anticipation of climatic norms rooted in their experiences further south. For example, on December 20, 1817, Dibblee observed: “Never a finer Day in Winter even at New York - we never had such weather before - Not a Day that might be called Cold in this Country yet.” Throughout his journal, Dibblee claimed to recollect conditions in his previous home as well as in earlier years on the farm near Woodstock. He remarked upon the unprecedented dryness of the ground, warmth, low snowfall by mid-January, and the mildness and pleasantness of the winter. Crawford’s observation on December 29, 1818, that “this hes bin a very Cold december sum says the most so that we ever had sence we bin in this country,” elucidated the cultivation of social memory of weather and climate among members of a fairly young rural community. A shared history of emigration created a temporal and experiential gauge of the relative normalcy of

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25 Frederick Dibblee, “Extracts from Rev. Frederick Dibblee’s Diary, 1803-1826,” 2012, http://gwydir.demon.co.uk/io/genealogy/earlydib/frederickdiary.htm, September 24, 1823, July 5, 1820, January 15, 1819, March 1, 1825. All quotes from Dibblee’s journal are from this online source unless otherwise stated.
conditions that could be assimilated by community members and transmitted to younger
generations.26

The other five farmers whose journals furnish much of the material for this study
were second- and third-generation settlers whose relatives had fought in the
Revolutionary War, and who benefited from the knowledge of weather and climate, and
adaptations to them, cultivated by previous generations. Jacobina Campbell (1796-
unknown), the daughter of a Highland soldier, moved full-time to the rural community
along the Nashwaak and Macktuguack (Tay) Rivers when she was a teen. Although the
family had spent some time on the farm in the years prior, it is unclear how much actual
experience and local knowledge Campbell and her siblings had cultivated. Even if their
father had grown up on a farm prior to learning a surveyor’s skills and joining the
military, the family moved to the Nashwaak following his death, and their mother’s
education had occurred within New York’s high society. Yet the young Campbells had
extended family and Highland neighbours on the Nashwaak, some of whom had
received woods training from Indigenous hunters.27 It is likely Campbell and her
siblings learned some LTK, including observational skills, from these late 18th-century
settlers, in addition to borrowing livestock to assist with land clearing and other tasks.28

Thomas Miles (1789-1858), who farmed on some of the most fertile soils in the River

26 Crawford’s claim gained credibility as a collective observation, as well as within the context of his own
record. Dibblee, on the other hand, used hyperbole more frequently than the other farmers whose records
are studied herein. Thus, superlative terms such as “never” and “most” must be treated with salty
skepticism when they appear in his journal.
27 Nashwaak Bicentennial Association, And The River Rolled On…. Two Hundred Years on the Nashwaak
(Nashwaak Bridge, New Brunswick: Naswaak Bicentennial Association, 1984), xii.
28 Jacobina Campbell, A Calendar of Life in a Narrow Valley: Jacobina Campbell’s Diary, Taymouth,
New Brunswick, 1825-1843, ed. D. Murray Young and Gail Campbell (Fredericton, NB: Acadiensis Press,
2015), 34.
Valley at Maugerville, was descended from Loyalists granted land in this already-settled township in 1783. Maugerville’s Loyalists thus benefited from almost 30 years of LTK cultivated by prior settlers from lower New England. Miles’s younger brother was swept downriver in the rushing torrent of the spring freshet in 1803. His awareness of risk and vulnerability was no doubt influenced by this personal trauma as well as by the larger family and culture of which he was a part. Janet MacDonald (1795-1887), whose father was a Scottish Loyalist from New York, farmed with her family along Lake Washademoak, on land that was part of the estate where she grew up. Her husband’s ancestors had been among some of the earliest Euro-American settlers in the vicinity. The MacDonald’s extended network of family and neighbours had around 70 years of local experience by the time she began her journal in 1857 at the age of 62.

Finally, Philip Nase (1821-1885) and Isaac Ketchum Hoyt (1824-1855), were third-generation settlers descended from emigrant farmers who had kept records themselves. Philip (P.) Nase, grandson of Henry Nase, grew up along the Nerepis River near his grandparents’ farm. He set out to cultivate diverse knowledge in life, engaging in farming as well as the grocery, lumber, and real estate business. P. Nase likely missed out on some of his continuing education in LTK when he moved his family to Indian Town to run the store. Yet they were back on the Nerepis seven years later, and during their time on the farm, the Nases benefitted from a circle of family and neighbours, many of whom had stayed on the land and maintained local social memory of weather and climate. Isaac Ketchum (I. K.) Hoyt likely grew up in the vicinity of the

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29 There was, however, conflict between some of the previous inhabitants and the Loyalists who received land grants at Maugerville; Edwin Wallace Bell and Lilian M. B. Maxwell, *Israel Kenny His Children and Their Families*, Reprint edition (Fredericton, NB: George H. Hayward, 1946), 4-5.
Kennebecasis and knew his grandfather, Azor, whose journal he continued after the latter’s death in 1842. Like P. Nase, his LTK was supported by the experience of local Loyalist settler communities.

Not only was the LTK of these five farmers’ communities more established, so too were organizations for agricultural improvement and the dissemination of scientific interpretations of natural processes, and the mid-19th century climate was generally milder than that of the decades prior. The first agricultural societies initiated the importation of seeds in the 1820s, and by mid-century the predominantly elite members of these associations were also importing ‘improved’ breeds of livestock. By this time, Mechanics’ Institutes had also begun to offer lecture series on natural history, scientific discoveries, and innovative technologies including the steam engine. These decades continued to have colder seasons, years, and periods, in some cases influenced by distant volcanic eruptions. Still, the combination of a more temperate climate with expanded infrastructure for transportation and communication, as well as increasing population density, created opportunities for settlers who could access and take advantage of them.30

All of the farmers whose journals are used in this study were in advantageous positions within the climatically-influential Wolastoq/St. John River Valley. The very soils at the foundation of their farms were deposited after the close of the Wisconsinan glaciation around 18,000 years ago. In addition, most of these farmers also settled land nourished by at least 2,000 years of organic sedimentation on the bed and shores of

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Glacial Lake Acadia. This ancient lake stretched from above Fredericton to at least as far south as Bellisle Bay, and vestiges of it remained in the form of rivers and lakes that moderate the climate of the surrounding landscape by absorbing, holding, and re-radiating heat. While the Dibblees lived north of the lake’s ancient boundaries, they farmed rich intervale that was nourished by thousands of years of higher water levels in the River as well as by the annual spring freshet. The Winslow, Miles, and MacDonald families farmed within the lowland region of the River Valley that has the longest growing season in the province, due to the basin topography and extensive wetlands around Grand, Washademoak, French, and Maquapit Lakes and the Wolastoq/St. John River. The Campbells lived beyond the bounds of this region and the glacial lake’s legacy in the soil, although they too farmed fecund intervale soils and benefitted from the microclimatic influence of the Nashwaak and Macktuguack (Tay) Rivers. There are also rich alluvial soils along the upper Kennebecasis River and its tributaries, where the Hoyts farmed. Beneficially for settlers in this area, freshet flooding was historically less dramatic in this region than further north along the Wolastoq/St. John. Finally, the Crawfords and Nases (when living along the Nerepis) farmed intervale land with the microclimatic benefit of the Wolastoq/St. John, Nerepis, and Kennebecasis Rivers. In the city of Saint John, P. Nase’s family encountered an even more moderate climate that includes neither the extremes of cold nor of heat that occur elsewhere in the River.

Valley. Precipitation levels along the coast are some of the highest in the province, which had ramifications for transportation and the Nase family’s grocery business.\(^{33}\)

Regardless of where they lived within the River Valley or the nature of the climate, the Wolastoqey and Euro-Americans and their descendants understood the River Valley in dramatically different ways. The Wolastoqey understood it through their LTK, which included their seasonal uses of the entire watershed, and the interdependence of their oral traditions with the climate as well as the River’s flow and form.\(^{34}\) Wolastoqwiyik recognize their interrelatedness with the rest of life, which anthropologists refer to as a kincentric worldview.\(^{35}\) Wolastoqey oral traditions and histories record knowledge of how to interact responsibly with the River’s flow, other creatures living in the watershed, and the seasons. They also tell how particular weather phenomena were created. For example, Wolastoqey knew their culture hero, Koluscap, had tamed the winds for the people by tying the wing of the giant wind bird, thus stilling the drought-inducing gusts he caused when he beat his enormous wings together.\(^{36}\) Wolastoqey reckoned an annual round as thirteen moons, each related to local signs in nature and corresponding human activities.\(^{37}\) Another way they observed the changing

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\(^{33}\) Zelazny et al., *Our Landscape Heritage*, 73, 182-183.

\(^{34}\) For reference to Wolastoqey oral traditions pertaining to the River’s flow and formation, see Jason Hall, “River of Three Peoples: An Environmental and Cultural History of the Wəlastəkw/rivière St. Jean/St. John River, C. 1550 – 1850” (PhD diss., University of New Brunswick, 2015), 38-41.


\(^{37}\) Evan T. Pritchard, *No Word for Time: The Way of the Algonquin People* (San Francisco, CA; Tulsa, OK: Council Oak Books, LLC, 2001), 19; although European sources claim that Algonquin peoples had
seasons was by the movement of the Great Bear constellation (Ursa Major) through the sky. Andrea Bear Nicholas and James Divine explain that the Great Bear “moves around the North Star once every night and stands in a slightly different position at the same time every evening of the year. … According to most versions of the story, the hunters follow the Great Bear from Spring to Fall, but they kill her only when she stands up to face the hunters in the Fall, which also explains the splash of red on trees” at this time of year. 38 Wolastoqey also recognized signs portending thaw. The term, “puni-apuwockiya/there is a winter thaw,” in Wolastoqey can be foretold from the following conditions: “If a big river has water flowing from its edges out over the ice on a freezing cold day, then a big rain and thaw is coming.” 39 Wolastoqey stories also recount much older transformations, including the breaking of ice dams, vestiges of the last glaciation, which eventually caused the River to follow its current path over the Reversing Falls and out through Saint John harbour. 40

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In contrast to Wolastoqey Local Traditional Knowledge, the LTK of Euro-Americans and their descendants was refracted through the value they placed on agricultural improvement, in line with Christian teachings as well as scientific understandings of soil chemistry and Enlightenment desires for efficiency. To study the settlement of the Wolastoq/St. John River Valley at this time is to highlight the intersection of the challenges posed by the environment, including weather, with the cultural imperative for improvement, and the desire of most settlers, who were displaced themselves, to establish a farm to provide them a sufficiency and a competency.41 Unlike in many other parts of North America, the environmental and subsistence imperatives trumped improvement imperatives for many settlers in New Brunswick between the late 18th and 19th centuries. Wolastoqey LTK provides one foil for Euro-American approaches to land use. The agricultural and forest knowledge, weather interpretations, and cultural practices of Acadians, Métis, and black settlers living in the River Valley offer other windows onto the possibilities for subsistence and community life.42 Their processes of cultivating LTK have invited other studies.43

This study explores the complex tensions among improvement, ecological, and subsistence imperatives through the lens of settlers’ praxis of observation. I initially developed the concept of praxis of observation through a coupling of anthropologist Tim

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42 Piper, “Colloquial Meteorology,” 106.
Ingold’s work with that of Brazilian popular educator and philosopher Paulo Freire. In a collection of essays titled *Being Alive*, Ingold articulates how the perceiving actor “in the weather-world” is attuned to celestial and seasonal rhythms. In this total experience, observation, movement, and description are intertwined. For Freire, praxis is the integration of theory and practice, necessary for the researcher who is aware of the emancipatory potential of knowledge rooted in experience. It was through farmers’ own experiential learning, while enfolded by local weather in particular places as well as within specific human families and communities, that they developed their personal praxis of observation. The concept of praxis as “a working model” was popular in the 19th century, and usefully captures the concreteness and dynamism of farmers’ methods of learning and living local weather. Through personal observation, communication with others over time, and with the help of their journals, the farmers of focus cultivated a dynamic understanding of reality that incorporated interrelationships among water and ice, wind directions and speeds, currents, different modes and routes of transport, temperatures, precipitation, and soils. This working model helped them understand changing conditions, effectively deduce the possibilities for action and inaction, and adopt effective strategies for planting, harvesting, travel and transport of goods, labour, and socializing. In short, farmers’ praxis as a working model allowed them to orient

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46 “Praxis,” *OED*. 
within their world at all times, and helped them to organize their awareness for adaptive responses. The journals they kept were working models of sorts, venues for observation and prediction, and a record of conditions, their patterns, and human perceptions and strategies, for the author and often for future readers. As “living” documents, farmers’ household journals served as a touchstone for memory and some authors re-read and consulted their own records in order to make comparisons between conditions in a given year and their previous experiences. Members of younger generations sometimes read through the journals as well, as did Crawford’s son Wallace in 1881.

This study conceptualizes farmers’ praxis of observation as a form of “being-knowing,” thereby accentuating the centrality of place-based experience to the development of local weather knowledge. I follow the arguments of anthropologists, especially Ingold, feminist theorists including Donna Haraway, and historian Joy Parr, about how our embodiment in the world influences the way we perceive, think, and act. Ingold and Terhi Kurttila describe knowledge as ‘skill in interaction with the world.’

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48 Crawford’s son Wallace reread the diaries in 1881, adding his own recollections alongside some entries. Beneath Crawford’s entry for November 7, 1819, “Remarkable dark day all day, but Especially from twelve in the day until three in the afternoon, so dark that we had a candle alight part of the time,” there is a note signed BWC that reads: “Remember this well.”


with other beings and elements of the world. Through these relationships, people are physically as well as psychically and spiritually formed by and for the work they must do, a process of cultivating and applying knowledge in their daily lives. Some anthropologists refer to this embodiment of knowledge over time as *enskilment*. People gradually become more knowledgeable as they interact more and more deeply with the places they live and rely upon. Embodied knowledge involves the training of our perceptions in concert with the training of our muscles and bones. We "‘lear[n] to see’ in cultural ways," that are embedded in multisensory practices.

Multisensory awareness is an interwoven totality that includes tactile, auditory, olfactory, and visual cues, as well as more subtle perceptions including “proprioception, the sense of bodily knowing in space; kinesthetics, the gait, pace, and posture with which the moving body encounters its surroundings; and proxemetics, the emotional comfort with nearness and distance.” Working with all of our senses, or at least all those we can access, facilitates “spatial orientation and the coordination of activity” in a particular place. People may not distinguish among information received through different senses; indeed, the interconnectedness of sensory perceptions can be informative in itself. Perception can be broken down into sensual experience (i.e. information received through the senses), and the mental, ideological, cognitive

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51 Grasseni, “Learning to See,” 152 for direct reference to *enskilment*.
dimensions of how this sensual information is interpreted and understood.\textsuperscript{56} This broad definition elucidates the dynamic relationships between direct experience, culture, place, and personality. It also illuminates the usefulness of a phenomenological approach to a study that seeks to understand how people viscerally experienced the entwining of weather and daily life.\textsuperscript{57} Neuroscientists now understand that an individual’s thoughts and actions, as well as culture, influence the structure of the brain. This interdependence among what we experience, think, and do, and how we learn who we are – at chemical, electrical, and musculoskeletal levels, as well as in terms of our externally demonstrated skill sets – illustrates the intimate interdependence of any sentient being with the world around them.\textsuperscript{58} Farmers’ journals are a record of sensory perception, and thus also reflect the learning and enskilment of their authors.

A fine-tuned knowledge of weather signs “is not something that is handed down as a set of customary prescriptions or formulae; rather it grows through a lifetime’s experience of living in a place and moving in its environs.”\textsuperscript{59} The Nova Scotian seaman, Arthur Spearing, had such a nuanced understanding of weather signs that in the late 19\textsuperscript{th} and early 20\textsuperscript{th} century, he was called upon by his neighbours to advise on the correct time to harvest hay or hold picnics and strawberry festivals. Neighbours who

\textsuperscript{56} Parr, \textit{Sensing Changes}, 1.
\textsuperscript{58} Norman Doidge, “Appendix 1: The Culturally Modified Brain,” in \textit{The Brain That Changes Itself: Stories of Personal Triumph from the Frontiers of Brain Science} (New York: Viking Penguin, 2007), 287-311. See notes to Rane Willerslev, \textit{Soul Hunters: Hunting, Animism, and Personhood Among the Siberian Yukaghirs} (Berkeley, CA: University of California Press, 2007), 186-88. This conceptualization of being-knowing does not suggest that experiential learning is a seamless experience of Heideggerian “being-in-the-world;” most of the time, people have to work at it, and their experience is typically mediated by culture in one or more ways.
\textsuperscript{59} Ingold and Kurttila, “Perceiving the Environment,” 189.
had grown up in the same community no doubt learned some weather signs and lore, yet they did not share Spearing’s nuanced skill at interpreting winds, clouds, and qualities of light and color in the sky. At the turn of the 21st century, Randolph Parent and Rob Hagerman of Bear Island, New Brunswick, were renowned within the memories of their descendants and neighbours as having similar skill. The weather holds signs for those who can read them.

Euro-American farmers emigrating to Nova Scotia and New Brunswick from the South brought weather lore that was most applicable elsewhere, although it shared an orientation towards the Atlantic Ocean to the East rather than to the West. Their knowledge also carried insights into what to expect from the continental westerlies, not to mention winds from the North. According to folk historian of North American weather knowledge, Eric Sloane, it took roughly a century for European emigrants to New England to develop their own local weather lore. Some of their observations and proverbs were based directly on the wisdom of their Indigenous neighbours. As evidence of the continued need for emigrants to adapt their weather lore to fit new homes on the Western shores of the Atlantic, Sloane quotes an immigrant father writing to his son across the ocean from America in 1762: “The greatest differences here, you shall find in the weather. You shall need the stoutest of cloathing. The sky and its signs

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and the seasonal changes are most unlike those to which we are accustomed."64 When settlers arrived in the Wolastoq/St. John River Valley, they once again encountered surprising seasonal changes, as well as extremes of heat in summer and cold in winter.65 Similarly, their understandings of which weather came out of which quadrant in the sky (a helpful rule of thumb to guide forecasting) needed to be fine-tuned to place, as well as to the way the four seasons expressed themselves in their new homes.

In addition to developing knowledge of local weather, settlers also carried traditional knowledge, technologies, practices, attitudes, and religion, from generations of European and Euro-American farmers as well as from their own distinct families.66 Farming is a way of life, as are lumbering and fishing.67 Traditional knowledge, wherever and by whomever it is cultivated, is knowledge for and inseparable from, a particular way of life. It is learned through interaction and multisensory perception in “nature,” labouring and traveling alongside other people and animals on the land and

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65 Anya Zilberstein, *A Temperate Empire: Making Climate Change in Early America* (New York: Oxford University Press, 2006), 97, for an example of Boston’s colonists adjusting “to ‘sharp and longe’ winters” in the early 17th century.

66 Colin Renfrew, *Prehistory: The Making of The Human Mind* (New York: The Modern Library, 2009). See “Chapter 9: Appropriating the Cosmos,” especially pages 155-159 regarding evidence from the upper Paleolithic in France of human awareness of the phases of the moon, the cycles of the sun, and subsequent development of calendars. See also Carl Sagan, *Broca’s Brain: Reflections on the Romance of Science* (New York; Toronto: Random House Publishing Group, 1980), 104-106; Sagan argues that astronomers in ancient agricultural societies were so adept at interpreting the cosmos that some developed two calendars, one for civil use based on the simple, whole number of 360 days per year, and one for agricultural use that reflected the complexities of lunar and solar cycles (106). On the family as a centre of the transmission of particular weather proverbs in relevant contexts across the generations, see Cindy Day, *Grandma Says: Weather Lore from Meteorologist Cindy Day* (Halifax, NS: Nimbus Publishing, 2013), 86; “I heard them over and over, year after year, and not just in passing. Grandma always made a big deal about weather lore. Sometimes she would tell a story about how her father or even grandfather would watch for the very same signs.”

Some of the settlers’ agricultural practices and knowledge of weather signs were a legacy of thousands of years of farming in Europe and the Near East. Through migration, trade, conflict, and travel, the farmers of Western Europe also adopted crops and methods of growing them that had originated in diverse microclimates and geographies in the Afro-Eurasian world over thousands of years. Archaeologists estimate that farming practices in Ireland and the United Kingdom date back at least 6000 years. Farmers there likely developed or adopted local beliefs and practices, as did their counterparts around the world. Often, these adaptations included elements from the Indigenous cultures they displaced, such as happened on the western edge of the Eurasian steppe as sedentary agriculturalists displaced pastoralist cultures. Some emigrants to the British American colonies brought these beliefs with them, including the understanding that the earth was alive and gave people life. Farmers had the ability and responsibility to honour, nourish, and celebrate the earth’s cycles. In many communities, these beliefs coincided with Christian traditions. Yet, changing economic and cultural influences over the 17th and 18th centuries often convinced colonists to replace explicitly Earth-based traditions with Christian beliefs and church services. Mechanistic metaphors gained ascendancy with

68 Pritchard, No Word for Time, 8-11; Algonquin cultures do not separate “artistic expression” from other practices in daily life.
69 Merchant, Ecological Revolutions, 103-104, 113-17.
industrialization in Western Europe and contributed to perceptual shifts about the nature of life and human purpose.

Despite this rich material, cultural, and religious history, not all emigrants to New Brunswick carried substantial traditional knowledge about farming with them, while most brought the cultural imperative for “agricultural improvement.” Some were from urban, landless, and upper- or middle-class backgrounds and had to cultivate practical agricultural knowledge from scratch. Settlers from the colonies to the south probably brought awareness of the Indigenous triad of corn, beans, and gourds, even if they lacked experience growing them. Some brought knowledge of poly-cropping or growing all three plants in a mixed plot.72 Most settlers also brought their familial and personal experiences and attitudes toward evangelical Christian revival, with its emphasis on the individual’s personal relationship with God and on local decision-making structures. Settlers had also been exposed to the rise of rationalism and quantification; some had readily adopted these approaches to reality.73

Rationalism and quantification were key aspects of ‘modernity’ and were significant to proponents of “improvement agriculture,” who were interested in increasing the productive capacity of the landscape, farm animals, and farmers themselves. Self-professed ‘improvers’ were typically among the “upper crust middling” or “elite” members of society, and were motivated by the Enlightenment vision of mastering nature efficiently, and so justifying the appropriation of the lives of other animals, including of other human beings, as well as plants, minerals, and entire

72 Merchant, *Ecological Revolutions*.
continents. Some of their agricultural strategies had roots in the British agricultural revolution catalyzed by practices developed in Flanders (now parts of France and Belgium) in the 15th century. For example, improvers advocated a four-fold crop rotation system instead of the medieval rotation of three different crops followed by a year of fallow. These practices marked a more intensive agriculture and included growing turnips and clover as fodder crops that also complemented soil chemistry.

Agricultural improvers conceived of traditional knowledge – whether held by other settlers or Indigenous peoples – as static and, ironically, abstracted from place, bound up in activities that could be learned through imitation, whereas “modern” agriculture was becoming a science. Only through text-based study could farmers grasp the complexities of scientific farming. Ironically, improvers also sought to stimulate ‘the spirit of emulation’ among would-be acolytes, recognizing that social relations and imitation played a significant role in learning. Ingold and Kurttila reflect on the persistence of a limited official definition of LTK when they distinguish between the understandings of knowledgeable locals revealed through fieldwork and the state-centric modernist idea of traditional knowledge as passed down genealogically in the

form of “cultural heritage.” Historically, as well as in the 21st century, this conceptualization has facilitated the sidelining of LTK as ‘unscientific,’ thus asserting the dominance of Western scientific expertise in government priorities and policy. It has also allowed the state to legitimize the relocation of Indigenous people and others and to eliminate their land base, because the cultural heritage model abstracts knowledge – and culture, not to mention people – from place. Yet as various theorists have demonstrated, science itself is simply another form of LTK with its own practices of calibration, its own ‘ecologies’ created and managed in laboratories and test plots, and its own cultural traditions.

While upper and middle class improvers employed a scientific language of soil chemistry to impress or ostracize those without the resources to exert dominion over other beings and natural systems, the cultural imperative towards agricultural improvement was part and parcel of Euro-Americans’ settler imperialism in New Brunswick. The term improvement was initially a reference to “operations for monetary profit, where it was often equivalent to invest, and especially to operations on or connected with land,” including the enclosures of common and peasant lands by British elites. Elites proclaimed their own uses of the land to be more “productive” and

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thus justified land seizures for agricultural exploitation and personal profit.⁸¹

Furthermore, in the 16th through 19th centuries, European improvers and colonial promoters believed that land clearing ameliorated the climate, at least in colonies in the northern hemisphere.⁸² Europeans who had feared that climate was responsible for what they perceived as the ‘degenerate state’ of Indigenous people in North America were thus able to reverse the equation and argue that Indigenous people had not progressed from a “primitive state” because they had failed to improve their lands.⁸³ Despite the Royal Proclamation of 1763, which prohibited the granting of “‘lands within or adjacent to the territories possessed or occupied by… Indians,’” Nova Scotia’s administrators granted tens of thousands of acres of land to “gentlemanly elites,” and also failed to distribute the Proclamation among the Wolastoqey. Colonial administrators and their friends, including Joshua Mauger, for whom Maugerville is named, expropriated almost all of Wolastokuk or the homeland of the Wolastoqey, as well as Mi’kma’ki, the homeland of the Mi’kmaq.⁸⁴

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The placenames we use when talking about local weather, or reconstructing the history of knowledge-making in the Wolastoq/St. John River Valley, are significant because of the political, economic, and cultural power of naming. In response to the local history of settler imperialism, and out of respect for the deep history of Wolastoqey LTK in New Brunswick and beyond, this study uses Wolastoqey placenames whenever possible. It includes British and/or current commonly used place names in brackets, or in the case of the Wolastoq/St. John River, following a “/”. As historian Andrea Bear Nicholas points out, renaming the River itself, as well as renaming settlements and other locations along its course, was more than a symbolic act or an assertion of possession. “[T]he erasure of Maliseet place-names was, in many ways, a crucial step in separating Maliseets from their land, a psychological weapon of sorts, since Maliseet place-names defined the relationship of their people to their sources of life in the land.”85 Wolastoqey have recently called upon the provincial government to restore the River’s traditional name and honour its history as well as Canada’s commitment to the 2007 United Nations Declaration on the Rights of Indigenous Peoples. Article 13 of the Declaration includes reference to Indigenous peoples “revitaliz[ing], us[ing], develop[ing] and transmit[ing] to future generations their histories, languages, oral traditions, philosophies, writing systems and literatures, and to designate and retain their own names for communities, places and persons.”86

The history of settler imperialism is significant to our understanding of how farmers learned local weather knowledge in the Wolastoq/St. John River Valley, because it laid the foundation for them to make their homes along the River. While this study explores farmers’ LTK, it is understood that the knowledge cultivated by tens of generations of Indigenous people in the region is fathoms deeper, as it is based on thousands of years of inter-being with this place, their homeland. In language that reflects a sense of ownership of history, if not of ‘land,’ anthropologist W. E. H. Stanner attempts to translate some of the meanings of homeland for an Indigenous people:

When we took what we call ‘land’ we took what to them meant hearth, home, the source and locus of life, and everlastingness of spirit. At the same time it left each local band bereft of an essential constant that made their plan and code of living intelligible. Particular pieces of territory, each a homeland, formed part of a set of constants without which no affiliation of any person, no link in the whole network of relationships, no part of the complex structure of social groups any longer had all its coordinates.87

In contrast to this embeddedness within place, the settlers who came to the River Valley in the second half of the 18th century and through the 19th century had family histories of ex-placement. Whether their ancestors had lived to see the end of a three-lives lease in Ireland, been cleared from their lands in order to make way for sheep or more desirable human colonists, or eked out a meager existence as landless labourers for generations, they may have made the River Valley their home, but it was not their homeland.88 This informed how they perceived and interpreted daily life, and the relationships they

87 Chamberlin, If This Is Your Land, 79-80.
established with local weather and the rest of New Brunswick nature, as well as with one another.

Yet some settlers did build deep enduring relationships with particular places and form strong communities in the River Valley and throughout the region, and their descendants are still rooted here today. MacDonald and P. Nase, for example, were New Brunswickers. To say that a person makes their home in a place, and thus identifies with it as part of who they are, is no small claim. “Home” is a deeply meaningful concept in its own right, and for most settlers in the region, it was hard won. As Graeme Wynn Rusty Bittermann, and Robert MacKinnon observe from detailed case studies of two colonial communities in Nova Scotia, “[t]here is much to be learned from careful investigation of the ways in which ordinary people responded to the ‘great changes’ that impinged on their lives. If struggle and sacrifice, hardship and conflict, frustration and failure are as much part of the story as success and fulfillment, so be it. There is no shame in resilience.”89 Vulnerability and resilience are common themes of case studies in climate history as well as contemporary research into adaptation to climate change. Although the farmers’ journals at the centre of this study reveal the experience of settlers who did not dwell on the sharpest ecological or socio-economic edges of colonial life, they also highlight the continuous intimate relationships between farmers and local weather, no matter where they lived or the particular opportunities and challenges they faced.

There is a small body of literature that is also focused on using journals and correspondence to understand the processes by which settlers dwelling in lands that were part of the British Empire, or immigrants of Euro-American ancestry, learned to live weather in their new homes. Canadian historian Liza Piper based her study, “Backward Seasons and Remarkable Cold,” on Benjamin Crawford’s journal, which I use in this project, with a focus on the years 1812 through 1821. While Piper sought to understand and reconstruct weather patterns at Long Reach on the Wolastoq/St. John River, she was also keenly attentive to how settlers perceived and understood weather and climate, including through social memory. As well, Piper investigated the relationships among climatic phases and the socio-economic strategies of farm families. The current study builds directly on her work and delves more deeply into understanding settlers’ learning processes and the ways they contended with high seasonal and interannual climatic variability. This study also expands on farmers’ repertoire of strategies to work with the implications of weather and climate in daily life, especially with regards to agriculture and transportation. In *Home in The Howling Wilderness*, Peter Holland asks a similar set of questions about the ways that British immigrants to Aotearoa (New Zealand) made local knowledge of weather and climate and adapted their agricultural practices in turn. Settlers were challenged to learn about the extent of possible weather conditions on their farms and identify the variety in

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microclimates across short distances of landscape. British immigrants to New Zealand and Euro-American settlers in the Wolastoq/St. John River Valley were part of the same larger imperial project. They each carried an agricultural package and cultural prejudices that both legitimated the dispossession of Indigenous people and prevented most settlers from learning to understand and work within local weather and climate from those for whom their new homes constituted homelands.91

Several other studies examine the centrality of culture to the cultivation of LTK of weather and climate, and the importance of LTK to science. Historian Conevery Valenčius’ *The Health of The Country* focuses on American settlers’ assessments of the relative health or salubrity of the newly ‘opened’ Western states of Missouri and Arkansas in the 19th century. She identifies “the porous boundaries between science and nonscience,” and finds “in the swirl of everyday description of fields, river bottoms, and human well-being much that illuminates the history of scientific and technical knowledge.”92 The current study similarly witnesses farmers creating an LTK that was blended with scientific approaches and understandings. Archaeologist Toby Pillatt identifies what he calls the reconciliation of tradition and science in the diaries of two farmers in 18th-century Cumbria. He, too, draws on Ingold’s concept of the weather-world, extrapolating from it to argue that research into the historic intersections of climate and society need to recognize that climate was a lived reality intertwined with people’s sense of place and self. Worldviews and environmental attitudes, as much as

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particular geographies, have historically informed human perceptions of climate.\textsuperscript{93} Georgina Endfield and David Nash’s research on European missionaries in central southern Africa reflects exactly these factors at play in their perceptions and interpretations of weather and climate. Cultural assumptions and personal experience informed missionaries’ sense of climatic normalcy and of what constituted legitimate local knowledge of weather and climate. Endfield and Nash expose these situational foundations of the desiccationist discourse of European colonials in parts of Africa.\textsuperscript{94} Their analyses, coupled with the confidence of North American improvers in climatic amelioration through forest clearance, demonstrate the significant influence that colonial and imperial projects have had on ‘scientific narratives.’ Hindsight informs us that climate had been telling its own story all along.

This study is comprised of seven chapters, in addition to the introduction, each of which explores settlers’ praxis of observation in a particular context, and integrates methodological and historiographical issues. The first chapter introduces the journal-keeping practices of farmers, situating them within the oral communal culture of rural life, as well as within the increasingly literate culture accessible through newspapers and at times mandated by the state. It draws on the historiographies of weather lore, literacy, communication, and media to demonstrate the ways that farmers cultivated Local Traditional Knowledge (LTK) of weather and climate, as well as how their society as a whole was influenced by the rise of print culture. The second chapter provides a more


fulsome background on each farmer of focus in this study, including reference to his or her history with agriculture, or lack thereof, as well as factors influencing familial settlement and farming endeavours. This chapter illuminates the larger world historical context of immigration to New Brunswick as well as out-migration, which reveals settlers’ responses to broader pull factors and local push factors. The next three chapters explore settlers’ praxis of observation in the context of transportation on the variable medium of the Wolastoq/St. John River and connected waterways. Chapters 4 and 5 analyze human vulnerabilities and strategies to maximize access to transportation on waterways during the cusp seasons of ice formation and break-up, and spring and fall freshets. Chapter 4 is focused on ice seasons and draws on literature related to larger trends in regional weather patterns across the 19th century, and on how climate historians understand the relationships among weather, climate, and human decision-making. Chapter 5 integrates work on farmers’ historic adaptations to freshets and on the flooding history of the central and lower River Valley. Chapter 6 examines the influence of water levels on transportation, milling, and fishing at different points throughout the year. It recognizes the interdependence of colonial subsistence and industry with local weather, other ecological constraints, and legal frameworks, and notes the ways that resource exploitation in turn transformed the material context for human land use. The final two chapters consider farmers’ praxis of observation as it pertained to crops and livestock, two key risk areas for agriculture. Chapter 7 draws on work examining farmers and gardeners’ use and creation of microclimates beneficial to the growth of desirable crops, a central theme in our lived agricultural history as a species. Chapter 8 considers the climate and weather-related vulnerabilities, strengths,
and needs, of the various animals that farmers relied upon year-round for labour, transportation, and food. Farmers considered these elements in their adaptive strategies to meet the caloric requirements of their multi-species households, as well as to engage in the formal and informal economies. Each chapter is written with attention to the relationships between people and place, people and animals, and among people themselves, all foundational to farmers’ praxis of observation. Learning to “live weather” was always a collective endeavour.

This study is about farmers’ firsthand knowledge, learned over the course of a lifetime, with the benefit of the social knowledge of elders when possible, and for the purposes of maintaining and re-creating a way of life. The rise of abstract scientific approaches to knowledge, demonstrated in the ethos, literature, tools, and practices of improvement agriculture, challenged settlers’ LTK. It helped to facilitate and legitimate the cultivation of habits of inattention, quite the opposite of settlers’ historic ways of being-knowing as revealed through this study. Understanding the context in which they cultivated their “everyday ecology of attention,” provides insight into the roots of our own habits of inattention in the 21st century. It also reveals the adaptive processes that allowed farmers from elsewhere to learn local weather and climate in the River Valley. Today, “local knowledge-holders” continue to practice embodied awareness of weather and climate in New Brunswick. Yet changes in the culture and economic organization of the province have posed challenges to place-based enskilment in truly local knowledge.95 Current climatic change requires each one of us to take greater

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95 Ben Phillips, one of the filmmakers on the Climate Change in Atlantic Canada Project, notes the challenge of gauging long-term ecological changes in the region based on interview data alone. Ben Phillips, personal communication, November, 2012. The film is available on YouTube: Ian Mauro, Ben
responsibility for our perception and understanding of the nuances of weather, and changes in its patterns, in the places to which we are local. By reconstructing 18th- and 19th-century ways of building and applying local knowledge, this study offers lessons from our elders in how to increase the resilience of our families, communities, and the larger circle of life of which we are a part, if we practice tuning ourselves to the weather-world in which we live.

Chapter 2


When William MacDonald, son of New Brunswicker and farmer, Janet MacDonald, started keeping a record in January 1857, he called it a “Journal of the Weather.” His mother took over the recording task the following April and continued for over a decade.1 On Prince Edward Island, farmer John McEachern began his “Diary or Memorandum of the weather work etc.,” in 1832. When he passed away in 1883, his sons Lauchlin and Dougald kept the record in his stead for another 18 years.2 The journals of two other farmers in this study were also continued by loved ones.3 The titles and life histories of these records demonstrate that many late-18th and 19th-century farmers’ records are best conceptualized as household journals. The root of journal is *jour*, the French word for *day*, indicating a daily record, without the personal connotations of a diary.4 Margo Culley, however, notes that it was not until the 20th

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1 Janet MacDonald Diary: January 1, 1857 – February 8, 1868, MacDonald Family Fonds, MG H 108, Series 1, HIL SPECAR.
3 Diary of Benjamin Benedict Crawford (1810-1837), Benjamin Benedict Crawford Fonds, MC 1115 F 10988, PANB; Hoyt Diary.
century that people commonly associated the *diary* with a private or secret record. As communal records, the journals reflect the collaborative process through which settlers cultivated knowledge of local weather and climate. The inclusion of “weather” in the very title of some of these records reflects the centrality of weather conditions, and therefore weather knowledge, to farmers’ daily lives. Household journals are thus an expression of farmers’ praxis of awareness in action, of their knowledge of local weather and responsiveness to it.

Dramatic changes in communication and transportation technologies over the late 18th and 19th centuries affected daily life in colonial New Brunswick. Farmers thus assembled specific weather knowledge and understandings of effective and appropriate agricultural strategies, as well as more general ideas about the learning process and the nature of reality, under the overlapping influences of local oral culture and global imperial print culture. Farmers adapted methods for cultivating their praxis of observation, or way of being-knowing required for living weather, to reflect these changes. For example, they became involved with agricultural societies or attended lectures hosted by Mechanics’ Institutes, which reinforced the shift from vernacular practices and understandings to abstract scientific interpretations of the world. Improvers and farmers alike integrated scientific and commercial values with spiritual and communal values, albeit to different extents. British attitudes towards nature underwent a dramatic shift between the 17th and 20th centuries, from perceiving the

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universe as alive and spiritual to inert and mechanical. Households journals provide evidence of the coexistence of these worldviews in the minds of many New Brunswickers in the period of study. At the same time, the conventions of the journal form – which were slightly different for each of the farmers in this study – prevent complete insight into the day-to-day lives and larger society of settlers. We are left with mysteries, gaps that we fill imaginatively, whether we are conscious of them or not.

Listening closely to farmers’ voices was – and continues to be – the most effective way to understand how people cultivate local knowledge of weather and climate over time. I thus grounded this study in their stories rather than writing about the weather, climate, and daily life by drawing on official documents, emigrant guides, the correspondence of elites, and statistical accounts, although I occasionally consulted such texts, which appear throughout the study. It would also have been possible to write a history from below that focused on the interdependence of climatic, economic, and social dynamics for the casual, itinerant, and seasonal labourers who appeared infrequently – if at all – in the journals, and were often anonymous. For example, amidst the “[v]iolent wind and drifting snow” of “[a]nother severe snow storm” on January 4, 1804, farmer and colonial administrator Edward Winslow reported the freezing death of an unnamed servant who worked for “Mr. Bell.” Clearly, important historical recovery work is needed to illuminate the lives of “the people without history.” Yet only through farmers’ own words could I witness the intimate and

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6 Carolyn Merchant, *Ecological Revolutions.*
7 In her keynote on the writing of history at the UMaine/UNB Conference in Orono, Maine, 2010, Gail Campbell discussed the imaginative task of the historian, as well as seeded the possibility that the past was indeed a foreign place, where people do things differently, à la L. P. Hartley in *The Go-Between* (London: H. Hamilton, 1953). I now believe it is, and they did.
visceral ways that settlers learned and inhabited local weather. Although all of the farmers in this study enjoyed relative privilege in colonial society, their diverse approaches to journaling and their frequent references to other people in the community allowed me to explore the lives of farm families with different opportunities, challenges, and concerns. That said, the particular situations of backland farmers, settlers without capital, emigrants without family members close at hand, and other folk of modest means, often resulted in vulnerabilities to weather phenomena that were unknown by the farmers of focus in this study.9

Farmers’ Journaling Practices

Household journals reflect the concerns of family and community members through a culturally specific medium encouraged by Protestant religious traditions, Enlightenment enthusiasm for natural laws, and Christian-influenced almanacs.10 Puritan introspection prompted diary-keeping amongst the first generations of British settlers on the North American continent.11 In New and Old England in the 18th century, natural philosophers began to coordinate their practices of keeping weather

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9 For discussion of some specific struggles faced by backland farmers in New Brunswick during this time, see pages 276-77 and 335 below.
journals with countrymen on the same side of the Atlantic, and eventually shared these texts across the sea, so as to understand how the elements of weather traveled from place to place over time.\textsuperscript{12} The colonial tradition of journaling continued through the 19\textsuperscript{th} century, in rural as well as urban settings, in part related to the continuing encouragement of self-reflection by the religious traditions practiced in the region.\textsuperscript{13} With the exception of the Bible, almanacs were the most popular and commonly owned reading material. The first book published in America is purported to have been “an almanac for 1639, calculated for New England by Mr. William Pierce, mariner.”\textsuperscript{14} Almanacs were compiled annually and included pages for each month of the year with notation about the phases of the moon throughout the months as well as weather forecasts. Their authors and editors were typically influenced by the ethos of “agricultural improvement,” which was accompanied by its own cultural traditions, including the understanding that rational farming involved record-keeping. By the 1770s, almanacs often inserted blank pages for owners to record observations and

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\begin{itemize}
  \item\textsuperscript{14} Mark Kurlansky, \textit{Paper: Paging Through History} (New York: W. W. Norton, 2017), 206.
\end{itemize}
errata.¹⁵ For example, a Connecticut *Agricultural and Economical Almanack* for 1817 counselled that each day, farmers should:

> [s]et down in writing, on the blank pages, ordinary, new, or useful events; especially such facts as you may wish to remember, or such observations as can serve to elucidate truth, correct error, or in any way prove beneficial. Miscellaneous statements and remarks would be desirable, on tools, implements of husbandry, carriages and bldgs.; on indigenous and exotic plants, grasses, grains, vgs, and roots…and likewise on the value of produce and the expense of living. Fact, actuary & conciseness are requisite.¹⁶

This description most closely fits the journal practice of the New Brunswick settlers I have studied. As noted in the introduction, the word ‘practice’ is semantically kindred to praxis. Both terms emphasize activity and the application of knowledge beyond the theoretical realm.¹⁷ Keeping a journal was an important expression of a farmer’s praxis of observation in action. Furthermore, the advice given in the 1817 almanac indicates the variety of skills, responsibilities, and knowledge required for farming. The interdependence of these requisites with the weather is implied. As one almanac

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¹⁷ “Praxis,” *OED*; One definition is “action or practice; spec. the practice or exercise of a technical subject or art, as distinct from the theory of it; (also) accepted or habitual practice or custom.” Similarly, a definition of practice is “[t]he actual application or use of an idea, belief, or method, as opposed to the theory or principle of it; performance, execution, achievement; working, operation; (Philos.) activity or action considered as being the realization of or in contrast to theory (cf. Praxis).” “Practice,” *OED*, 2018, [http://www.oed.com.proxy.hil.unb.ca/view/Entry/149226?rskey=KXzRoq&rresult=1#eid](http://www.oed.com.proxy.hil.unb.ca/view/Entry/149226?rskey=KXzRoq&rresult=1#eid). Both definitions are focused on activity and the application or expression of knowledge. Neither word connotes an unpracticed or theoretical approach.
observed, “The sounds and smells and signs of weather … do set the full rich stage for each day of farming life.”

Almost 20 years later, William Alcott scorned that approach to journals in his *Young Man’s Guide*, claiming it had been “‘found useless.’” Alcott encouraged more critical reflection in diaries, including an assessment of improvements that might be made on the farm. He suggested the following as a model:

> July 2 Our haying season commenced. How fond I am of this employment! How useful an article hay is, too, especially in this climate, during our long and cold winters! We have fine weather to begin with, and hope it will continue. I think a very great improvement might be made in our rakes. Why need they be so heavy for light raking? We could take up the heavier ones when it becomes necessary.

Alcott’s observations were more detailed, his emotional response – his fondness for haying – was articulated, and his thoughts on improvements recorded, in a way that suggests he did not grow up immersed in rural culture. If he did, he was not interested in communicating with many of his neighbours, who would likely have felt alienated by his approach. Alcott’s proposals reflect his strong commitment to the tenets of “improvement agriculture,” which were often espoused and propagated by gentlemen farmers who did not have to grow their own food to survive. As well, his disparagement of the concise observational and account book diary is in keeping with improver critiques of so-called unproductive techniques and strategies employed on most farms.

As historian Thomas Knoles notes, written introspection was not a high priority for rural record-keepers engaged in clearing land and establishing homesteads in the late 18th and

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20 For example, some farmers criticized those who would rely on “‘book learning’” as a basis for agricultural understanding; R. W. Sandwell, *Canada’s Rural Majority: Households, Environments, and Economies, 1870-1940* (Toronto: University of Toronto Press, 2016), 82.
early 19th centuries.\textsuperscript{21} As well, some farmers actively resisted the implications of the tenets of improvement agriculture – that the primary goals of farming should be productivity and profit.\textsuperscript{22} Regardless of farmers’ perspectives, the inclusion of diary-keeping within a general “self-improvement” guide for young men reflects the high value placed on this practice by social reformers. Etiquette books for young ladies similarly recommended diary-keeping, although the purpose was self-improvement – the cultivation of composition and hand-writing skills – as opposed to critical engagement with the tools and methods of women’s labour.\textsuperscript{23}

While the above description from the 1817 almanac generally captures the concerns at the heart of each journal entry consulted for this study, the farmers took such diverse approaches that the concept of the “household journal” casts a wide and variegated net. Winslow and Thomas Miles often recorded “account book” style entries that enumerated hours of labour by various workers and the amounts they paid to men as well as women.\textsuperscript{24} Benjamin Crawford sometimes kept similar records at the front or back of his journals, where he also tallied butter and eggs sold and the amounts received on each date of sale, details of other purchases and harvests, especially haying, and sporadically, records related to livestock or his role as a Justice of the Peace. Crawford

\textsuperscript{21} Knoles, “A Tour of the New England Diary,” 41. For insight into survival as the top priority for settlers in colonial Nova Scotia and New Brunswick, see Wynn, ed., \textit{People, Places, Patterns, Processes}, 336; Wynn, “Reflections on Environmental History of Atlantic Canada,” 242, regarding settlers prior to around 1870 struggling for survival and reaping the rewards of their labour, “if they were fortunate.” See also Merchant, \textit{Ecological Revolutions}, 150, and Monaghan, “Literacy in Eighteenth-Century New England,” 43-44.

\textsuperscript{22} G.W.G., “Does Farming Pay?” \textit{Maine Farmer}, July 19, 1873, with thanks to Cody P. Miller for drawing my attention to this source and for sharing a copy.

\textsuperscript{23} Indeed, some women and their advocates campaigned against the dearth of benefits of modernity applied to women’s work as compared to men’s; Sandwell, \textit{Rural Majority}, 90, 96-97.

\textsuperscript{24} For a detailed discussion of this type of source, see Kathryn Carter, “An Economy of Words: Emma Chadwick Stretch’s Account Book Diary, 1859-1860,” \textit{Acadiensis} 29, 1 (Autumn, 1999), 43-56.
and Philip Nase, who was a grocer, often included market prices for particular produce and types of lumber in entries throughout their records. The journals of Frederick Dibblee, MacDonald, and P. Nase, furnish prospective researchers with robust material for biographies or historical fiction based on the lives of settlers. Conversely, Henry Nase left but a skeletal impression of life on his homesteads. While Jacobina Campbell’s entries were also brief, the frequency with which she wrote, the 18-year duration of her record, as well as her numerous community roles, provide the historian with rich fodder for understanding her and the life of her family and community.25

While I use the term ‘journals’ to emphasize the communal aspect of the topics generally covered therein, and to counteract presentist assumptions that diaries are necessarily personal records, MacDonald and P. Nase used their journals to record hopes and fears for themselves as well as their families and humanity, in tones that the 21st-century reader would describe as “private.” Yet the status of journals as household documents often shared with family or close friends meant that each anticipated their writing might – or would – be read by others.26

There is substantial literature emphasizing diaries as evidence of an individual’s process of self-making. Diaries have been particularly useful in uncovering aspects of women’s history through the perspectives of women in particular places and times, and have been interpreted as records that subverted the dominant discourses in which those

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25 Campbell Diary.
26 Kathryn Carter, “The Cultural Work of Diaries in Mid-Century Victorian Britain,” *Victorian Review*, 23, 2 (Winter 1997): 251-67. Carter describes how the “public”/”private” dichotomy was concretized by bourgeois men from the late 18th century onward and allowed them to exercise power based on gender as well as class. British attitudes toward diaries reflected anxiety about the true separation of public and private, in part because of the tensions between Romantic introspection and the commercial impulse behind the publication of so-called “private” diaries.
women were steeped within larger societies.\textsuperscript{27} This study takes farmers’ journals as a reflection of the interdependence of their personal identities with the human and animal members of their households, and with their larger communities.

Farmers used journals to record their awareness of local weather systems, which they cultivated through their day-to-day attention to conditions, as well as their responses. Over time, they fully experienced the nexus of weather and daily life and labour within the context of family, neighbours, and religious communities. Almost every activity on the farm, as well as all forms of transportation, were influenced by the weather: the texture, temperature, and wetness of the ground; the presence and depth of open water or ice; the variable strength and safety of ice; the intensity of summer thunderstorms. The centrality of these elements to the risks, vulnerabilities, and adaptive activities of settlers led most to comment on daily weather conditions (often including wind direction, sensible heat or cold, and precipitation), as well as water levels in the Wolastoq/St. John River or its tributaries, planting, harvesting, livestock feeding and pasturing, modes of conveyance, and the first and last travel on the ice and on open water. Many farmers observed ice formation, break-up, and the freshet or spring melt, with acute attention to daily and even hourly changes. Despite high variability in the onset, duration, and nature of each of these processes from one year to the next, farmers’ observations and experiences gave them a clear sense of the parameters and patterns of weather they could typically anticipate at a given time of year. Farmers’ phenological

observations, ie., their records of when particular plants budded, bloomed, and fruited, and the songs and movements of frogs and birds, acted as proxy markers of changes in temperatures and daylight. These events also influenced people’s perception of the timeliness or backwardness of the spring, crops, and the weather in general. Records of seasonal markers imbued day-to-day changes, and changes at certain times of the year, with an element of certainty, a cautious security for farmers whose way of life was so vulnerable to factors beyond their control.

Farmers relied on frequent communication with family members and neighbours to know how weather was interacting with local land-, ice-, and waterscapes throughout the year, reflecting the crucial social component to their praxis of observation. The intelligence they gained from others sometimes allowed them to predict changes and take adaptive action on or near their own farms, including covering or harvesting plants in case of frost, and waiting until they received notice of river or lake ice fit for travel. Weather’s direct impact on subsistence activities, and the sometimes narrow window for timely human response – such as plowing or harvesting as soon as conditions permitted, or before the weather changed – meant it was critical to share intelligence that allowed farmers to anticipate changes in immediate weather conditions. Many farmers noted frosts, rain, harvests, and other weather phenomena and weather-dependent farm activities taking place in locales beyond the vicinity of their farms.

As part of a community of observers, they contextualized their own perceptions within the awareness of “the longest liver among us,” as well as within their own
family’s experiences and recollections. For example, on January 23, 1817, Crawford reported that the ice was the thickest it had been in 30 years; that spring he recorded the highest freshet “as was ever known I Believe.” Although Crawford had 16 years of personal homesteading experience on the Long Reach, members of his family had been there for approximately 30 years, so the ice observations were potentially based on their perceptions over time. His assessment of freshet height likely drew on discussions amongst neighbours and in town, and may have reflected the experiences of settlers along the River since the late 1750s or early 1760s.

Sometimes a single date went down in local history. Although almost 25 years had passed, on May 2, 1861 MacDonald reported: “It is almost a match for 1 May, 1837. I think it did not freeze quite so hard as it did then.” Her entry reflects how long-term social memory in rural communities indexes the passage of time with ecological markers, and sometimes with coinciding farm activities. In the early years of her journal, Lucy Everett Morrison returned to the first entry of January to report on the most memorable feature of the year that followed. They were always related to ecological dynamics and reflected general experiences; “[t]he year 1869, memorable for Saxby Gale and earthquake;” and in 1870, “(memorable) for dry summer and immense fires in the woods and earthquake.” Recording or otherwise transmitting social memory supports the younger and coming generations in gauging a sense of normalcy.

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29 “Administrative History,” Benjamin Benedict Crawford Fonds, MC 1115, PANB.
30 Diary of Lucy Everett Morrison, January 1, 1869, January 1, 1870, MC1958, PANB.
and extremes and developing skills of anticipation. It also maintains knowledge of a repertoire of potentially life-saving adaptive strategies used on rare occasions in the past.\textsuperscript{31}

Meanings of weather were often personal as well as cultural and shared, and they could change over time.\textsuperscript{32} While the first immediate meaning to weather was always the implication that it had for agricultural, economic, or social life, weather was interwoven with Christian religious cosmology as well as personal outlook. English weather observers sought evidence of order in God’s creation. Some Christians saw weather as a reflection of God’s capacity to exact retribution as well as show mercy and express goodwill to humanity; contemporaries did not necessarily agree with one another about how to interpret weather signs.\textsuperscript{33} In the 18\textsuperscript{th} century, “[m]eteors, weather, and seasons were among the most powerful forces informing the physical, moral, financial, and political landscapes.”\textsuperscript{34} The belief in weather’s ability to reflect and/or influence earthly affairs continued into the 19\textsuperscript{th} century. It was evident in some responses to the “very strong” El Niño event that caused an unusually mild winter in parts of the Northeast and American Southeast in 1827 and 1828.\textsuperscript{35} A newspaper editor in Fayetteville, Tennessee

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\textsuperscript{32} For an example from the Guarani people of Brazil about the weather-related and cultural meanings of halos around the moon and sun respectively, see Luiz Carlos Borges and Flavia Pedroza Lima, “The Tupinamba and Guaraní Contribution Towards the Understanding and Control of Weather,” in \textit{Weather, Local Knowledge and Everyday Life: Issues in Integrated Climate Studies}, ed. Vladimir Janković and Christina H. Barboza (Rio de Janeiro, Brazil: MAST, 2009), 258.
\textsuperscript{33} For example, Merchant, \textit{Ecological Revolutions}, 114, 129. See Golinski, “American Climate and the Civilization of Nature,” 158, about 18\textsuperscript{th}-century debates in New England over whether God or science/natural law should be held responsible for weather phenomena. Were they even portents at all?
\textsuperscript{35} See page 156-57 herein for reference to late ice formation in the fall in parts of the Wolastoq/St. John River Valley during the latter half of the 1820s.
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reported: “The oldest do not remember a winter so mild an[d] the superstitious, (among whom we beg to be registered, being satisfied to keep company with the Johnsons and Littletons), are looking out for convulsions in the natural and moral world, as the proper succession to so unprecedented a state of weather.” In 1843, the extended brilliant tail of the “Great March Comet” – which Miles witnessed from Maugerville on the 24th of March – was perceived by some observers as a “‘thrilling warning to all the inhabitants of this precious and transitory Earth.’” In parts of New England, the comet’s passing helped catalyze the Adventist Christian movement.

Many farmers of Protestant persuasions engaged in personal as well as collective prayer and fasting, calling for divine intervention to mitigate climatic risk to crops and livestock, or to end other social or ecological crises. In their journals, farmers recorded praying to God for weather that would be propitious for crops, and thanked

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38 See for example, “Queen Anne’s Proclamation of December 12, 1703,” in Excerpts from The Boston News-letter, no 9, June 12 – 19, 1704, pages 90 – 91, in An Historical Digest of the Provincial Press; being a collation of all items of personal and historic reference relating to American affairs printed in the newspapers of the provincial period beginning with the appearance of The present state of the New-English affairs, 1689, Publick occurrences, 1690, and the first issue of the Boston news-letter, 1704, and ending with the close of the revolution, 1783, ed. Lyman Weeks and Edwin M. Bacon (Boston: The Society for Americana, Inc., 1911), https://archive.org/details/printednewspaper00presrich. The Queen called “for a general fast in view of the ‘late most Terrible and Dreadful Storms of Wind, with which it Pleased Almighty God to Afflict the greatest Part of this our Kingdom on Friday and Saturday the Twenty-sixth and Twenty-seventh days of November last.’”
God when conditions suggested promising crops and when their families and neighbours brought in a good harvest. They witnessed God’s mercy in weather that answered their prayers or that was much needed. Fasting was a social as well as spiritual strategy for ecological resilience. Collective fasting unified believers in troubling times and signaled the willingness of individuals to sacrifice for the good of the whole. These actions enfolded settlers’ perception of the nature of weather and their relationships to it, as well as reflected their belief in a God who punished the unrighteous and showed mercy in response to human need. If “Kind Providence” was capable of responding to human requests for intercession, then Christians had a responsibility to ask for an amelioration of conditions. Attitudes toward the effectiveness of fasting changed in the 19th century. In England, debates over calling a general fast during the cholera epidemic of 1832 reflected class and religious tensions as well as the rise of rationalism. When an outbreak of cholera hit Scotland in 1853, some religious leaders called for the development of urban sanitation systems to address the known causes of the spread of such diseases, instead of a day of prayer. Yet the tradition of supplication continued in New Brunswick for at least another decade, with a day of fasting and prayer during the Crimean War, May 31, 1854, and one on January 9, 1860.

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39 Examples from the journals include Dibblee Diary, July 17, 1823. I believe Winslow was the only farmer of focus who did not make reference to God and the weather in the same context.


41 Richard J. Janet, “Providence, Prayer and Cholera: The English General Fast of 1832,” *Historical Magazine of the Protestant Episcopal Church* 51, no. 3 (September 1, 1982).

42 Campbell Diary, 122, fn 134. Janet, “Providence, Prayer and Cholera,” 311; Hoyt Diary, 84, May 31, 1854. During the prayer service recorded in the latter, the community took up a collection of 6 pounds for
While many farmers likely sought God’s order in the vicissitudes of nature, those who made a record of their perceptions found a concrete way to identify patterns when they emerged, despite living at the mercy of the weather at all times.\textsuperscript{43} Journal entries related to phenological indicators, or the budding, blooming, and fruiting, of various plants and trees, were evidence of Nature’s order observed. Crawford’s record reveals his detailed and knowledgeable attention to the appearance and ripening of multiple berries and fruit over the years. The repetitive quality of such a record has numerous potential connotations. It was pragmatic to observe and note the progress of the berries and fruit that the Crawfords clearly relied upon for nutrition as well as winter preserves and wine. Crawford likewise anticipated the annual appearance and development of wildflowers such as adder’s tongues and ornamental plants, inserting familiar features into the sometimes erratic process of seasonal change. If emerging plants were previously unknown to settlers, their noteworthiness may have derived from their novelty, or the simple recognition that they were beautiful markers of the passage of time in their new home.\textsuperscript{44} Given the pragmatic needs and perspectives of many farmers, it is likely that observations of changes in plant life informed settlers’ diagrammatic relief of the wives and children of soldiers killed in Turkey during battle. According to the MacDonald Diary, January 9, 1860 was “a day set apart for fasting and prayer all over the Christian world.” I was unable to find any other record of a fast on that day.

\textsuperscript{43} For reference to many cultures treating “the regular sequence of the seasons… as an image for the steadiness of time’s passage and the permanence of the fundamental parameters of human existence,” see Strauss and Orlove, “Up in the Air: The Anthropology of Weather and Climate,” in Strauss and Orlove, eds., \textit{Weather, Climate, Culture}, 3. For a discussion of the way we talk about seasons as framing the temporal dimensions of our experience and reflecting our need to name and speak about things that affect our lives, see Benjamin S. Orlove, “How People Name Seasons,” in Strauss and Orlove, eds., \textit{Weather, Climate, Culture}, 136.

\textsuperscript{44} Keith Grant, relating discussion with Angela Duffett, Sara Spike, and others, at the meetings of the Canadian Historical Association, University of Ottawa, June 2, 2015; personal communication, spring 2015. Crawford Diary, May 8, 1834.
reasoning, helping them to nuance their knowledge of the timing, processes, and implications of elements of seasonal change.

Vital human statistics, including births and deaths, punctuated the course of seasonal change and marked key events in the lives of farmers’ extended families and home communities. Such details, including records of births, funerals, illnesses, weddings, and travel, are evidence of mutual concern as a key dynamic nourishing the life of the community. To refer to a community’s life connotes vitality, interconnection, and cohesion. A sense of the interconnectedness of weather, place, and life animated farmers’ record-keeping as much as the attempt to witness or establish order. In fact, these interrelationships characterized the dynamic order that was rural colonial society.

Household journals reflect this culture of communalism, one in which morality requires subsuming personal desires to the needs and goals of the group, while also occasionally giving voice to individual concerns and hopes.45 The practice of keeping a record of daily life is interdependent with a person’s experiences and memory. Thus, it can inform how a person thinks as well as what they share with family members and neighbours.46 MacDonald and P. Nase wrote more of their inner thoughts and emotions than the other record-keepers in this study, which made their writings evocatively personal. While MacDonald may not have wanted family members to read of her loneliness and sorrow, and this desire may have influenced her choice to take the text

45 For reference to the significance of communalism in supporting maritime religious communities’ integration of scientific understanding with faith, see Armour, “McCulloch, Lyall, Shurman and Keirstead,” in Bogaard, Profiles of Science and Society, 104.
with her on an extended visit, P. Nase was aware that his journal would have readers.47 Regardless of the topic of their entries, each also typically situated themselves in relation to their families, and sometimes to larger communities.

For women in patriarchal, colonial societies, writing about oneself necessarily involved writing about what was happening inside the home, the private sphere to which women were relegated by British and Improvement culture alike.48 So axiomatic is this element of women’s journaling that researchers studying colonial era diaries in Nova Scotia were able to determine the sex of a record-keeper simply by whether or not the writer referenced domestic chores.49 At the same time, women did assume various roles in the public sphere, which was less partitioned from the private sphere in rural communities. As well, some spaces, including all-female Methodist class meetings and services led by female preachers, provided opportunities for women to assume public leadership roles.50 Some women agreed with Dr. John Gregory, the late 18th-century author of A Father’s Legacy to His Daughters, who believed that women’s focus on the domestic sphere was aligned with their moral superiority over their male counterparts.51 In line with patriarchal gender norms, some male observers interpreted women’s involvement in religious and civil society organizations as a continuation of their

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47 Philip Nase Diary, 40, April 21, 1864. Also, Keith Grant, “Enthusiasm and Loyalty: Emotions, Religion, and Society in British North” (PhD diss., University of New Brunswick, 2017), 21, regarding the role of expressing emotion in evangelical self-fashioning during the Enlightenment.
48 For example, Samson, The Spirit of Industry, 272-73.
50 Hannah M. Lane, “‘Wife, Mother, Sister, Friend’: Methodist Women in St. Stephen, New Brunswick, 1861 – 1881,” in Separate Spheres: Women’s World’s in the 19th-Century Maritimes, ed. Janet Guildford and Suzanne Morton (Fredericton, NB: Acadiensis Press, 1994), 94-95, including 94, fn7, which cites an article by Joy Parr and one by Gail Cuthbert Brandt on “the more complex and shared social reality of women… in a small farming and lumbering settlement.”
51 Conrad, Laidlaw, and Smyth, eds., No Place Like Home, 47.
“feeling” impulse as opposed to evidence of their intellectually-driven ambitions and abilities.52

The journaling practices of men and women in colonial New Brunswick reveal the significant ecological influences of living weather and farm life, as well as the cultural influences of religion and improvement. The journal forms were diverse, and the farmers of focus were unique individuals with particular concerns and responsibilities, yet each record offers insight into the interdependence of human society and local weather systems from the late 18th through the 19th centuries. The journals capture elements of each writers’ awareness of these interdependencies, and supported farmers’ understandings as well as their adaptations to a highly seasonal and variable climate. The dynamics of social learning and memory are reflected in the inclusion of information about the weather conditions, transportation choices, and weather knowledge, of places and settlers beyond farmers’ immediate locales. Finally, journals illustrate the ways in which farmers understood the flux of local weather systems in the Wolastoq/St. John River Valley to be dynamically interrelated to God as well as human action.

**Farmers’ Weather Knowledge**

Farmers’ knowledge of weather signs in the sky and on Earth reflected a long legacy of observation-in-action. Indeed all humans who depended on nature for their

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sustenance needed to apprehend changes in the weather. For example, around the world, people from diverse cultures know that a halo around the sun or moon portends moisture.\textsuperscript{53} In their journals, farmers recorded elements of weather reflecting keen observations. They also demonstrated the importance of sharing weather observations, as neighbours depended upon one another for vital intelligence influencing agricultural activities and transportation.

Record-keeping helped settlers to fortify their powers of multi-sensory observation and understanding; their often detailed observations of the weather were indicative of their priorities as farmers.\textsuperscript{54} When they anticipated frost, farmers recorded cold air, a sky clear of clouds, and wind out of the North. From wind direction and intensity they could anticipate storms. Farmers commented on cloud cover and occasionally, colours in the sky. MacDonald referred to a black sky as a sign of impending thaw in late January 1862. Some settlers on the Nashwaak knew that “[a] green tint in the sky was a sign of strong winds from that direction.”\textsuperscript{55} The familiar proverb “red sky at night, sailor’s delight…” was likely known to farmers; the authors of the Biblical Book of Matthew thought it important enough to include in that sacred text. And yet, the truth of the adage requires context, as the quadrant of the sky that appears red makes all the difference. A red sky surrounding a sunset in the West – where most North American


\textsuperscript{54} Following my discussion in the introduction, and drawing “multisensory” from Sara Spike in “‘Sights worth looking at.’” Spike quotes Cristina Grasseni on the connections between sight and culture: “‘one learns to see’ in cultural ways,” and in ways that are embedded in multi-sensory practices relevant to a specific set of priorities.” Spike, “‘Sights worth looking at.’”

\textsuperscript{55} Nashwaak Bicentennial Association, \textit{And The River Rolled On}, 102.
weather systems come from – appears red because light is shining through highly concentrated dust particles, which typically indicates a high pressure system is moving in with calm weather from that direction.\textsuperscript{56} Farmers also paid attention to the quality and proximity of sounds, the behaviour of animals and the smell of the air, to determine whether rain was approaching. As Wayne Curtis writes of the older folks where he grew up along the Miramichi in the mid-20\textsuperscript{th} century, “They could tell by the echoes if it were going to rain. … A hollowness in the air, the voices of certain birds, and wild animals feeding along the shores all meant rain.”\textsuperscript{57} Scholar of Franco-American folklore, Roger Paradis, notes that Acadians recognized that robins sang different melodies “depending on the weather outlook.”\textsuperscript{58} Fishermen on Brier Island, Nova Scotia, use the phrase “it gives rain,” based on the smell and the feel of the air.\textsuperscript{59} Farmers also noted the scent of the air during the spring burning of fields or dry periods when forest fires raged.

Not only did farmers perceive weather and its changes directly through their senses, they sometimes built natural hygrometers to exploit their knowledge of how moisture levels in the air affected different materials. Some colonial farmers used a European design in the shape of a small house with a human hair suspended from the

\textsuperscript{56} See Matthew 16, verse 2, noted in Richard Zurawski, \textit{Richard Zurawski's Book of Maritime Weather} (East Lawrencetown, NS: Pottersfield Press, 2007), 144. Cindy Day, “Red Sky at Night…Not Right!” October 1, 2013, \url{http://atlantic.ctvnews.ca/ctv-news-at-5/weather-blog/red-sky-at-night-not-right-1.1478183}. Zurawski and Day disagree with one another on the accuracy of this adage. Zurawski claims it is true 70\% of the time, while Day claims it’s reliable 99\% of the time. Start your records! And be aware of your location. It is possible that day was referring to Atlantic Canada. Marq de Villiers agrees with Zurawski and clarifies that a red sky at night will bring clear weather in Northern and mid-latitudes, within the northern hemisphere, around 70\% of the time. He adds that red sky in the morning is a portent of foul weather around 60\% of the time. If you are in the Caribbean, where weather systems come from the East instead of the West, you should disregard this proverb altogether. Marq de Villiers, \textit{Windswept: The Story of Wind and Weather} (Toronto: McClelland and Stewart Ltd., 2006), 131.


\textsuperscript{58} Paradis, “Franco-American Folklore,” 51.

\textsuperscript{59} Conversation with Dennis Welch, Brier Island, NS, May 2011. For more examples of how fishermen and other seamen and women interpreted the wind, see Sandwell, \textit{Powering Up Canada}, 169-70.
roof down the center of the building. Depending on which side of the house the hair swung or curled towards, settlers could glean clues as to what type of weather was on the way. Some farmers tied one end of a piece of hemp cord to a stick, and the other end to a rafter in the barn. As the cord curled in response to moisture in the air, the suspended stick spun and pointed toward labels farmers marked on the floor below: “clear” in one direction and “rain” in the opposite direction. Farmers in Maine would say “when rope twists, forget your haying.” The texture of tobacco or baling cord also indicated the moisture content of the air. Men and women engaged in coastal industries could tell by the appearance of the strands in clumps of seaweed what the weather had in store. They also watched ropes on board ship, knowing: “Curls that kink and cords that bind/Signs of rain and a heavy wind.”60 Some Acadians used a forked spruce twig fastened to a door jamb, which bent downward to indicate foul weather, and remained straight when the weather was fair.61 Finally, farmers’ bodies predicted shifts in the weather through the effects of changing barometric pressure on human joints, bones, and nerves. Physiological and psychological responses to the weather can change over time, lessening as people develop hardiness to particular conditions, or becoming more acute as people age.62

Although farmers tended not to record expectations about the duration of weather conditions, local oral tradition and written weather-lore indicate that some farmers had a

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60 Sloane, *Folklore of American Weather*, 20. “Yet all around the country there were natural instruments that told of the weather, sending out messages by smell or sound or movement and adding to the weather wisdom of the day.” See also 22-24; pages 22 and 23 have diagrams of the human hair and hemp cord weather guides.
fine-tuned understanding of weather signs and patterns. It was sometimes possible to interpret how long current conditions might last, as well as what kind of weather was likely to approach in one or two days. Obvious self-referential use of the journals provides evidence of farmers becoming attuned to the relationship between specific conditions and larger patterns over time. Winslow noted on August 4, 1799, “Much gratified that I have no hay exposed. Generally - between 30th July and 7th August weve a long storm of rain. Vide journals for six years past.” Similarly, on August 26, 1818, Crawford recalled, “cool last night it reminds us of this time last year and the two years before when the frost came.” Farmers also observed “meteorological” signs in the tradition of the ancient Greeks, for whom the term referred to celestial and atmospheric phenomena. They witnessed eclipses of the sun and moon, which were listed in almanacs that gave other details of daily celestial phenomena, reflecting the implicit cultural assumption that cosmic events were interconnected with daily life on the farm.

As well, farmers watched comets, sometimes recording their transit through night skies over multiple entries.

63 Sloane, Eric Sloane’s Almanac and Weather Forecaster, vii-xv. Morris Corbett, personal communication, May 30, 2016. Corbett recalled his father observing the sky one morning and informing him that it was time to mow a large hayfield, because they were going to have dry weather for a week. Hay needs three or four days of dry weather to ‘cure’ before it is stored. For a testimony of the weather knowledge of farmers, see Sharon Bird, Through the Eyes of Mary: The Mary Morehouse Diaries (1920-1958) (Riverview, NB: Chocolate River Publishing, 2016), 114. For further examples of portents related to the duration or advent of weather conditions, see Day, Grandma Says, 1, 16, 79, 89, 107; Sloane, Folklore of American Weather, 14, 51, 63.

64 See also, for example, Dibblee Diary, January 29, 1816; “We have had no Norwesters, which is very fortunate, for if the wind had blown as usual after Snow Storms it would have driven the snow all into Heaps.”

65 Janković, Reading the Skies, 2. For references to eclipses, see Crawford Diary, May 15, 1836, and MacDonald Diary, July 18, 1860, and January 26, 1862. Members of colonial society inhabited a spectrum of belief about the relationships between cosmic and earthly events.

66 For example, Typescript of Miles Diary, March 24, 1843. One wonders if Frances Beavan was belying her English upbringing more than her understanding of local perception when she reported “those mysterious northern lights, whose appearance in superstitious times was supposed to threaten, or be the
Farmers’ knowledge of weather signs in the sky and on Earth was reflected in their awareness of the Moon’s phases and their potential impacts on plants, animals, and activities on the farm. The journals depict several farmers experimenting with traditional European folklore about synchronizing agricultural activities with the phases of the moon. Agricultural almanacs from Anglo North America, as well as local histories in New Brunswick, reflect widespread knowledge of this ancient lunar tradition, yet most of the farmers of focus rarely commented on them.\(^{67}\) Farming in step with the moon’s phases was rooted in the concept that the ‘laws’ of the cosmos applied to the microcosms of earth and the human body.\(^{68}\) The moon must thus exert a similar force on the oceans as on the other waters of the world.\(^{69}\) Specifically, when the Moon vorerunner, of dire calamity; and no wonder was it, for even now, with all the light science has thrown upon such things, there is attached to them, seen as they are in this country, a feeling of dread which cannot all be dispelled.” She also provided a remarkable description of the sound they made, observing a “wild unearthly sound is heard, as if swords were clashing.” Beavan, *Life in the Backwoods of New Brunswick*, 141.


\(^{68}\) This is an understanding that has been held by many cultures at different times across the planet. See Frederick Sargent II, *Hippocratic Heritage: A History of Ideas about Weather and Human Health* (New York; Oxford: Pergamon Press, 1982). On the reworking of this microcosm-macrocosm understanding in the latter decades of the 19th century as a reflection of expanding scientific knowledge of the universe, including the theory of evolution, see Martin Kemp, *Visualizations: The Nature Book of Art and Science* (Oxford: Oxford University Press, 2000), 63.

\(^{69}\) “American Folklore – Planting by The Moon/Signs, Part 1,” Reprinted with permission by Charles Wood, *Gardening Jones: Simple Tips and Information by a Self-Proclaimed Gardening Addict*, (2018), http://gardeningjones.com/blog/2011/02/10/american-folklore-planting-by-the-moonsigns-part-1; Sally Roth, *The Gardener’s Weather Bible: How to Predict and Prepare for Garden Success in Any Kind of Weather* (Emmaus, PA: Rodale, 2003), 86-87; Day, *Grandma Says*, 28-29. Day refers to the practice as “lunar gardening.” She explains that groundwater rises and falls with the ocean tides. Planting tomato seeds in waxing phase-the second quarter … encourages plant growth because the groundwater continues to increase as the moon moves toward its full phase.”(29) Merchant, *Ecological Revolutions*, 121, 125. Christian farmers were also used to celebrating one of their most sacred festivals, Easter, according to the first Sunday following the full moon after spring equinox. Thanks to Jason Hall for pointing out this association between lunar and Christian calendars.
was waxing, it exerted a pull on the moisture in the soil and in plants themselves, as well
as influencing human and animal physiology and health.70 Hence, plants that fruited
above ground were to be planted in the increase of the moon, while root vegetables were
to be planted in the moon’s decrease.

An 1865 Almanac laid out a schema for weather forecasting based upon the time
when the moon appeared in different phases in summer and winter. The authors claimed
that it was “the result of many years’ actual observation,” and that its forecasts were “so
near the truth as to be seldom found to fail.” If the full Moon occurred between 10 and
midnight in the summer, the next day would be fair, while if these same conditions
pertained in winter, the following day would be fair and frosty. The descriptive table
was accompanied by a caveat that it was more reliable for summer than for winter.71
Midwives and other settlers who used herbal medicines understood that the Moon’s
phase influenced the potency of some plants, and they harvested, processed, and
administered medicines, under a particular moon phase.72 Lunar lore included
 correspondence between organs of the human body and the moon’s passage through the
signs of the Zodiac, which instructed healers as well as letting farmers know when to
avoid or watch for particular physical complaints.73 Reflecting on the persistence of

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70 See, for example, Merchant, *Ecological Revolutions*, 141.
71 See “Table of Foretelling the Weather through All the Lunations of Each Year,” *New Brunswick
Almanac 1865*, p.78, King’s Landing Archives, Prince William, New Brunswick. Sloane’s *Folklore of
American Weather*, includes an almost identical table on pages 47-48, and notes that it was popular in
early America and believed to have been devised by the European natural philosopher William Herschel,
although he did not take credit. Sloane adds that Pennsylvania Germans created “fractur writing” replicas
of the table, integrating weather knowledge with a traditional art form.
72 Marion Robertson, ed., *Old Settlers’ Remedies* (Hantsport, NS: Lancelot Press, 1960), Amy McKay,
73 Merchant, *Ecological Revolutions*, 138. Merchant notes that the publishers of almanacs continued to
include the diagram of “the Man of the Signs” through the late 18th century because of popular demand,
and not because of their own continued confidence in its veracity.
moon planting amongst his recent ancestors in Johnville, New Brunswick, Maurice Corbett recognized that until the early- to mid-20th century, lunar guidance filled a need. Most farmers had large families completely dependent on the fruits of their own labour and land, and moon lore complemented their knowledge of weather signs to counteract (to some extent) the enormous uncertainty of last frost dates and weather conditions during growing seasons and harvest. While several farmers of focus noted the moon’s phases, H. Nase’s references were most frequent, and included the only instruction about lunar planting. On June 15, 1785, he wrote, “NB no Turnips, or any other roots to get sown, but in the demise [waning] of the moon.” Yet in the years following, H. Nase planted turnips eight times when the Moon was waning or ‘decreasing’ (ie. meeting its ‘demise’), and eleven times as the Moon was waxing; sometimes he planted during a waxing and a waning moon in the same year. There was a similar pattern, or lack thereof, to his planting of other root crops, as well as the timing of his harvesting. It appears that he was experimenting with the idea that the phase of the Moon was significant, particularly when it came to planting turnips and shearing sheep. For example, on May 30, 1794, H. Nase recorded “sheared sheep 5th day after waxing.”

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74 According to tradition, there were concrete indicators of whether moon phases had been followed or not. For example, Morris Corbett of Johnville, New Brunswick, described the local practice of butchering at a particular phase of the moon, especially when it came to pigs and hogs. Otherwise, farmers were concerned the pork would ‘wizen up’ more when it was cooked. Each person in a large family might be fortunate to get a small portion of meat a day, and it was easier to distribute a cut of meat that remained filled-out once cooked. For the same account from a Prince Edward Islander, see Weale, Them Times, 39-40.

75 NB is shorthand for “nota bene,” which is Latin for “take special note of.” H. Nase and Winslow used “NB” when they wanted to call attention to a passage for later reference, revealing their formal educations. The word “demise” is difficult to make out. But it is a logical guess, as it follows the moon lore about root crops during waning.

76 Henry Nase diary, MIC-Loyalist FC LFR .N3H4D5; Nase planted turnips during a waning moon in 1786, 1787, 1789, 1791, 1792, 1793, 1795, and 1796; he planted turnips as the Moon was waxing in 1785, 1786, 1787, 1788, 1789, 1791, 1792, 1793, and 1795.

77 See also Henry Nase diary, June 7, 1796.
Moon lore does recommend shearing sheep as the Moon is waxing. It is possible that H. Nase had neighbours or relatives who swore by lunar wisdom in these endeavours, or that he was learning from almanacs. Yet his own experience suggested that it was not a system worth following, at least not within the prevailing local weather patterns on the Nerepis River, or in his early years of farming.  

Farmers’ praxis of observation relied on a dynamic traditional knowledge system that led each generation and each individual farmer to experiment and make adaptations based on their own perceptions and actions and information about the local ecology, including weather, which they collected. Their observation of weather signs reveals the interrelationships at the centre of this praxis: among people in family and community, for farmers learned from childhood by observing their elders; among observers’ sensory faculties; and among elements of nature such as the shape of clouds, direction and speed of the wind, and the flight or calls of birds. The most keen weather observers, such as Randolph Parent and Rob Hagerman of Bear Island, New Brunswick, and Arthur Spearing from Nova Scotia, could interpret the nuances within weather signs, and their neighbours in a predominantly oral settler culture looked to them for their use and understanding of proverbs and other weather lore.

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78 For example, on August 30, 1826, A. Hoyt wrote “commenced marsh haying. Cut Hog Island the 1st of the old moon. Finished September 14.” His practice was in line with moon wisdom about soil moisture and harvesting. The fact that he also includes the completion date suggests he may have been using the moon as a temporal reference point for short-term timekeeping. Although several other farmers of focus made a few references to the moon, I did not analyze their journals to determine whether they synchronized activities with moon phases because the entries did not associate the Moon with an activity.

Changing Cultures of Awareness and Observation

The journals portray a culture calibrating the tenuous balance of older and newer ways of understanding relationships among knowledge, experience, and the world. It was a culture that encompassed vernacular and centralized practices, and oral as well as literate communication. Farmers blended local solar time with clock time and local news from family members and neighbours with that gleaned from newspapers and other colonial literature. The sun in the sky and orally transmitted stories and frost reports were generally accessible to everyone. People relied on one another and shared vital intelligence about the interactions of weather with local land- and waterscapes. In the late 18th century, farmers knew where they stood in terms of the personal and social components of their praxis of observation – their way of being-knowing. As Sara Stidstone Gronim has written of New York at this time, “what one assumed one could know for oneself and whom one could trust as reliable sources of what one didn’t know – were as important as the content of the knowledge itself.”80

During the late 18th and 19th centuries, changes in methods of interpreting and communicating reality destabilized social relations of knowledge. The rise of print culture, Enlightenment science with its confidence in natural laws and increasingly mechanistic ways of understanding the universe, industrialization, the increased pace of commerce, and the implications of conflict, migration, changing political organization, travel, and missionary work, reverberated through settler societies.81 Depending on the history and life experience of farmers, communities in New Brunswick were more or

80 Gronim, *Everyday Nature*, 2, 7 for last quote. Gronim adds: “In the long run, matters of truth are always functions of social relations.”
less influenced by the shift in authority wrought by these currents of change.

Destabilization was inevitable for those Loyalists who suffered during wartime, had to petition to recover their losses during the War, and relied on colonial administration for land grants and the basic means of subsistence. The same was true for most new emigrants who had no reason to expect the forms of support available to the Loyalists.

The constellation of influences affecting daily life at this time were part of a long transformation of Western European habits of thought. Influential environmental historian Alfred Crosby has argued that this revolution in “mentalité” began in the late 13th century and persisted until the turn of the 20th century. The concept that physical reality could be broken up into uniform units or quanta that could be grasped visually and measured corresponded with an increasing emphasis on tools for visualization – from telescopes and microscopes to perspective in Renaissance art and detailed illustrations of human anatomy. The mechanical clock was one of the earliest inventions that conditioned Western Europeans to think and perceive of time, and subsequently of space, numerically and visually. The effects of this influence were ongoing. In the mid-18th century, the British government abandoned the old Julian calendar, which had been based on the integration of solar and lunar calendars with multiple religious and civil chronologies, in favour of the Gregorian calendar. Devised

82 For reference to this dislocation and one Loyalists’ negotiation of intertwined emotion and politics, see Grant, “Enthusiasm and Loyalty,” 31. As well, for Edward Winslow’s despair at being unable to meet the expectations of timely land grants that he had encouraged among Loyalists, see Edward Winslow, Winslow Papers, A.D. 1776-1826, vol. 1, ed. W. O. Raymond (Saint John: New Brunswick Historical Society, 1901), 188, https://ia800209.us.archive.org/20/items/winslowpapersad101raym/winslowpapersad101raym.pdf.
84 For examples of techniques used and images produced under this influence, see Kemp, Visualizations, including 32-35, 38-41.
in the 16th century by two Italian mathematicians (although one’s calculations were infinitesimally more accurate than those of his peer), the calendar is named for Pope Gregory XIII, who instituted it among Catholics in 1582. Although the new calendar was based on the relative motion of the Earth and Sun, or the solar year, it also reflected the assumption of contemporaries of Newtonian, “absolute,” time. Absolute time was an ideal version of time as a pure constant that overhauled the pluralistic method of time reckoning based on solar and lunar calendars as well as previous human records. At the same time as the calendar was reformed, clocks became more popular and accessible to larger numbers of people. These technological and cultural shifts normalized the new sense of measured time and emphasized the conceptualization of natural phenomena as rationally ordered.

European settlers began to farm the Wolastoq/St. John River Valley approximately 300 years after clocks had begun influencing their cultural habits of thought. Some journal-keepers indicated the timing of events using numeric clock time or changes in the weather, although they most often referred to periods of the day such as forenoon, afternoon, and sunset. Local solar time could be apprehended directly through an

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87 Frances Gies and Joseph Gies, *Cathedral, Forge, and Waterwheel: Technology and Invention in the Middle Ages* (New York: HarperCollins, 1995), 214-15; Crosby, *The Measure of Reality*, 10, 17. Crosby refers to the clock as “the most distinctively Western of all contrivances for measuring quantity,” although the Chinese had invented huge astronomical clocks centuries prior – and had then apparently ceased to utilize these machines, and did not simplify them. See also Pritchard, *No Word for Time*, 20: “Algonquin people used to call this device ‘Captain Clock,’ because it seemed to rule the white missionaries with an iron hand, or perhaps brass.”

88 See for example Dibblee Diary, March 25, 1820; Typescript of Miles Diary, April 26, 1843.
individual’s perception. Settlers with clocks initially set them according to listings of the time at which the sun rose and set that almanacs published. Yet clock time, like ‘news’ gleaned from newspapers, required an intermediary as well as alphanumeric literacy for its apprehension. With the standardization of railway time in 1883, farmers’ temporal experience was further abstracted from nature’s perceptible rhythms, as they could no longer set clocks by the celestial beacon. Still, the sun and daylight hours (with the addition of moonlit hours under relatively clear skies) continued to predominate in considerations of daily activities on the farm.

As central to daily life as the sun in the sky was the shift in Western European “mentalité” that began accelerating in the 17th century, from the conceptualization that human beings are in dynamic relationship with the living Earth, to the idea that the Earth is inert, and that the universe generally runs like clockwork. The association of order and efficiency with the metaphor is captured in the aphorism “to run like clockwork.” Clocks – and the small versions watches – were sophisticated mechanical objects that could run for hours, if not days, with minimal human intervention. The Earth, like clocks, was a mechanism, and with strategic human intervention, could run more efficiently. Those associations are accretions that have gathered around the concept since the proliferation of clocks over the last two centuries, and have had other ramifications for everything from human subsistence methods to the invention of

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89 Sloane, *Folklore of American Weather*, 16.
87 Changes in daylight over the course of the year influenced farmers’ choices, as they sought to make the most of “long” days. For farmers using moonlight for outdoor chores and activities including travel, see Sloane, *Folklore of American Weather*, 16; Sandwell, *Rural Majority*, 7, 52, 89.
“interpersonal relationships” between individuals. This shift in perception had – and continues to have – dramatic spiritual and ecological ramifications that have been deemphasized in some material as well as cultural histories. Carolyn Merchant’s, *Ecological Revolutions: Nature, Gender, and Science in New England*, pays close attention to spiritual and ecological dimensions of social, cultural, and economic change over the last four centuries. Merchant traces changes in the definitions of *production*, *resource*, and *reproduction*, as evidence of changing understandings of how value is created. When people understood that the Earth was alive, they understood that it created value and humans were responsible for taking respectful actions that supported the continuation of Earth’s vitality. These actions took the form of agricultural practices including techniques for fertilization and plowing, and rituals to encourage beneficial exchange between soil and the heavens. Natural philosophers and early economists were influenced by mechanistic interpretations of nature made possible by everything from their own observations with the most far-reaching telescopes ever created, to the invention of machinery that replaced human or animal labour, to the commodification of nature in commercial exchange networks. These thinkers, including John Locke, and improvers such as Sir John Sinclair, engineer of the Scottish enclosures, perceived that humans create value. Our interventions increase the productivity of land we use, thus ‘improving’ it. The Christian God who had coexisted with sanctified nature now took “His” place as sole deity, abstracting spirituality – and people – from particular land-

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93 Samson, *The Spirit of Industry*, 56. See also Merchant, *Ecological Revolutions*, 163. Merchant quotes John Locke, “Essay Concerning the True Original Extent and End of Civil Government,” 1690: “As much land as a man tills, plants, improves, cultivates, and can use the product of, so much is his property. He by his labor does, as it were, enclose it from the common.” See 311, n26.
and waterscapes. This rupture, like changing conceptualizations of time, took
generations to fully materialize in people’s ways of being-knowing. Yet it was at the
core of transformations of human relationships with and ideas about weather and other
natural phenomena, as well as relationships among people in communities and in society
writ large.

One interconnected facet of the shift away from nature’s animacy is the rise of
literacy and print culture, which influenced people’s ways of being and thinking in
colonial New Brunswick. To understand how these changes in communications
influenced day to day life, we turn to scholars from various disciplines who have
described the social relations of knowledge in oral cultures, and one response to printed
materials in a society that also straddled the two worlds. First and foremost, Indigenous
languages reflect intimate cultural relationships to landscape. As Trudy Sable and
Bernie Francis write in *The Language of This Land, Mi’kma’ki*, the Mi’kmaw language
“grew from and is inseparable from this landscape.” In the English-language version
of her poem, “Monuments,” Mi’kmaq poet Rita Joe expressed it: “Scholars, you will
find our art/in names and scenery,/Betrothed to the Indian/since time began.” The
depth of history, spirituality, and ecological and cultural understanding reflected in place
names, and the multiple words expressing Indigenous knowledge pertinent to this
landscape, such as wood grains in trees, are living testament to the interrelationships

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94 See E. P. Thompson, “Time, Work Discipline, and Industrial Capitalism,” cited in Gerald Friesen,
*Citizens and Nation: An Essay on History, Communication, and Canada* (Toronto; Buffalo; London:
University of Toronto Press, 2000), 134.
95 Sable and Francis, *Mi’kmaw*.
96 Rita Joe, “Monuments,” in *The Maritimes: Tradition, Challenge, and Change*, eds. George Peabody,
Carolyn MacGregor, Richard Gregory Thorne (Halifax, NS: Maritext, 1987), 222. As another example,
see Winston White, “Away to the North: A Landscape is Singing,” in Edwin A. Jones et al., eds., *Land,
Sea & Time, Book 2* (St. John’s, NL: Breakwater Books Ltd., 2001), 10-11.
between Indigenous peoples and the maritime region. As well, language encapsulates a worldview and a way of being that relates to how speakers live in a particular place.97 Although farmers were transplanted here and spoke languages that evolved in different geographic and climatic contexts, their sensibility was also largely land-based.98 If they were fortunate, farmers were able to raise the means of their own subsistence from their farms, and knew themselves to be intimately connected with the places they called home. By way of illustration, late 19th-century writer, R. R. MacLeod, told of a man from northern Queen’s County, Nova Scotia, who asked for soil from his fields to be brought to him in bed as he was dying, “so he could put his gnarled fingers in the soil he had plowed, hoed, planted and sowed. … He, like many others, came seeking land and independence.”99 While not all settlers had this passion, they still spoke a language rooted in local and larger landscapes, despite the fact it was a land they could begin to

97 Sable and Francis, Mi’kma’ki, 42-50. Also Pritchard, No Word for Time, 10-13; Robert M. Leavitt, Maliseet and Micmac: First Nations of the Maritimes, 2nd edition (Fredericton, NB: New Ireland Press, 1996), 52-56. For words of caution about this perspective, which in the form of “linguistic relativism” can have dangerous ramifications, see Chamberlin, If This Is Your Land, 18. Chamberlin also argues that oral and written traditions are much more interwoven or overlapping than we think. He points to the ‘written’ communication of patterns in textiles and other art in so-called oral cultures, and the oral traditions including those in legal courts and religious institutions that are central to our so-called written culture.

98 Friesen, Citizens and Nation, 89, 91.

99 Quoted in Heather L. MacLeod, “Responding to the Land: Experiencing Nature in Nova Scotia, 1607-1900,” in Campbell and Summerby-Murray, eds., Land and Sea, 18; H. MacLeod quotes and cites J. Lynton Martin, “The Land.” See also Narciso G. Reyes, “Farmer in the Sunset,” in Philippine Short Stories, 1925-1940, ed. Leopoldo Y. Yabes (Diliman, Quezon City: University of the Philippines Press, 1997), 218–21, in which a farmer on his deathbed tells his son, “I must see my fields before I die.” In the setting light of day by the field of ripened rice, he was young again, and experienced the freedom he needed to die in peace with the sunset.
know only after dispossessing the original inhabitants, whose language had evolved in the River Valley and surrounding region.\textsuperscript{100}

In addition to considerations of the ecological context for language, Indigenous writers, anthropologists, and historians, have illuminated the key element of the social context of speech in oral cultures.\textsuperscript{101} As Evan T. Pritchard describes in \textit{No Word for Time}, oral teachings in Algonquin cultures are given by the teacher depending on what the student is ‘ready for’ as well as the surroundings and what is appropriate in the moment. There is no speech without context, which is one reason that elders never tell the same story twice.\textsuperscript{102} The necessity of context is a function of culture as well as of physics (at least, basic physics according to a lay person). Even when you are talking to yourself, you are in your body and in a time and space that has meaning based on temporal and other cultural conventions. In his new history of \textit{Paper}, Marc Kurlansky references Plato’s awareness of this fact in the 4\textsuperscript{th} century BCE, as Greek society was becoming increasingly literate. Plato was concerned that reading eliminated interaction and thus the element of instruction accompanying the process of sharing and learning true knowledge. Without participation in a contextualized dialogue or other social dynamic, readers remained ignorant while they believed they were gaining wisdom.\textsuperscript{103}

\begin{footnotes}
\textsuperscript{100} For examples of settlers’ language as rooted in local and larger landscapes, see discussion of local ecological knowledge about freshet in Chapter 5 below, especially pages 212-14.

\textsuperscript{101} See for reference to the social context of communication, Friesen, \textit{Citizens and Nation}, 3.

\textsuperscript{102} Pritchard, \textit{No Word for Time}, 8-11, 43, also Leavitt, \textit{Maliseet and Micmac}, 8, for evidence from words for teaching and learning activities in Maliseet/Wolastoquey and Micmac/Mi’kmaw that the key element is involvement in the knowing process. “Everyone is a knower.”

\textsuperscript{103} Kurlansky, \textit{Paper}, 18-19.
\end{footnotes}
Rural culture was predominantly oral, and proverbs as well as colourful local expressions reflected the wisdom of ordinary people. Proverbs themselves were highly contextual utterances, which gained meaning in the shared experience of living weather, when the speakers’ understanding of weather signs could influence the judgments and choices of all participants in the “scene of action.” Appropriate use of a proverb lent authority to the speaker; a speaker who was already respected for their understanding was more likely to have influence when they uttered an aphorism.

Nature is a complex dynamic system. Farmers and others who relied on proverbial lore understood that nuanced observations of multiple natural elements might be required before a single proverb was likely to be accurate. For example, American weather folklorist, Eric Sloane, noted that the multiple reasons for fog’s formation prevent this simple statement from being true all the time: “Fog in the morning, sailor take warning; Fog in the night, sailor’s delight.” However, Sloane notes, “it is generally accepted that ‘a summer fog for fair and a winter fog for rain.’” He compiled a dictionary of 165 popular American weather proverbs, several of which had obvious roots in England, while a handful of others are ascribed to Indigenous peoples of North America. Sloane classified these 165 proverbs as “possible” – 51 – “true” – 52 – and “false” – 53. (A further nine were included without clear classification.) His dictionary is but a

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sampling, and in some cases even a “true” proverb relied on certain conditions for its veracity. Yet Sloane’s compilation illustrates the types of weather lore that are more and less likely to be accurate. Proverbs related to clouds, and visually perceptible effects of moisture in the air that farmers could also measure with homemade or natural hygrometers, are often true.\textsuperscript{108} Conversely, prognostications about the weather to come that are based on ‘magical numbers’ were likely false: for example, the number of bubbles in the pot when you boil a pint of the first snow; or claims that the weather on a particular day indicates what the rest of the season will be like, such as the popular “In like a lamb, out like a lion; In like a lion, out like a lamb” for the month of March (which P. Nase referred to multiple times in his journal).\textsuperscript{109} Other false proverbs suggested that taking particular actions, such as burying or hanging up a snake or observing particular behaviour on the part of animals or insects, facilitated or predicted certain weather conditions.\textsuperscript{110} The above could be categorized as “superstitions,” in comparison to observations derived from generalizable experience.\textsuperscript{111} Some “true” proverbs related to insect or animal behaviour, including that crickets chirp faster in warm weather and slower when it is cold.\textsuperscript{112} Only personal observations in place can verify or disprove a proverb for a given locale.


\textsuperscript{109} Sloane, \textit{Folklore of American Weather}, quote on 44. For examples of weather proverbs related to specific dates, see pages 56, 53, 30, 45. For references to March weather, typically on the first day of the month, see Philip Nase Diary, 27, March 1861, and pages 32, 47, and 57 for March 1, 1863, March 1, 1865, and March 1, 1866, respectively.

\textsuperscript{110} Sloane, \textit{Folklore of American Weather}; for examples see 29, 33, 42, 52-53, 55, 57.

\textsuperscript{111} Fanny D. Bergen and W. W. Newell, “Weather-Lore,” \textit{The Journal of American Folklore} 2, no. 6 (September 1889): 204.

\textsuperscript{112} Cindy Day mentions the cricket’s chirping ‘thermometer,’ too. See \textit{Grandma Says}, 42-43.
Sloane argues that most of the weather lore from settlers’ homes on the Eastern shores of the Atlantic was not useful in America, and that it took around 100 years of experience for farmers to develop a local lore of the weather. The different orientations of the shores and coasts on opposite sides of the north Atlantic meant that English proverbs related to weather, especially those with directional references, were completely inaccurate in North America. Farmers carefully observed their weather vanes to devise understandings of the weather, and what could be expected from the cardinal directions in the Northeast and from the quadrants between. Some American beliefs about the influence of the weather on a particular day – including the still-recognized “Groundhog Day” – are derived from older English traditions rooted in historical events. Despite the fact that these sayings often turn out to be ‘false,’ their cultural weight has carried them forward through the generations. When American folklorists Fanny Bergen and W. W Nowell published a paper on “Weather-lore” in 1889, they chose to focus on weather traditions related to Saint’s Days with European roots, having argued that “[t]he value of the study of weather-lore is therefore rather anthropological than meteorological; it illustrates in what manner the stock of ancient sayings has been supplied, and how limited is the direct influence of experience on oral tradition.” Bergen and Nowell’s genealogical approach to proverbs was incapable of conceptualizing the dynamic relationship between experience and tradition. By emphasizing continuity within oral tradition and inaccurate weather lore, they obscured

the fact that much genuine weather wisdom is rooted in particular places and conveys relationships between specific phenomena.

The experiences of participants in the “proverbial economy” mattered; because some proverbs encapsulate generations of lived experience, their transmission relies upon a certain groundwork of fundamental shared knowledge – or at least the awareness that such knowledge existed and supported human survival. As well, like other kinds of oral traditions (e.g., in Indigenous cultures), the contexts in which proverbial generalizations are invoked influences their meaning in the present and adds new potential dimensions to them in the future. As markers of ordinary wisdom that have been shaped by countless people’s experiences over time, the proverbs of shepherds and farmers have been sought out by Western scholars in different epochs who wish to collect and codify direct knowledge of the natural world. Historian of science Stephen Shapin writes that the effort to collect and publish proverbs in 16th-century England reflected recognition that oral knowledge could help legitimize the new medium of print. It also reflected the perception among the so-called ‘learned’ that proverbial lore offered the best method for forecasting even though it did not fall into the desired form of a scientific, natural law. In fact, one of the great values of proverbs is their adaptability as well as their contingent nature as Shapin explains.

[1] In Aristotelian terms, Proverbs belong to the process known as deliberation – the taking of decisions about what to do, what may be brought about by our own efforts, in the realm of the more or less and of the contingent – where absolute certainty is neither available nor rationally to be expected. They belong to the

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complex circumstances of life-as-it-is-lived, not to the idealizations of philosophy or science.

As demonstrated above, proverbs are so sophisticated because they represent living knowledge. Unfortunately for those who published compilations of proverbs and thought that they were preserving true knowledge, Plato’s concerns were salient. As Shapin notes, without “a whole raft of qualifications, reservations, and stipulations about context and contingency,” which can only be learned through experience, a written proverb alone does not contain the information required for a person to determine its relevance and utility in a given situation.120 Ironically, the very practicality of proverbs, including the elements of personal experience and “imperfect truth” (because nature is complex and dynamic), left these aphorisms and the people who knew and understood them, susceptible to critique by so-called improvers and men of science. In addition to context and experience, the words themselves were important, too. Rhyme, alliteration, parallelism, and unexpected contrasts, were all mnemonic tricks used in proverbial speech to help listeners recall the exact wording.121 Indigenous oral history and oral traditions also use various mnemonic devices to ensure ease of recollection by listeners and accuracy in the retelling of oral histories. Mi’kmaw even has a word, “ga’sgwe,” which listeners, especially children, say only during pauses in stories to show they are still engaged and wake.122

Crosby and other scholars of social and cultural change argue that the supplanting of orality by literacy was part of the centuries-long revolution in Western European mentalité and that it transformed people’s perception of reality as well as the social

120 Shapin, “Proverbial Economies,” 339, 331.
121 Shapin, “Proverbial Economies,” 325-26, 323.
122 Leavitt, Maliseet and Micmac, 18.
relations of knowledge. Path-breaking Canadian scholars Harold Innis and Marshall McLuhan have posited that particular forms of communication nurture corresponding forms of perception, thought, social organization, and collective experience, hence McLuhan’s famous phrases, “the medium is the message,” and “the medium is the massage.”

By the time McLuhan had coined the first in 1964, Innis had already delineated the implications of various media for the cultures that relied upon them for communication and the representation of reality. For Innis and McLuhan, the proliferation of the printed word on the readily transported and stored medium of paper led to new approaches “to the organization of time and space” influenced by assumptions of the linearity, uniformity, and repeatability of units of the material world and of human experience. Prior to this conditioning, McLuhan described “the interplay of all the senses in haptic harmony,” akin to the multi-sensory awareness required of colonial farmers interacting with local weather systems. While farmers likely would have never used the term “harmonious” to describe the sounds of braying oxen, “the shoutings of the younger parties assembled, the straining of chains and the creaking of boards,” combined with the strain in their own muscles while hauling on an animal’s tether and walking into biting wind so as to move a house uphill on the snow,

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125 McLuhan, *Gutenberg Galaxy*, 27. While Innis and McLuhan’s more deterministic arguments have been refuted by communications scholars, feminist historians of science, and others, some researchers have explored the multiple effects of literacy in certain societies at particular times. See for example, Jay Lemke, “Literacy, Culture and History,” *The Communication Review* vol. 1, no. 2 (Yverdon, Switzerland: Taylor & Francis, 1995): 241-259.
the description and its context nonetheless capture the holistic experience of “living weather.” Improvers tended to devalue farmers’ awareness, arguing, for example, that soil chemistry and abstract natural laws contained invaluable truths inaccessible to direct observation and traditional knowledge systems. Around the world, European imperialists also used the oral nature of Indigenous languages as yet further evidence of Indigenous peoples’ lack of civilization, thus undermining their cultures and knowledge.

Gerald Friesen’s *Citizens and Nation: An Essay on History, Communication, and Canada*, explores the processes by which ordinary people’s awareness and hence dominant perceptions of space and time, have shifted as new media has been taken up throughout Canadian history. He argues a common thread that has shaped “public consciousness” over time is the struggle of ordinary people to master new communication technologies as they respond to changes and events influencing their lives. Major cultural shifts were always incomplete and contingent, and only over generations did people grasp the full implications of the new modes of thought. Hence, Friesen notes the similarity between some of the perceptions associated with oral-traditional and settler-textual societies. Understanding weather signs continued to be central to settlers’ decision-making about transportation and other activities, and the family typically continued to be the unit of production. International markets and

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126 Beavan, *Life in the Backwoods of New Brunswick*, 11-12. “No one can form any idea, until they have heard it, of the noise made in driving oxen; and, in such an instance as this, of the skill and tact required in starting them, so that they are all made to pull at once.”


128 For example see Friesen, *Citizens and Nation*, 45.

biblical history also influenced conceptualizations of space and time by Christian settlers living in the British Empire who continued to rely on predominantly oral communications. At the same time, “‘alphabetic-letterpress-print’ abstractions” were becoming more common in colonial communication. These “communicated messages in uniform format,” and therefore eliminated contextual elements, including ecological and social dynamics, from the communication process. Literacy further facilitated centralized administrative control, as it rendered intelligible the rural populations that elites sought to reform. 

Improvers touted literacy skills among the repertoire of strategies for personal improvement. Yet literacy could also be empowering for ordinary people, as it gave them new opportunities to convey their own needs, as well as gain access to a modicum of power in society.

Effective literacy conferred “the power to act” in colonial New Brunswick because the petitions system, including the claims that Loyalists had to submit to colonial administration for their losses during the War, relied on written submission of grievances and request for pay for services rendered. Settlers also petitioned the government for relief in the event of crop failure. Although most of them were literate, “[o]nly 8 percent of New Brunswick Loyalists (and a smaller proportion of those in

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130 Friesen, *Citizens and Nation*, 89-93, 134, quotes from page 89. See also Samson, *The Spirit of Industry*, “Chapter 4: Enclosing the Commons at Minudie,” 114-140.
131 Grant, “Enthusiasm and Loyalty,” 271.
Nova Scotia) sought restitution for their losses” after the Revolutionary War. Those without the financial resources, time, or perhaps skill, to pursue claims for their losses – as well as those who had not owned enough to submit a claim – did not even attempt to recuperate them. Thus the successful use or procurement of literacy skills for interaction within the political sphere could depend on multiple factors. As the colony became more ethnically and linguistically diverse through the late 18th and early 19th centuries, literacy levels varied, particularly in the English language, which was the language of politics and economics in much of the province. As an example of the material rewards for literate farmers at this time, Crawford received 200 bricks from a neighbour in March 1832 in exchange for writing for him, despite Crawford’s own idiosyncratic spelling and the absence of formal punctuation in his prose. Three and a half decades later, P. Nase claimed Rev. E. MacLeod, a leading Free Baptist and owner and editor of the *Religious Intelligencer*, “without doubt one of the most useful men in the province, being an able writer.” Religious newspapers provided a means for men and women to

participate in a global imperial conversation about the relationships between Christianity, politics, and other facets of daily life.\textsuperscript{138}

The tensions between orality and literacy in colonial society, and their effects on ways of thinking and being, were evident in dialogues amongst proponents and critics of agricultural improvement.\textsuperscript{139} Beginning around 1820, individuals, newspapers, and early agricultural societies, disseminated information about the tenets and practices of agricultural improvement throughout the Atlantic world using oral and print media.\textsuperscript{140} The majority of farmers subsequently faced direct or indirect blame for their current practices, the value they placed on traditional knowledge, and for what they did not know, value, or understand.\textsuperscript{141} Further distancing most farmers from improvement circles were the requirements of specialized literacy to grasp improvers’ propositions, capital to implement them, and sometimes, the use of particular instruments and skill in their interpretation. Whereas the journals themselves are evidence of the literacy level of the farmers of focus, many settlers could not read and were not fluent in the language.

\textsuperscript{138} Samson, “Damn TORYISM Say I.”

\textsuperscript{139} Friesen, \textit{Citizens and Nation}, fn 8, 264-66. See also Doidge, \textit{The Brain That Changes Itself}, 308, for evidence from brain scans of how “different brain areas are involved in hearing speech and reading it, and \textit{different comprehension centers} in hearing words and reading them.”[Italics in the original.] As well, Leavitt, \textit{Maliseet and Micmac}, 56, regarding the interdependence of culture and language; language does not simply lead and culture follow. See pages 3-11 and 53 for a discussion of the interrelationships of language and culture, as well as how Maliseet/Wolastoqey and Micmac/Mi’kmaw are verb-based languages, and English is noun-based, which affects how speakers conceptualize other living beings as well as the workings of our world.


\textsuperscript{141} The cultural shift wrought through print media also contributed to a shift in our understandings of what traditional stories are actually for and about. See Clarissa Pinkola Estés, \textit{The Gift of Story} (Boulder, CO: Sounds True Recordings, 1993); Thomas King, \textit{The Truth About Stories: A Native Narrative}, The Massey Lectures (Toronto: House of Anansi Press, 2003), and Chamberlin, \textit{If This Is Your Land}. 

of “scientific agriculture,” nor could they afford the seeds, breeds, or other materials required to adopt improvers’ recommendations.¹⁴² For these settlers, the shifting social relations of knowledge sometimes compounded the challenges they experienced from their material circumstances alone. Yet, in a culture built on a firmly oral foundation, ‘unlettered’ farmers learned about agricultural improvement from their literate neighbours and public presentations, such as those given by John Young (who wrote under the pseudonym “Agricola”) in Nova Scotia in 1820. Literate farmers sometimes used their skill with a pen to counteract the truth claims of improvers. For example, “An Experienced Farmer” from Cumberland County, Nova Scotia, heard Young speak and replied in writing, explaining that farmers were interested in strategies to “enrich our land,” yet many did not have the resources to invest in limestone or its procurement, for example. Rather, they worked with the resources they had, keeping “good stocks of cattle… but we labour under some disadvantage for many of us owe the merchants.” His *Experience* led him to opt out of agricultural society membership. Young’s proposals, including the financial solvency he promised farmers through the market system, did not address the needs of this gentleman or his neighbours.¹⁴³

¹⁴² Samson, *The Spirit of Industry*, 60-61; Alexander, *Atlantic Canada and Confederation*, 114, 117. According to the 1871 Census of Canada, only 14% of New Brunswickers were illiterate. Yet Alexander qualifies these estimates with the recognition that census data on literacy does not necessarily indicate the actual level of functional literacy in a society. See also Sandwell, *Rural Majority*, 82. “Many rural people saw education in general, and scientific farming in particular, as a way to gain control over their environments and used market opportunities to reshape their families’ futures. Others were deeply suspicious of ‘book learning’ as a way of understanding the complexity of farming and of negotiating its relation to the larger world. Others could not afford to spend the time or the money required to learn and implement new ways of farming.”

In addition to opting out of agricultural societies and critiquing them, farmers continued to use literacy to reframe the social relations of knowledge. Agricultural newspapers offered a ready forum for a larger conversation about the goals of agriculture. Thus, G. W. G. submitted the following to *Maine Farmer* in 1873:

We think that farming ought *not* to pay. … What would inevitably follow? Luxury, fashion, ambition for office, a loss of self-respect; idle, dissolute sons and frivolous daughters; and if any virtue is left remaining, a sighing and longing after the good old times when farming did *not* pay. But to think that farming *does* pay, although in quite another sense than the popular. We contend that the farmer is paid in all that satisfies a rational mind far better than money could pay him. Instead of the above mentioned evils, he gets simple habits, a contented mind, the society of virtuous children. He has a home he can call his own... – all the fruits of the season - …. pure air and water, and leisure to cultivate his mind...  

Many farmers were neither in an economic position, nor the physical condition, to enjoy, for example, “all the fruits of the season,” or “leisure to cultivate” their “rational” minds. G. W. G.’s diction and rhetorical strategies suggest familiarity with the “polite literature” of the day. As well, despite using the pronoun “we,” G. W. G. emphasized the life of an individual male farmer and his family. Yet the value he or she placed on the simple and independent life of the self-respecting farm family would have struck a chord with many rural people. G. W. G. also correctly recognized that what farmers valued influenced their economic decision-making. Relatedly, *Annales* historian Lucien Febvre observed in 1938 that people who are cold, hungry, and insecure, and spend long winter seasons in the dark, think and act differently from their more comfortable

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144 For further critiques of agricultural societies by farmers, see quotes and jokes in John Douglas White, “Speed the Plough: Agricultural Societies in Pre-Confederation New Brunswick” (MA thesis, University of New Brunswick, 1976), 61-63.
145 G.W.G., “Does Farming Pay?”
146 For a reference to modes of expression in ‘polite culture,’ see Grant, “Enthusiasm and Loyalty,” 14.
counterparts who are less reliant on nature’s rhythms for survival. Most improvers failed to take the latter points into consideration. Some even went so far as to disparage communal labour practices in Acadian and other rural communities, seemingly unable to appreciate the cultural, familial, economic, and spiritual values, and rationale behind them. At the same time, as Daniel Samson, historian of agricultural improvement in Nova Scotia, notes, improvers used the language of “civic humanism” to emphasize the obligations of middling farmers to the lower classes; some improvers encouraged a form of collective interest that sought the betterment of the human condition as well as the economy.

Rural society in colonial New Brunswick contained the tension between oral and written media and the trends toward relationship-based communication and interdependence, and atomistic individualism, which some researchers associate with cultures relying on these media, respectively. In New Brunswick, moral communalism arose from multiple cultural, social, and economic dynamics. These included the exchange required in oral communication, vulnerability inherent within

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149 McLuhan, Gutenberg Galaxy; Friesen, Citizens and Nation, 96, 113-114, 124-125. In Rural Majority, Sandwell writes of the concerns of rural people, as well as some of their urban counterparts, about “the anonymity, greed, violence, individualism, and corporatism so often associated (by rural people in particular) with the city.” (27-28) Some researchers trace the historic correlation of literacy and democracy, as both can be interpreted as giving primacy and freedom to the individual. For example, Monaghan demonstrates how governments have construed literacy this way and have secured public support for their project; Monaghan, “Literacy in Eighteenth-Century New England,” 14-17. Merchant notes that alphanumeric literacy was among the tools used by promoters of analytic consciousness (and detractors of mimetic or oral/aural consciousness) for the objectification and exploitation of nature; Merchant, Ecological Revolutions, 22, 103, 109-110. See Umeek/E. Richard Atleo, Tsawalk: A Nuu-Chah-Nulth Worldview (Vancouver: UBC Press, 2004), 117-18, regarding the Nuu-chah-nulth understanding that all life is one, which entails human responsibilities. While individualism is strongly valued in Nuu-chah-nulth culture, it is experienced and enacted within dynamic interdependence with the rest of life.
rural societies, familial bonds joining members of communities, Christianity’s centrality in many settlers’ lives, and an effective response to the challenge of eking out a living on the land. Moral communalism thus appears as an overarching influence across the period of study. 150 At the same time, the rise of print culture contributed to shifting experiences and conceptualizations of public and private space and identity, in part by suggesting that introspective withdrawal led to more meaningful public engagement with the world.151 It also started to alter patterns of human identification, as it gave people the opportunity to identify with other readers with whom they had no direct contact, and to contemplate ideas and experiences that arose in more diverse contexts than had previously been within living reach. While literacy had been a highly valued and disseminated skill in Puritan-influenced New England and most New Brunswick Loyalists were literate, the “class consciousness” of the province’s elites led them to prioritize grammar schools for children from the upper and middle classes, and the establishment of a college, prior to institutionalizing common elementary education across the province.152

The farmers of focus were among New Brunswick’s elite and middling ranks and were wholeheartedly engaged in print culture, taking out newspaper subscriptions,


152 For reference to the literacy levels of New Englanders and Loyalists, see Monaghan, “Literacy in Eighteenth-Century New England;” and Bumsted, “1763-1783: Resettlement and Rebellion,” 181. For the discussion of how class conscious elites designed an early colonial education system for the middle and upper classes, see Katherine F. C. MacNaughton, *The Development of the Theory and Practice of Education in New Brunswick, 1784-1900: A Study in Historical Background*, ed. Alfred Goldsworthy Bailey (Fredericton: University of New Brunswick, 1946), 40-43.
reading books, and keeping their own written records. Yet their journals were predominantly concerned with the affairs of their households, and often demonstrated the dominant influence of relationship-based activities and interests. Farmers often noted communal labour practices and events such as Sunday school and church, singing school, and public lectures. As well, numerous entries contained neighbours’ observations and experiences with local weather, as well as transportation conditions and routes. Finally, farmers kept journals within the milieu of a busy farmhouse, which sometimes directly influenced what they wrote in the moment, and always framed the conditions for their experiences, and often, the motivation for their record-keeping. MacDonald often wrote in the evening with her family around her singing, reading, and visiting. Her journal, as well as Dibblee’s, was most likely to include the observations of others.

Farmers incorporated the strengths of print resources into their ways of being-knowing, which were inherently social and oral. In some colonial homes and communities, reading was a communal activity accompanied by dialogue and dissension. This was the case in MacDonald’s household and in at least several communities in Pictou County, Nova Scotia, in the 1820s. In a letter to the Nova Scotia paper the Colonial Patriot, “Simon” described regular gatherings of neighbours to listen to a person read and then discuss the ideas as a group. The very expense of holding a

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153 I have borrowed this conceptualization of class from Gwyn, “Female Litigants Before the Civil Courts of Nova Scotia,” 321-22.
154 For an exemplary description of the surroundings of home as she concluded an entry, see MacDonald Diary, December 22, 1861.
155 On the amalgamation of old with new media see Innis, Empire and Communications, 155. “Simon,” Colonial Patriot, 28 March 1828, quoted in Samson, The Spirit of Industry, 268-9, fn 43 on 384. For another reference to a group of neighbours who met in one gentleman’s shop to hear Thomas McCulloch’s Stepsure Letters read aloud and critiqued, see Davies, Studies in Maritime Literary History, 159. For an
subscription to a newspaper, and the necessity of being connected to a post office capable of receiving “circulation” at all, meant that neighbours shared newspapers and other reading materials, and likely discussed their contents even without an appointed time and space in which to do so. 156 As well, in a society in which economic and familial ties, as well as personal identity, often stretched across the Atlantic and south across borders, farmers valued intelligence from abroad, including from the new United States. 157 Finally, the multiplication of print materials related to improvement and natural science offered farmers potential insight into their own knowledge, including that codified in weather proverbs. For example, an 1858 schoolbook titled Familiar Science; Or, The Scientific Explanation of Common Things, included answers to questions about why particular weather conditions were indicated by different colours in the sky at sunrise or sunset. 158

Ideas about improvement and natural science and their implications for daily life continued to circulate within traditional oral media including debates and public presentations, and agricultural fairs hosted by Agricultural Societies from the 1820s

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156 For a reference to a meeting called in one community to raise a subscription to “pay a weekly courier to assert our rights at the nearest post-office,” accompanied by a subscription to the Albion newspaper, see Beavan, Life in the Backwoods of New Brunswick, 39. Nigel Thrift points to the increased use of the metaphors of “circulation” and “progress” with increased speed of communication and transportation in the latter half of the 19th century. Nigel Thrift, “Inhuman Geographies: Landscapes of Speed, Light and Power,” in Writing the Rural: Five Cultural Geographies, ed. Paul Cloke et al. (London: Paul Chapman, 1994), 200.


onward. Fairs often included a cattle show, livestock competition, horse races, and an exhibition of contest entries including farm produce and ladies handiwork. Historian Sara Spike has observed that agricultural fairs provided one venue for reformers to ‘perform skilled visions’ in which they also sought to ‘train’ rural sightseers. Whereas farmers valued and monitored the behaviour and appearance of livestock based on criteria related to function, improvers often emphasized pedigree over pragmatics. Their appreciation for elements of breed required an emphasis on particular features of animals that were not necessarily relevant to most farmers’ needs. Spike argues that fairs were ambiguous spaces, and rural people perceived and responded to reformers’ modes of observation and values based on their own prerogatives. In his study of New Brunswick agricultural societies in the first half of the 19th century, John White demonstrates the continued skepticism of the majority of farmers towards the Societies from the 1820s through the 1850s, yet suggests the continuation of their fairs implies the general popularity of these events. While a few farmers including Miles gained social capital as well as monetary prizes for their winnings, the public was largely drawn to agricultural fairs for their entertainment value.

Over the 19th century, colonial elites and others attempted to further transform the social relations of knowledge and raise the moral ‘tenor’ of society through institutions

160 Spike, “Sights worth looking at.”
161 For farmers’ testimonies and concerns that so-called improved breeds were not necessarily suited to either the local climate or the foddering capabilities of farmers, see J.F.W. Johnston, *A Report on the Agricultural Capabilities of the Province of New Brunswick* (Province of New Brunswick, 1849), 65-66, 80.
162 Spike, “Sights worth looking at.”
164 For the shift to entertainment in Agricultural fairs in later years, see Squires, *History of Fredericton*, 135-39.
to address specific ‘social ills.’ Reformers involved with Agricultural Societies and Temperance Societies focused on how changes in individual attitudes and practices could transform the fate of society as a whole. These organizations represented a merger of governmentality and the concerns of some families and communities. Regular meetings and events hosted by the Societies provided a forum “for the diffusion of order and moral improvement and for the integration and coordination of centre-local state activities.”

Beginning in the mid-19th century, Mechanics’ Institutes became another institutional fixture of colonial society. They coordinated presentations and lecture series on scientific discoveries, including electricity and steam, pitching them to popular audiences using entertaining visual demonstrations and gimmicks. Historian of meteorology, Katharine Anderson, argues that public performances of science in the 19th century demonstrated the need of newly professionalizing scientists to gain popular legitimacy for their work as well as for their interpretations of reality. The Natural History Society of New Brunswick, founded in 1862, also sought to raise public awareness of scientific truths, in part by teaching citizens how to perform practical science themselves. Sharing some of the motives behind agricultural societies, the organization was oriented towards elevating the ‘productive’ skills of ordinary citizens.

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166 Samson, *The Spirit of Industry*, 17. Samson noted that Michel Foucault used an older or more generic concept of government “as directing, guiding, regulating, and generally exercising both liberty and restraint in the ordering of activities.” (13) See also 321, fn 34-35.
167 For an introduction to the history of the Saint John Mechanics’ Institute, see Martin Hewitt, “Science as Spectacle: Popular Scientific Culture in Saint John, New Brunswick, 1830-1850,” *Acadiensis* 18, no. 1 (Autumn 1988): 91–119. Scientific ideas were also disseminated from some pulpits, as Protestant preachers in the maritimes during the final decades of the 19th century were part of a philosophical tradition that blended Biblical and scientific ‘truths;’ Rawlyk, “J. M. Cramp and W. C. Keirstead,” 119–34. For reference to this tradition of blending truths, see Armour, “Four Philosophic Responses,” in same text.
(i.e. their ability to generate wealth), as well as their virtuousness. Hence, Society members combined a traditional focus on direct personal observations in ecological context with observation of elements of nature extracted from their natural habitats. They taught people from diverse class backgrounds and ages techniques of sustained and careful direct observation, which they believed had a positive influence on people’s ways of thinking and moral fiber. The organization also campaigned for responsible citizenship through the identification and destruction of agricultural pests, and basic knowledge of economic geology, or the wealth potential in the province’s rocks. Finally, Society members organized amusing and healthy events including snowshoeing and skating parties.169

The society-wide movement for reform helps to explain how ordinary people from all walks of life increasingly placed their faith in science and technology, although it took generations for the broad-based transformation of society. Agricultural societies were generally organized by and for elites. Mechanics’ Institutes appear to have reached a diverse audience, although perhaps like the Agricultural Societies, their events were less geographically and culturally accessible to some rural dwellers.170 These organizations were united in their belief that people working alone and together could ‘improve’ their society, i.e., raise economic productivity as well as virtuousness, and eliminate toxic social ills including poverty and antisocial behaviour. At the same time, in order for their messages to displace rural people’s integrated way of being-knowing,

170 For the comparison between the goals and membership of Temperance and Agricultural societies, see White, Speed the Plough, 18-19. For the shift to entertainment in Agricultural fairs in later years, see Squires, History of Fredericton, 135-39.
organization members appealed to the cultural and political authority of “science” and Christianity. In so doing, movements for reform urged conformity and homogenization in human belief and practice.

Cultural changes from the late 18th through the 19th century influenced farmers’ praxis of observation, as traditional knowledge of local weather workings and time reckoning based on the sun were challenged and, in some cases, supplanted, by the rhetoric and methods of improvement culture and industrialization. Direct personal perception and experience continued to hold authority in rural culture, as did social memory and the observations and experiences of family and community members. At the same time, the increased accessibility of print materials, and the elevated voices of agricultural improvers that print facilitated, challenged rural social relations of knowledge. Settlers with diverse experiences and concerns used literacy skills as a means to promote opposing perspectives on agricultural realities in the region. While some farmers expressed their dissatisfaction in writing, others continued to rely upon local forums for oral communication. They discussed agriculture, science, and economic concerns around the hearth fire at night, in one another’s homes and fields, and in the churchyard and marketplace. Agricultural fairs and the meetings and public events organized by diverse reform minded societies, provided concrete opportunities for rural people to learn and be entertained beyond the bounds of home and community.

To follow the recommendations of media scholar Marshall McLuhan and to take “a mosaic approach” to the constellation of elements influencing rural people at this time is to recognize the idiosyncratic responses of individuals to the dynamism of their
experiences in the late 18th and 19th century. While the sun still governed working hours for the majority of rural people, farmers continued to sift, sort, and balance religious and scientific understandings of celestial workings, the place of the earth in the cosmos, and the role of individuals in making their own fate. Economic and ecological opportunities influenced but did not necessarily determine the responses accessible to ordinary people. Rather, farmers’ responses originated within their own intertwined thought and action, their personal praxis of observation.

Journals reflect farmers’ awareness and actions intertwined with local weather and the rest of the natural world. The often repetitive quality of journal entries offers insight into the rhythm of daily chores and the hard work and very real drudgery that accompanied rural life before ‘modern conveniences.' They illuminated the seasonal rhythms of labour and life as the ‘wheel’ of activities on farms and in larger society turned, year in and year out. Journals also illustrate the context of family and community life that was central to the transmission and development of traditional knowledge and social memory, which were key elements of farmers’ way of being in the world. Farmers’ experiences of living weather were influenced by cultural changes in the conceptualization of nature, and new technologies of communication and transportation began to alter people’s foundational perceptions of life, being human, space, and time. As with many processes of cultural change the shifts did not usually constitute a complete rupturing of tradition or personal perception within a short span of

time. Ecological, economic, religious, and social dynamics, including relationships in families and communities, influenced how farmers viewed and participated in change.
The personalities, habits, and values of farmers can be seen within and between the lines of their journals. Understanding their backgrounds, prejudices, and aspirations, and who these people were in their daily lives, provides insight into how personal experiences informed their observations and the ways they lived weather. All of the farmers were of Irish, Scottish, or English descent, albeit by way of the colonies that became the United States; all practiced a Protestant faith. Their families had at least a modest level of resources, higher than that of many settlers, and their first language was English. Significantly, all lived on or near rich intervale land, either on the Wolastoq/St. John River or one of its tributaries. This gave them access to fertile soil and a moderated microclimate with a slightly lengthened growing season, marsh hay, fisheries, and boat transportation. Members of eight out of ten of these farmers’ households held an administrative position of one type or another in the government. While the financial remuneration for most colonial offices was minimal, these roles nonetheless conferred a level of political and social prestige.\(^1\) One farmer, Frederick Dibblee, was an educator and Anglican minister and received financial recompense from various sources for his labours. Members of all ten households sold farm produce, lumber, or both.\(^2\)

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\(^1\) Stephenson, *Recollections of a Long Life*, 23. “Even in my own day a justice of the peace, or squire, was a dignitary of much consequence, and the Loyalist grantees — who were referred to colloquially as Bluenoses — maintained their elevated positions with unrelaxing vigilance.” See also pages 19 and 21 in the Campbell Diary.

\(^2\) I am making a guess about Isaac Ketchum Hoyt, about whose life we know very little. He continued his grandfather Azor’s diary after Hoyt Senior passed away.
Figure 3.1: Situating the Journal-Keeping Farmers Within the Watershed of the Wolastoq/St. John River

Legend:
◊ the boundary of the watershed
1 Rev. Frederick Dibblee, below Woodstock
2 Edward Winslow, Kingsclear
3 Jacobina Campbell, Taymouth
4 Thomas Miles, Maugerville
5 Janet (Hendry) MacDonald, Washademoak Lake
6 Azor Hoyt, Kennebecasis
7 Benjamin Crawford, Long Reach
8 Henry Nase and Philip Nase, Nerepis
9 Philip Nase, Indiantown
A Wolastoq/St. John River
B Nashwaak River
C Washademoak Lake
D Nerepis River
E Kennebecasis River
F Bay of Fundy
Temporal proximity to an immigration experience influenced the farmers’ identities, as experiences that were foundational to their lives and perceptions in New Brunswick. Men wrote seven of the nine journals studied, and women wrote two. Two of the men arrived as adults who had fought in the Revolutionary War, another emigrated as an adult with the spring fleet in 1783, while two others arrived as children at that time. The other two men were second- and third-generation settlers, whose relatives had fought in the war. The women were second-generation settlers, descended from Loyalists. The places and dates of their births, and the births of their parents, influenced settlers’ expectations of weather and climate, the extent of local traditional knowledge (LTK) of their family members and neighbours, and the roles they themselves assumed in settlement and farming.

Gender had a profound influence on life in the patriarchal world of colonial New Brunswick. A couple’s fertility and the degree to which they and their children were able-bodied and of ‘sound mind’ were significant determinants of the needs and, to some extent, the production of the farm. The combination of these factors could ultimately decide the success or failure of the pioneering endeavour. Vocational and employment opportunities were almost completely determined by gender. Laws governing land grants and ownership were biased in favour of men, as were traditions of inheritance.

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3 The Hoyt journal had two authors.
4 For example, Dibblee gave his daughter Elizabeth land as a dowry in 1817. It is unclear whether she would have retained power over this property once she was married. Jo Edkins, “Children,” Rev. Frederick Dibblee, 2012, [http://gwydir.demon.co.uk/jo/genealogy/earlydib/frederick1.htm](http://gwydir.demon.co.uk/jo/genealogy/earlydib/frederick1.htm). See W. L. Hoyt, “Some Aspects of Married Women’s Property,” University of New Brunswick Law Journal 13 (1961): 32-39; Elspeth Tulloch, *We, the Undersigned: A Historical Overview of New Brunswick Women’s Political and Legal Status 1784 – 1984* (Moncton: New Brunswick Advisory Council on the Status of Women, 1985), 87-88; Nanciellen Davis, “Patriarchy from the Grave”: Family Relations in 19th Century New Brunswick Wills,” *Acadiensis* Vol. 13, no. 2 (Spring/Printemps 1984), 91-100; Campbell Diary, 35; Campbell’s brother Sandy received a share of the ‘McGregor fortune’ in the mid-1850s, while Campbell herself did not, because Scottish law stipulated that the eldest son received his mother’s inheritance if she was deceased.
Men were the officially sanctioned societal leaders in most facets of the ‘public’ realm, while women’s place was first and foremost in the ‘private’ sphere of the home. Yet increasingly across the late 18th and 19th centuries, women had a degree of flexibility to take on leadership positions, including in religious communities and the temperance movement.5 Jacobina Campbell’s diary provides a good example of the leadership roles a religious and unmarried woman could take in colonial society.

The memoirs, letters, and journals of four women and two men also helped to inform this study. Two of the women were sojourners from Great Britain, while the rest were second- or third-generation emigrants.6 It is likely that all of these writers were Protestant. Isaac Stephenson’s memoir covers his lifetime (1829-1915), although his early years until 1843 are the most significant for this study, as that year marked his family’s relocation to Maine so that he and his father could continue forest work. Upon arriving in New Brunswick via New York, one of Isaac Senior’s first jobs had been estate manager or groundskeeper for the father of Thomas Miles, whose journal is used in this study. Stephenson’s memoir is the only one of these first-person documents that extends the geographical scope of the study, as he illuminated life in the lumber camps up the Shiktehawk Stream, northeast of Woodstock.7 Frances Beavan, whose memoir extends from the late 1830s to the early 1840s, lived with her husband at Long Creek, east of the Washademoak.8 Juliana Ewing lived in Fredericton with her husband,

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6 Bird, _Through the Eyes of Mary_, 9.
7 Stephenson, _Recollections of a Long Life_, 27.
8 Beavan, _Life in the Backwoods of New Brunswick_.
Alexander, who served as an officer in the military, and her letters cover 1867-1868.\footnote{Margaret Howard Blom and Thomas Edgar Blom, eds., \textit{Canada Home: Juliana Horatio Ewing’s Fredericton Letters} (Vancouver: UBC Press, 1983).} Col. William Baird wrote a memoir of his life (1819-1897) in Woodstock.\footnote{Baird, \textit{Seventy Years of New Brunswick Life}.} Lucy Everett Morrison was a market gardener whose husband owned a sawmill. They lived just below Fredericton and she kept a diary from 1869 to 1893. Finally, Mary Morehouse lived upriver from Fredericton at Burtt’s Corner, where she kept a diary from 1920 to 1958. Morehouse’s journal, including Sharon Bird’s editorial remarks, provides context for practices referenced without explanation in the nine journals of focus. The text demonstrates the increased pace of life and mechanization of work in New Brunswick around the turn of the 20\textsuperscript{th} century and in the decades that followed.\footnote{Bird, \textit{Through the Eyes of Mary}.}

The biographical sketches that follow reveal similarities in the push and pull factors that influenced emigrant families. From their own words, as well as those of settlement promoters, we understand that hardiness was an important prerequisite for successful pioneer settlement. Those with the strength, youthfulness, and commitment could consider abandoning the places they were born when it became increasingly difficult to survive there due to economic hardship, political turmoil, dispossession, population growth, and other dynamics.\footnote{Wynn, \textit{People, Places, Patterns, Processes}, 349; Charlotte Gray, \textit{Sisters in the Wilderness: The Lives of Susanna Moodie and Catharine Parr Traill} (Toronto: Viking, 1999), regarding push factors, 17; viii and ix, and 67, re. pull factors; xiv, 76, and 107-110 on the stamina, character, disposition, economic and physical self-sufficiency, as well as necessary practical skills required of, or acquired by, those who made a go of it; see pages 69 and 209 regarding the degree of challenge faced by those who emigrated. For Susanna and her husband, not even “sustained effort and faith in God’s goodness” could guarantee success in backwoods living.} In some cases, as in Ireland in the 16\textsuperscript{th} and 17\textsuperscript{th} centuries, and the American colony of Georgia in the 1730s, British imperialists strategically ‘planted’ populations considered likely to succeed and maintain social
order, in the ethnic, economic, political, and geographic context. In cases including the dispossession of Wolastoqey and Acadians living in the central and lower Wolastoq/St. John River Valley in the 1750s and 1760s, administrators ousted prior inhabitants to make room for their preferred subjects. In addition to the opportunity to access free land, or to purchase much more land than would ever be accessible at home, pioneers drew on their cultural heritage. According to some narratives, cultural characteristics, which could be associated with a particular home place – such as Ulster, Ireland – furnished pioneers with the fortitude their life experiences required. The next generations inherited these qualities, and could use them to forge successful new lives in settlements across the British Empire. Families sought to stay together when possible, as the close-knit fabric of family life nurtured the production and reproduction at the heart of rural communities. Finally, throughout history, people facing hardship have struggled to transform their situations so that they and their families – and sometimes, communities – have as strong a base as possible for survival. Each of the journals reflects the character-building experience of pioneering, and of rural living in general.

13 The layout of communities in the Upper Wolastoq/St. John River Valley indicates that administrators established a partial buffer between English and French settlements. The Irish Catholic Planter community of Johnville, the Scotch colony that includes Kincardine, Bon Accord, Kintore, and Upper Kintore, and New Denmark, are arrayed across the uplands and highlands between most of the predominantly English communities and predominantly French communities, in the Upper River Valley. Thanks to Jason Hall for pointing out the strategic geographic placement of these settlements.
14 Mancke, “Idiosyncratic Localism,” 169–81, especially 177. Isaac Stephenson's family’s history “follow[s] in general outline, but with divergent detail, the history of the Scotch emigration to Ulster and the subsequent Exodus from that province to America;” Stephenson, Recollections of a Long Life, 17. Col. Baird's family was ejected from the place their family had lived for almost 200 years in the town of Graffia, County Monaghan, Ireland, upon the death of his great grandfather, John Baird. His death “terminated a three-lives’ lease of land.” His grandfather thus answered an invitation from Baird's own father, and moved to live with them in New Brunswick; Baird, Seventy Years of New Brunswick Life, 1-2.
15 Stephenson, Recollections of a Long Life, 17.
Each reveals causes for great joy and great sadness, and insight into how people with various resources, skills, and dispositions, responded.17

The biographies below are organized according to two rationales, familial ties and chronology. The initial biographies focus on Henry and Philip Nase, and Azor and Isaac Ketchum Hoyt. Although the Nases kept separate records, whereas Isaac Ketchum (I. K. Hoyt) picked up and continued his uncle Azor’s (A. Hoyt’s) journal, their kinship as well as the geographical proximity in which they lived their lives recommends grouping each dyad together. The following six biographies are organized chronologically according to the date on which each farmer initiated their record. This system also separates the farmers by birthplace, beginning with three born in New England, and concluding with three born in New Brunswick. Incidentally, it also separates the biographies by gender.18 For the most part, I have maintained the idiosyncratic spellings and punctuation in quotes from the diaries.

The Farmers

Henry Nase, February 6, 1784 – June 1797 (b. June 28, 1752, d. May 20, 1836)19

Henry Nase was born into a close-knit family of nine in Dutchess County, New York. His ancestors were initially from Germany and had settled there in 1725, hence H. Nase likely gardened, if not farmed, while growing up. Following the onset of the

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17 For a reflection on the character-building wrought through suffering and recognized as part of the value of rural communities, see Alexander F. Laidlaw, ed., *The Man from Margaree: Writings and Speeches of M. M. Cody* (Toronto: McClelland and Stewart Ltd., 1971), 143.

18 The distinctiveness of Jacobina Campbell and Janet MacDonald’s life experiences and styles of communicating their praxis of observation suggested that grouping them together based on gender alone was inappropriate for the purposes of this study.

19 Henry Nase Diary. For the details of his family – wife and children – see Philip Nase Diary, 67.
Revolutionary War, his brother William faced impressment by the rebels, and the two planned to “Join the King’s Troops as soon as Possible.”

Henry joined the King’s American Regiment; William did not. By 1780, William was a refugee on Long Island. The separation and conflict the brothers bore during the war was hard for H. Nase to bear. The war itself was brutal. Six and a half years of service comprised of marching, bloodshed, more marching, harrowing journeys at sea, more marching, suspense, blood. And fevers! At least 11 times, H. Nase succumbed to fevers or ague and he spent more than 57 days in Army hospitals or the equivalent. Many men died of such illnesses. Through luck, genes, or both, H. Nase survived. He risked in battle, and he risked on the sea. H. Nase’s faith was his only recourse during two terrifying storms on the water. Following a thunder and lightning storm on June 22, 1781, which threatened to throw the men to a watery grave, he wrote:

> it is impossible for me, to Express the Anxiety I was in, I intirely Dispair’d of any Relief, I therefore Could only recommend my Soul to God and Commit my Body to Seas, but it Pleased the Almighty, of his infinite mercy, in the moment of extream danger and distress, Delerious beyond our expectation; the Ship, which was tossed…. She Run on Shore near the Light House,… & thanks be to God, our lives were happily Saved.

H. Nase lived with this gratitude for the rest of his life. God’s mercy had seen him through unimaginable fear and trial. The overall lightness with which he recorded his experiences of “living weather” on the Nerepis River in New Brunswick suggests the mettle he developed through withstanding the sufferings of war.

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20 Henry Nase Diary, Kings American Regiment, The New Brunswick Museum, Archives Division, Nase Family Papers F4, transcribed by Todd Braisted, 2, MIC-Loyalist FC LFR. N3H4D5.
21 Henry Nase Diary, Kings American Regiment, 19.
At the end of the war, H. Nase was in New York City, which the British evacuated in the spring of 1783. He left with the spring fleet, landing first in Annapolis Royal and then traveling to the Wolastoq/St. John River in July with a party including Colonel Edward Winslow and Major Thomas Barclay. The latter men, with two others, explored the River between July 10th and 20th, and determined upon suitable locations for Loyalists to establish settlements. H. Nase first helped to build a house for Major John Coffin, with whom he had fought in the war. Coffin was very pleased with the home, and on October 12, took H. Nase to see Beaubear’s (Woodman’s) Point, where the lower Wolastoq/St. John and Nerepis Rivers meet. Over the next month, H. Nase and several other men set about “hutting” themselves at the Point, which had many natural advantages. These included the fact that it was the former site of the French Fort Boishébert, and before that an Indigenous village, which meant that the men had to clear relatively young trees for their farms. Nonetheless, this was no easy task. Early in his first spring, H. Nase’s axe slipped and he cut a deep gash into his leg. On May 22 he began planting, likely through assistance from his compatriots. Come fall, H. Nase harvested corn, buckwheat, and other crops, and sowed winter wheat and rye as well as clover for the next year’s hay crop. He likely further augmented his military rations by fishing for herring and salmon in the Wolastoq/St. John and Nerepis, the mouth of the latter being a deep pool beloved by salmon. In the fall, the nearby marshes resounded

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23 Henry Nase Diary, Kings American Regiment, 35.
25 Henry Nase Diary, April 2, 1784.
26 Hall, “River of Three Peoples,” 326.
with the clattering calls of migratory ducks and other fowl. H. Nase would have hunted here as well as perhaps canoeing upstream or taking to the forest on foot to shoot deer and other ungulates. Finally, the tasks of “cutting, trimming, blocking, hauling, chopping, splitting, and stacking” wood for fuel and fences required a considerable amount of H. Nase’s time. In his initial years on the Mount Hope Farm, these activities, in addition to erecting fences, may have consumed a quarter of his working hours.

In all seasons of the year, H. Nase traveled to the market in Saint John by overland and ice routes, and while some journeys brought danger, others brought him to the farm gate of his sweetheart. H. Nase may have purchased livestock or produce and other items from the Quinton farm, but posterity has recorded Jane Quinton’s buttermilk as the elixir of love. The couple was married in late winter 1788. Over the next two decades, Jane gave birth to 10 children. Two of the girls died before reaching adulthood, bringing untold heartbreak to the family. The death of their firstborn, Elizabeth, at just under the age of 3, was the family’s first tragedy. Yet the Nases also had many joys to buoy them, despite deep sadness. The family loved music, and in the evenings H. Nase or his son John Quinton would serenade them on the violin. The hymnal was a common book in colonial households and religious singing was a family pastime. The Nases’

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27 In his first fall, he killed a bear in the River; Henry Nase Diary, King’s American Regiment, October 13, 1783.

28 “In many cases, farmers and their horses would expend as much energy harvesting wood, as the fuel burned in their homes.” Joshua MacFadyen, “Hewers of Wood: A History of Wood Energy in Canada,” in Sandwell, Powering Up Canada, 135, 157 n22; MacFadyen cites Daniel Vickers, Farmers and Fishermen: Two Centuries of Work in Essex County, Massachusetts, 1630 – 1850 (49), whose research into early settler societies revealed that almost “one-quarter of the working year” was spent in forest clearance and field enclosure.

29 Nase, Westfield, 13-14, Henry Nase Diary, for danger on the journey to and from Saint John, see March 13 1784, for Elizabeth’s age at death, see December 6 1791, and Philip Nase Diary, 35.


faith was passed on to the next generations, helping them rise above suffering, challenge, and loss.

In addition to farming, H. Nase had a business relationship with his friend Major Coffin and served in various official roles within colonial administration and the Church of England. Although the terms of their “co-partnership” are unclear, H. Nase and Coffin signed an agreement in 1783 that involved H. Nase’s responsibility for Coffin’s sawmill operations, and Coffin’s use of the same in exchange for forgiving H. Nase’s debts in 1779 and 1780. As the authors of *Hector Maclean: The Writings Of A Loyalist-Era Military Settler In Nova Scotia* have revealed, this type of relationship, integrating economic, political, and social, elements, was common between military settlers in Nova Scotia and their former officers. H. Nase also served as Deputy Surrogate to Edward Winslow (later, Judge of Probates) for Kings County, and was a lieutenant-colonel in the Kings County militia, a Coroner, Commissioner for Solemnizing Marriages, and an active member of the Church of England at Westfield. Services were initially held in people’s homes, and several Nase sons were baptized in the Coffin barn.

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32 Henry Nase Diary, October 14 1783; 1 August 1786; November 9, 1789. It is difficult to make out the wording for the entry of November 9, 1789; I have inferred that Coffin gained access to the proceeds of the mill for the milling season of 1789-1780. With gratitude to John Reid for our correspondence, June 1, 2017.
33 Currie, Mercer, and Reid, *Hector Maclean*. With gratitude to John Reid for our correspondence, June 1, 2017.
H. Nase was keen to observe and learn about local weather patterns as well as how settlers in the area understood shifts in the weather and the phases of the moon.\textsuperscript{36} In early January 1788, his fifth year on the River, he recorded: “The first freshet, or thaw this season[. I]t is to be observed, that about this time annually, a thaw and break up of creeks, rapids etc. takes place.”\textsuperscript{37} From his declaration April 2, 1784: “never was there better weather in this world, then we have experienced this winter,” to his statement March 27, 1796, “the winter has been beyond account easy and pleasant,” H. Nase’s record often flew in the face of British and Loyalist fears about winter’s “severity” in the region.\textsuperscript{38} In his initial years on the River, H. Nase did report two harrowing journeys to and from Saint John. In March 1784, he wrote: “traveling eight days on the river, … I fell in several times up to my hips, and was in eminent danger of losing my life”.\textsuperscript{39} H. Nase also made several entries regarding the “cold and severe” winter weather of 1786-1787, which other colonists remarked upon in correspondence.\textsuperscript{40}

H. Nase’s disposition as well as the climate at the Nerepis combined to buffer the family from winter hardship. Despite the fact that the winter of 1783-1784 was punctuated by colder than average temperatures due to the conjunction of the Laki and Grimvötn eruptions in Iceland, H. Nase lauded the season for its good weather.\textsuperscript{41} He also recorded that the winter of 1796-1797 had been “cold and dry only one rain of any Consequence in the time a very comfortable snow and chiefly gone,” expressing that

\textsuperscript{36} For examples of this see pages 62-63 above and page 264 below.
\textsuperscript{37} Henry Nase Diary, January 10, 1788.
\textsuperscript{38} Anya Zilberstein, \textit{Temperate Empire: Making Climate Change in Early America}, unpublished manuscript sent to the author via email, March 1, 2014, 68-76, 105-06.
\textsuperscript{39} Henry Nase Diary, March 13, 1784.
\textsuperscript{40} Henry Nase Diary, December 16, 1786, March 12, 1787.
\textsuperscript{41} Klemetti, “Laki Eruption and Climatic and Environmental Effects 1783-1784;” Henry Nase Diary, April 2, 1784.
winter conditions had been relatively easy, in stark contrast to the experiences of settlers in the northern River Valley and in Nova Scotia. Acadians at Madawaska referred to that winter’s suffering after two years of crop failures as la Misère Noire or the Black Misery. Colonial officials in Nova Scotia stated that it was “the longest and most severe winter known since the settlement of the province.” This diversity of observations and experiences reflects the variety of climates (and microclimates) within the region, as well as the interdependence of seasonal weather and human fortunes.

Where the Acadians had been blasted by crop failures, the Nases had reaped successful harvests, including of winter wheat and rye in August, 1796, before frost hit the area. The family had adequate fuel supplies and a social safety net. In the event that their harvest was poor, the Coffins likely could have supplemented their winter provisions with smoked salmon from the Major’s large-scale fishery just upriver along the Wolastoq/St. John from the mouth of the Nerepis. H. Nase maintained only a sporadic record, writing with a curt style, yet it appears his New Brunswick journal was a useful tool to orient himself to his new home, lifestyle, and seasonal rounds. H. Nase wrote most frequently between his arrival in Saint John and the end of 1783. He tended to

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42 Henry Nase Diary, March 24, 1797.
43 Historians also refer to it as “the black famine.” Having eaten the last cattle and cattle feed, and attempted to subsist on herbs in water, some settlers died of starvation while awaiting the return of a hunting party waylaid by the deep snows; Gail Underwood Parker, *It Happened in Maine: Remarkable Events That Shaped History* (Lanham, MD: Rowman & Littlefield, 2013), https://books.google.ca/books?id=ZpOFBAAAQBAJ&pg=PA18&lpg=PA18&dq=%22Black+Famine%22+Acadian+history&source=bl&ots=2EVvcMPI2u&sig=hxJuBvZ3TrTk6eRcV29Md00Qd8&hl=en&sa=X&ved=0ahUKEwjVo4bEtpnXAhUIw4MKHfKBhsQ6AEIMzA#v=onepage&q=%22Black%2Famine%22%20Acadian%20history&f=false. See also “La Tante Du Madawaska Marguerite Blanche Thibodeau (1738-1810),” accessed June 27, 2017, http://www.oocities.org/weallcamefromsomewhere/Women/blanche_thibodeau.html.
44 Quoted in Zilberstein, *Temperate Empire*, 124, 199 fn. 13.
45 Hall, “River of Three Peoples,” 326.
make the most entries per month in May, followed by April, and June, all key months in
the planting and growing season.

Henry and Philip Nase took quite different approaches to the practice of record-
keeping in New Brunswick. Whereas Henry was largely focused on details of
agriculture and transportation, Philip was interested in a broad range of events and
phenomena from the deaths of family, neighbours, and strangers, to the formation of ice
in local waters, material “progress,” and local, imperial, and American economics and
politics. The men’s entries on the subject of losing a daughter reflect their different
perceptions about who and what the record was for, as well as changes in colonial
culture.\textsuperscript{46} When Henry recorded the passing of their first child, Elizabeth, it was simply
to enumerate her age at death: “Elizabeth Nase aged 2 years, 11 months, and 10 days.”\textsuperscript{47}
Conversely, when Philip and his wife lost their daughter Sarah, Philip mourned her
openly in the pages of his journal. He described her death as “our greatest trial in life”
and prayed to God that the family would bear it gracefully and humbly, and live in piety
while they had the health and strength to do so.\textsuperscript{48} Philip wrote this entry seven decades
following the end of his grandfather’s journal, and the conventions of journaling had
changed, particularly in the event that the record-keeper was not engaged in pioneer

\textsuperscript{46} See for example, Carter, “The Cultural Work of Diaries in Mid-Century Victorian Britain.”
Carter draws from Raymond Williams to discuss the construction of “privacy” with industrialization, as a space
for members of the middle class to distinguish themselves from others while at the same time divesting
themselves of responsibilities for others. By the mid-19\textsuperscript{th} century, diaries had become a symbol of popular
anxiety about the concept of separate public and private spheres. Whereas Romanticism encouraged
introspection and self-expression, the publication of diaries that turned out to be fabrications, and legal
debate over whether a woman’s diary constituted admissible evidence or whether she had fabricated its
contents, were just two examples of how the cultural contexts of diaries raised questions about authentic
self-representation. Nonetheless, diaries continued to be socially acceptable forums for women’s written
self-expression, in contrast to novels. Although fewer men appear to have kept diaries after the mid-19\textsuperscript{th}
century than before, the influence of Romanticism and the semi-privacy granted the diary influenced the
conventions of the form for everyone.
\textsuperscript{47} Philip Nase Diary, 35; Henry Nase Diary, December 6, 1791.
\textsuperscript{48} Philip Nase Diary, 66, April 29 1868.
settlement in New Brunswick. Social ideas about the appropriate expression of emotion and inner thoughts had also changed. Finally, Philip was self-consciously maintaining a material as well as moral record for his family.

Philip Nase, May 20, 1836 – January 19, 1885 (b. April 26, 1821, d. February 2, 1885)

“At this period of my life [15 years old] I commence keeping a sort of Journal of events, which I fear will not be at all interesting, owing partly to my situation in life, having but little time to devote thereto, but principally to my inability.”

“I have consequently but a small share of education, which will render it difficult for me to conduct this little work as I would wish – I believe I have been considered quite diligent getting information, always shunning gay indolent or pleasure seeking companions and preferring the company of those who were temperate, industrious and progressive.”

As far as his diary allows us to see, P. Nase remained true to the values of temperance, industry, and progressiveness, for the rest of his life. He saw his father as having “moved along through life with mediocrity”, lumbering and farming for survival, but without much natural talent, education, or “tact for pushing through the world.” P. Nase, one of 10 children, wanted something different for himself and his family.

In 1843, at age 25, P. Nase bought his first piece of property, and a second plot of land one and a half years later, not far from where he was born in the settlement of Nerepis. He may have cleared the land for merchantable timber, and operated a small mixed farm, close to his family and childhood neighbours. P. Nase was industrious in

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49 For cultural changes, see Knoles, “A Tour of the New England Diary,” 41, as well as fn 26 on page 45 herein. For cultural attitudes towards emotional expression, Grant, “Enthusiasm and Loyalty.”

50 Philip Nase Diary, 9. It is unclear whether these entries were both written in 1836, or whether the second line was part of an afterword written in 1879. Nase’s editors used [sic] in the transcription, which I have quietly removed except in cases where the word is not easily intelligible.

51 Philip Nase Diary, 5, 9. In the “Introduction,” Rod Campbell states that the text pertaining to P. Nase’s father was part of an afterword written in 1879. Yet Campbell also says that another paragraph in what appears to be the same section was written in 1836 when P. Nase began the diary.
pursuing his goal of expanded vistas of opportunity for himself. Thus he managed to raise the funds to go into a grocery business at Indiantown on the outskirts of Saint John, with Matthew Taylor in 1846. Accepting cash and credit, the business was successful, but the partnership was not. On December 8, P. Nase closed the store for the winter and returned to Nerepis. Perhaps the events of the past year inspired him to contemplate his goals. He may have attended one of the most providential New Year gatherings of his life. Regardless, the following spring witnessed major changes for P. Nase. On March 23, 1847, he married “Miss ‘Elizabeth Mary’” Hamm from Grand Bay, Westfield, and the couple moved to Indiantown.

Living at the mercy of the weather had not prepared P. Nase for life at the mercy of economic upswings and downturns, particularly the deep lows of the late-1850s and then the global depression that began in 1873 and continued past his death in 1885. While farmers were connected to markets in British North America as well as across the Empire and the American border, through their barter and sale at grocery stores such as his, P. Nase found himself at the junction of multiple supply networks and customers. Business was affected by international geopolitics and cyclical price fluctuations, as well as the navigation season on the Wolastoq/St. John River.52 Other vulnerabilities kept the Nase family from remaining in Indiantown. In 1854, the “precariousness of life” was illustrated when the scourge of cholera descended upon Saint John.53 P. Nase made the difficult decision to sell his grocery business to his brother-in-law and move the family

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52 Philip Nase Diary, 37, January 26, 1864.
to the Nase farm on the Nerepis, where his father had continued to reside. Thus, by the time an international economic depression hit in 1857, the Nases were likely better off than their counterparts in the city. The late 1850s had witnessed an interconnected decline in the timber and shipbuilding industries. While P. Nase continued to be involved in lumbering, he and his family were buffered from the worst of hard times. He had been appointed supervisor for a stretch of the Nerepis Road in 1855, which brought a modest remuneration. The family was growing their own food and were likely not primarily reliant on their lumber sales. Access to wood access to fuel, the prices of which climbed to outrageous heights in the region’s cities in winter time. As well, in the fall of 1860, P. Nase was solvent and savvy enough to make money on the purchase and subsequent sale of “the Roley farm, Hay, Oats, Pung, and Sled.” After two years of economic depression, he reported that people had become inured to hardship and so were doing better with less. The essence of this observation reverberated in all of the journals. Settlers often tried to do their best, but it was experience that gave them the greatest capacity to meet the unfolding challenges of their daily lives. Their faith, too, was related to experience. Their experience with religion bolstered their faith, as did

54 Philip Nase Diary, 20, July and September 1, 1854.
55 Philip Nase Diary, 21, entries for autumn of 1857.
56 For example, see Philip Nase Diary, pages 20-24, as well as 39 for the entry of April 1, 1864, regarding wood for the family. For the steep prices of wood in cities in winter, see Judith Fingard, “The Poor in Winter: Seasonality and Society in Pre-Industrial Canada,” in Pre-Industrial Canada, 1760 – 1849, ed. Michael S. Cross and Gregory S. Kealey, vol. 2, Readings in Canadian Social History (Toronto: McClelland and Stewart Ltd., 1982), 62–78.
57 Philip Nase Diary, 26, September 29 and October 11, 1860. Not only did he make money from the purchase, but he may have maintained possession of livestock and a wagon after selling the rest.
58 “People are however becoming better prepared for hard times, economy has been resorted to.” Philip Nase Diary, 22, January 1859.
participation in their family’s ongoing story of persistence through generations of at least intermittent hardship.  

The Nases benefited from the economic rebound of the early 1860s, and returned to the grocery business in Indiantown later in the decade. In October 1869, the tropical storm known as the Great Saxby Gale wreaked havoc across the southern part of the province, felling trees as well as “Houses, Barns, Hay stacks, etc. etc. And the shipping suffered great loss.” P. Nase interpreted “these calamities… as a just punishment from Kind Providence for our Sins.” His religious explanation for the storm that had been predicted by a contemporary based on knowledge (however incomplete) of the moon’s cycles, reflects the persistence of beliefs in divine causation of weather phenomena, despite enthusiasm for modernity. P. Nase observed the progress of railways and other infrastructural developments. He may have blended Providence and progress in his mind, as many people did and continue to do, seeing God at work in technology as well as in the weather.

Having lost daughter Sarah in 1868, tragedy again visited the family in 1872, when Elizabeth, wife and mother, passed away. Through his heartache, P. Nase penned an extensive prayer for himself and his family. He asked for God’s assistance in living and loving, so that they too may be prepared for death and the elimination of all

59 For example, see Kenneth Christie and Marion Reicker, The MacDonalds of the Washademoak Lake (Fredericton, NB: Capital Free Press, 1988), 6, for the story of a child who had drowned in a cow track in Ireland. He was likely a brother to one line of the MacDonalds who emigrated to New York in 1759. Such stories of tragedy and loss accompanied by dispossession and exploitation, sometimes combined with horrific experiences during the Revolutionary war, could fuel a family’s sense of identity and allegiances for generations.

60 Philip Nase Diary, 67-68, October 10, 1869, February 24, 1870.

separation between them and their loved ones gone before them. As with other prayerful entries, this one revealed P. Nase’s perception of his journal as a household document. He first expressed the idea upon the death of a cousin in April 1864: “O that we were all like her, ready to meet with God in judgment. Great gracious God that the end of myself and all who read these lines may be like hers we all must die, we know not how soon.”

Multiple variations of this entry’s tenor throughout the journal appear to have been an exhortation to his children to take up the Christian duty of living as God decreed. P. Nase expressed personal emotions after his daughter and wife’s deaths, and when his loneliness was particularly acute in the years following Elizabeth’s passing. Yet these moments invariably included prayers and a depersonalization of his experience as he reminded himself (and his beloved readers) to follow God’s example. P. Nase also lived his commitment to God through the church, acting as superintendent of the Sunday school in the 1860s and as a warden of St. Luke’s Anglican Church beginning in April of 1882, as well as through involvement with the Sons of Temperance from 1849 onward.

P. Nase met the challenges to family and economic life head-on. Recession hit the province again in the mid-1870s. Having witnessed the closure of multiple local firms, P. Nase’s grocery business made the decision to accept cash only in May of 1876. This ensured that they received payment for any goods sold.

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62 Philip Nase Diary, 40. April 21, 1864.
63 Philip Nase Diary, 44, 87, 95, 22, December 22, 1864, December 20, 1877, January 1, 1883.
64 Philip Nase Diary, 41 and 93 for church involvement, April 28 and 29, 1864, and April 10, 1882, and page 6 for Sons of Temperance.
65 Philip Nase Diary, 83, 84, and 86, May 1, 1786, August 18, 1876, and January 1, 1877. The downturn for lumber started in the summer and autumn of 1874, and a number of entries relate to it over the next several years.
including real estate, were diverse enough that even with low profits during the
depression years, and the collapse of lumber prices, he stayed afloat and had resources
for modest luxuries. P. Nase’s entries about hard times tended to be pragmatic, listing
the names of bankrupt businesses and people who had left the province hoping to find
better prospects. Yet he occasionally expressed a broader view of society in turmoil. In
December 1875, P. Nase reported on the depth of the depression that had left many
destitute and in need of support, which was being supplied in part by a new Relief
association. At the turn of the new year in 1877, he observed: “The poor have
suffered, labour being scarce & low. Business men have also suffered. Many in this &
every other section of N.B. have been obliged to succumb.” Not one to be caught at
the mercy of circumstances if there was anything he could do about it, P. Nase took his
passion for temperance, industry, and good government into two election runs for the
Liberals. He ran on the prohibition ticket in 1856 and ran again in 1861. Believing that
he deserved contentment and happiness and that it could contribute to the peace and
harmony of his entire family, P. Nase married Lydia A. Vanwart October 31, 1878.
Their son, Otto, brought the joy of new life into the home several years later.

P. Nase kept the diary between the ages of 15 and 63, making it the longest
running personal record utilized for this study, and a rich – if partial – life record. In the
initial 11 years, he made scant use of the journal. In his 26th year, P. Nase began to write
sporadic entries during most months. Some years, he wrote a synopsis of one or more

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66 He even sent daughter Helen to the Mendelsohn Institute in Boston in 1878; Philip Nase Diary, 89,
September 9, 1878. She had also studied music at Carleton in 1866-1867. See pages 61-62, for entry for
January 15 1867.
67 Philip Nase Diary, 81-82.
68 Philip Nase Diary, 86, January 1, 1877.
seasons. Perhaps reflecting a combination of his desire to note significant information, his employment, and the increasing accessibility of newspapers as well as intelligence through his business connections, P. Nase’s journal was the most varied of the personal records consulted for this study. He included details about weather, crops, his personal health and that of his family, vital statistics, the vicissitudes of the market, current political events, and the rise of modern technology including urban electrification and sanitation. P. Nase also honoured the generations who had come before by including multiple family trees among entries in later years.

Azor Hoyt, December 15, 1811 – March 26, 1842 (b. September 13, 1770, d. June 2, 1842)

Isaac Ketchum Hoyt, August 26, 1842 – February 8, 1855 (b. March 28, 1824, d. May 9, 1855)  

Azor Hoyt was just 13 when his family emigrated to New Brunswick with the Loyalists in 1783. The son of a farmer and miller in Fairfield Parish, near Stamford, Connecticut, A. Hoyt had already spent half of his young life in exile on Long Island. While his father and uncle were granted lands on the Kennebecasis River, A. Hoyt hired himself out as an apprentice “to learn the secrets of farming, forestry and carpentry.” Having left the family farm six or seven years before, he had been unable to develop these skills through his childhood. A. Hoyt’s experience as an apprentice touched him.

69 For birthdate of I.K. Hoyt, see Hoyt Diary, 34, n111. I include both men’s birthdays here because they kept a single journal.
70 Note about Hoyt hiring himself out, see Hoyt Diary, 1; Raymond, The River St. John, 164-5.
deeply; later in his journal he referenced the death of a young farm apprentice in the area.\textsuperscript{71}

The 1790s brought some of the most significant changes of A. Hoyt’s life. He purchased 100 acres of Lot 28 in the parish of Kingston in 1795, and the other half of the lot two years later, which allowed him to live close to family members as well as other settlers from the Stamford area. He began to grow his own family when he married Hannah English on July 18, 1798. The couple raised at least two children which constituted a small family for the time.\textsuperscript{72} The family’s first home was likely smaller than the farmhouse they built between September 26, 1812 and May 19, 1814.\textsuperscript{73} Perhaps because the Hoyts had few hands to till the soil, churn butter, or generate other income at home, they rented out rooms as well as raising crops and livestock. A relative named John English came to work for the family in the spring of 1827. The farm expanded when A. Hoyt inherited 100 acres from his father.\textsuperscript{74}

While A. Hoyt wrote only sporadically in the journal, and his style was curt and concise, some of his descriptions of living weather are extremely visceral, including on January 13, 1813, “[c]ame from St. John in the severest snow storm I ever felt,” and on

\textsuperscript{71} Hoyt Diary, 57, November 7, 1841.
\textsuperscript{72} Hoyt Diary, 1-3; for a brief biographical outline, see “Administrative History,” Azor Hoyt fonds, MC 2117, PANB. The authors of this outline noted that the Hoyts raised “several children;” Samuel Belden Hoyt, born 1799, and Mary Ann Belden Hoyt (Anna), born between 1808 and 1809, were identified in the text.
\textsuperscript{73} Hoyt Diary, 1, 12, 32, fn 106.
\textsuperscript{74} Hoyt Diary, 41, May 29, 1827, and 2. Bittermann notes that some farm families chose to produce high-priced items such as butter and then exchanged these for less expensive necessities such as smoked fish and flour. As well, having a large family was not necessarily a boon to farmers’ home production. Depending on their land base and other resources at their disposal, youth and adult members of the family may have needed to work out for the family as a whole to subsist, let alone for the younger members of the household to be able to establish their own farms or livelihoods. Bittermann, “Farm Households and Wage Labour,” 41, 45, 64-65. For the latter point, see also Bittermann, MacKinnon, and Wynn, “Of Inequality and Interdependence,” 37.
February 25, 1823, “the most violent driving snow storm known in 30 years.” As well, on February 10, 1824, A. Hoyt dramatized days of palpable havoc: “A violent storm commenced about 10 PM accompanied with heavy gale of wind and continued with unabated violence about 36 hours, broke up the river, swept away bridges, stacks of hay, timber, fences, etc.” More than any other farmer whose journal is part of this study (although rivaling his successor, Isaac Ketchum Hoyt), A. Hoyt was fascinated by the dramatic and unusual, including events related to local weather. In the chilly spring of 1812, he recorded “a number of birds found dead with cold.” On January 16, 1817, he observed “A great light at 8 o’clock in the evening.” In June 1829, A. Hoyt reported, “Thos. Moody killed by lightning in G. Baxter’s house door,” and on October 13, 1831, “Mr. and Mrs. Cole here with six calves from one cow; A phenomenon.” As a justice of the peace from 1829 on, A. Hoyt was privy to the various and sundry crimes committed by his neighbours and settlers further afield. He sometimes detailed the reasons for a court case, including the time that three tinkers were convicted “for stealing four watches, one waistcoat and a pair of pantaloons”! A. Hoyt was 41 when he began keeping the journal in 1811, and 71 when he stopped. As the number of entries he wrote decreased around 1835, A. Hoyt focused more on deaths and destructive events including great fires and dramatic weather.

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75 Hoyt Diary, 8, 32, January 13, 1813, February 25, 1823. His spelling of “St. John.”
76 Hoyt Diary, 33, February 10, 1824.
77 Hoyt Diary, June 4, 1812, 7; January 16, 1817, 18; June 5, 1829, 46; October 13, 1831, page 51.
78 For biographical details, see Hoyt Diary, 2. For the case reference, see page 46, August 1, 1829.
79 Hoyt had bought a subscription to the New Brunswick Courier on October 25, 1828. See Hoyt Diary, 44. He did not write at all in 1836, and when he resumed keeping the diary in 1837, he only wrote a few entries per year.
A. Hoyt was a devout Christian, renting a pew at St. Paul’s Anglican Church in Hampton, where he acted as a member of the church vestry for a time. Throughout his journal he included details of the Bible verses quoted in church. The lengthiest he transcribed was from Rev. Scovil’s sermon on June 23, 1816 after the late spring brought on by volcano weather from Mt. Tambora’s eruption:

My beloved spake and said unto me, rise up my love, my fair one, and come away. For the winter is passed, the rain is over and gone. The flowers appear on the earth, the time of the singing of the birds is come, and the voice of the turtledove is heard in our land. The fig tree putteth forth her green figs, and the vines with tender grapes give a good smell. Arise my love, my fair one and come away.80

A. Hoyt’s 20th-century editors did not realize that the eruption of Mount Tambora had wreaked havoc with atmospheric circulation patterns and brought unseasonal temperatures and snow to parts of the region in early June. They remarked upon Rev. Scovil’s unusual “levity” in a footnote, surmising, “[h]e must have been unduly moved by spring or something else.” From the reports of contemporaries, the increasing warmth was reason enough for settlers to celebrate.81

The editors of the journal believe that after A. Hoyt passed away in June 1842, his grandson, Isaac Ketchum Hoyt continued the journal until his death at age 30 in 1848.82 He also kept up his grandfather’s interest in the dramatic and calamitous, including fires and deaths. The modern criticism of mainstream newsmedia – ‘if it bleeds, it leads’ –

80 Hoyt Diary, 16. Hoyt’s version reads: “the voice of the turtle is heard in the land.” For the reference to the “turtledove” as part of the original verse, see “Song of Solomon 2:12,” Bible Hub, accessed January 5, 2018, http://biblehub.com/songs/2-12.htm. See pages 307-308 below for a more thorough description of the effects of the Tambora eruption in the region.
81 Hoyt Diary, 44, fn. 57. For an example of contemporary reports, see Alan MacEachern, “The Big Chill,” Canada’s History Magazine, May 19, 2016, http://www.canadashistory.ca/Explore/Environment/The-Big-Chill, including a quote from Thomas Miles regarding the snowfall of June 7-8, 1816.
82 Hoyt Diary, 2.
describes many of the entries I. K. Hoyt made in reference to events distinct from “mundane” daily life on his family’s farm and in the colony, such as local weather, steam transportation on the River, and elections. For example, on December 26, 1846, he recorded: “Munson Gould Pickett shot his brother Seymour in a quarrel, in the body five balls extracted afterwards; Died in four hours. Munson committed to jail for trial.” Entries such as this one may reflect in part the growing influence of newspapers on colonial communication and sensibilities; his grandfather had taken out a subscription to the *New Brunswick Courier* in 1828, and they may both have been avid readers of provincial papers. The Hoyt men may also simply have had more of an interest in the sensational than the average person. I.K. Hoyt was certainly curious about the world and its workings, as evidenced in his frequent notes about lectures on natural science and history at the Hampton Mechanics’ Institute in the 1840s. His interest may also have stemmed from the certainty of a good spectacle. Over several months in 1845, I.K. Hoyt noted two presentations on electricity and one on steam engines that showcased an operating model.

I.K. Hoyt almost never referenced family, like his grandfather before him, yet his son John Allan had a key hand in the survival of the journal in manuscript form. John Allan was perhaps the only child of I.K. and Frances Cougle (Hallett) Hoyt. What we know for certain is that he copied out the journal twice in an effort to improve his own writing and composition skills. John Allan also made several notes in the text, including

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83 Hoyt Diary, 74.
84 Hoyt Diary, 44, October 25, 1828.
85 Hoyt Diary, 65-66, February 14 and 20, March 20, and April 4, 1845. For contemporary critiques that the presentations at Mechanics’ Institutes were too focused on entertainment and spectacle, and not enough on education and moral edification, see Hewitt, “Science as Spectacle,” 91-119.
sporadic entries in 1867 and 1868, and he likely penned the marginal note beside April 1, 1831 that read “April 1879 River opened on the 1st April.” Hoyt’s ice records were some of the entries that most directly expressed his personal perspective living along the Kennebecasis. John Allan’s addition of an ice-out date while working with the journal engaged directly with a key marker in A. Hoyt’s experience of living weather and demonstrated the continued relevance of the date when the ice went ‘out past my house.’

Edward Winslow, April 7, 1799 – January 6, 1811 (b. February 20, 1746, d. May 13, 1815)

Edward Winslow, the namesake of an ancestor who landed on the western shores of the Atlantic Ocean in the Mayflower in 1620, was born into a life of privilege at Plymouth, Massachusetts, in 1746. The Winslows were colonial elites who lived beyond their means, a trend that many Loyalists, including Winslow himself, continued in Nova Scotia and New Brunswick. Having served as a leading officer in the revolutionary war, Winslow played a key role in the resettlement of Loyalists in North America. Combining ideas and promises circulated by others, he proposed the ‘partition’ of Nova Scotia to form a separate colony of decommissioned Loyalist soldiers, which would be “the most Gentlemanlike one on earth.” Winslow was vexed not only by his family’s experiences with relative poverty in their new home at Kingsclear on the Wolastoq/St. John River, but also by his inability to manifest the

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86 Hoyt Diary, 2-3, 87-88, and 50.
dreams he had shared with his fellow countrymen. As he expressed it to his friend Ward Chipman in April 1784:

The chagrine of the officers was not to me so truly affecting as the poignant grief of the men. Those respectable Serjeants … (once hospitable yeomen of the country) were addressing me in a language which almost murdered me as I heard it. ‘Sir we have served all the War. Your Honor is witness how faith-fully. We were promised land, We expected you had obtained it for us.’

Winslow’s letters furnish a colorful and dynamic portrayal of his involvement in the settlement experience of many who served with him in the war, in part through the various administrative positions he held in colonial New Brunswick.

Winslow’s journal is almost singularly concerned with his family’s day-to-day experiences, with a focus on men’s labour and activities. As a farmer, he paid close attention to local weather and the freshet, gauged when he expected livestock to give birth, and literally got his hands dirty. For example in April 1800, he wrote “broke the Horse sled drawing dung for potatoes… Jeff will pig about 21st July.”

Winslow found it difficult to keep workers; in the early years of Loyalist settlement, labour was in such demand that small farmers and landless labourers often held the upper hand in choosing where and when they worked for others. Yet Winslow’s household, which consisted of himself and his wife Mary, 11 children, his two sisters, and three enslaved blacks, had ample hands to perform most of the work required on the farm. However, their expectations, rooted in their past experiences and social mores, led many Loyalists to respond to their observations and challenges during settlement with adaptations that did

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88 “Edward Winslow to Ward Chipman,” April 26, 1784, Raymond, WP, 188.
89 Edward Winslow’s Diary, April 21, 1800, in “The Winslow Papers,” https://lib.unb.ca/winslow/fullrecord.cgi?id=2408&level=2&BACKSTR=fields=Title%2CCreator_name%2CSsubject%2CSSource%2CETC_Sequence&order_by=Identifier&level=2&Creator_name=&Title=Edward+Winslow%27s+Diary%2C+1799-1810&Subject=&Source=&Keyword.
not always fit the pioneer conditions in which they lived. They groomed their children for lives beyond the farm, as when the Winslows sent their able-bodied son Murray away to military in New Brunswick college in England at the age of 12.90

Nonetheless, social preference had no bearing on the family’s degree of vulnerability to local weather. Although he made frequent references to weather conditions in the journal, it is once again in Winslow’s correspondence that we find the most detailed account of living weather. His dramatic testimonial of local suffering and the family’s survival of the ice freshet of 1798 bears repeating. “Many others above me, lost every animal… I escap’d… By a hair’s breadth. The water was up to my front door and 6 feet deep in my cellar. I… expected to lose my House. The mountains of ice were 40 feet high… The stoutest of elms and maples were broke like pipestems – … They took direction just to avoid the buildings… They tore all before ‘em.” Fearing for his family’s survival, and reflecting the wisdom of siting buildings on ridges, Winslow reported that he “detach’d my wife and all the Light Infantry part of my family, and stood ready with a boat to run like a lusty fellow for the Highlands. The ridge where the buildings stand was completely insulated. I sav’d all my cattle, and even my sheep and hogs – my fences of course went to the devil.”91 The magnitude of the ice here described, not to mention the extent of the potential damages that some of their neighbours suffered, shows Winslow’s bravado to be just that. The Kingsclear settlers’

terror in the face of the hybrid behemoth of ice and full-grown trees bearing down on them must have been profound.

Winslow also bore the challenge of chronic gout. The pain he suffered must have required him to step out of the public arena from time to time. He did not write in his journal during periods when his affliction was at its height. Although the central purpose of the text was to record men’s labour on the farm, and despite the fact that more work would have been required of others while Winslow was ill, when he stopped, so did his journal. This was also true when he traveled on public business.

Winslow wrote in his diary fairly consistently. He generally wrote the most in months that fell between May and September, and focused on planting and harvesting as well as on farm and household maintenance, weather, business and court sittings, and the hours kept by each of his labourers. His records of the latter subject took the form of account book style entries, often including time worked as well as how much he paid labourers. The cusp seasons between winter and spring, and fall and winter, were the times in which Winslow focused the most on observations related to the weather, reflecting his farming concerns. These are the periods when crops are most vulnerable to frost, and farmers need to pay particular attention to the interaction of local weather with land-, ice-, and waterscapes.
Benjamin Benedict Crawford, 1800 – 1801, 1810 – June 8, 1836 (b. August 21, 1777, d. January 26, 1859)\(^{92}\)

Benjamin Crawford was nothing if not observant. During his years in New Brunswick, he engaged fully in a praxis of observation on the land at Long Reach on the Wolastoq/St. John River. Of all the journals that were consulted in this study, his reflected the most attention to changes in nature in springtime, and gave abundant details of the impacts of frost and ice on his farm as well as neighbouring areas. For example on April 24, 1814, he recounted: “very cold last night froze the dung in the stables and the ice along shoar.” In early February 1823, he detailed: “finished hauling 2 stacks from the Iland - thaud the snow sum with the sun for the first time this winter I due not meen on the eves but on the river”. We can observe his continuing practice from this entry written on his North Oxford farm in Upper Canada in 1854: “Be it Remembered the Moon chang the 30th December 1853 and was as far south as I think I ever saw the sun set south of this consesion quite in the woods from the verandy to rang up the consesion where the sun sets now.”\(^{93}\) Crawford likely began his habits of observation in childhood, as he worked alongside family members on several farms in New Brunswick. His account is rooted in place, although the details he included indicate it was a record meant to reach across time. He and his family were able to refer to it and strengthen their own praxis of observation on the family’s farms.\(^{94}\)

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\(^{92}\) Although Crawford continued the diary for 27.5 more years, June 8, 1836 was the day the family set sail for Upper Canada from Saint John; Crawford diary.

\(^{93}\) Crawford Diary, 1854.

\(^{94}\) Crawford’s son Wallace reread the diaries in 1881, adding his own recollections alongside some entries. For example, beneath Crawford’s entry for November 7, 1819, “Remarkable dark day all day, but Especially from twelve in the day untill three in the afternoon, so dark that we had a candal alite part of the time,” there is a note signed BWC that reads: “Remember this well”.
Crawford’s journal actually began in North Oxford Township in 1801, when he joined a number of other able-bodied settlers who answered Lt. Gov. John Graves Simcoe’s offer of land grants in Upper Canada to loyal British subjects. Crawford cleared the required amount of farmland and constructed a log home. Yet he returned to New Brunswick to settle close to his relations within the year, only returning to Upper Canada in 1836, once he had a grown family of his own. Some Loyalist families stopped only briefly in Nova Scotia in 1783 and departed almost immediately for Upper Canada, having caught what locals referred to as “Niagary [Niagara] fever.” This particular ‘affliction,’ which could include a visceral reaction to New Brunswick’s climate, continued to affect settlers in the province. In 1811, Philip and William Force, originally of Pennsylvania, left Sussex for Upper Canada, refusing ever to ‘lay their bones in this damned cold country.’” Several neighbouring families did the same. Incidents of settlers following relatives or neighbours along “established migration streams” were common throughout the Maritimes, as farmers tired of pioneer struggle and responded collectively to the promise of warmer and more fertile lands or even gold, across the Empire as well as in newly ‘opened’ territories in the western United States.

95 “Administrative History,” Benjamin Benedict Crawford fonds.
96 Alan A. Brookes, “The Golden Age and the Exodus: The Case of Canning, Kings County,” Acadiensis 11, no. 1 (Autumn/Automne 1981): 57–82. I am indebted to John Elliott, a genealogist and member of the Kings County Historical and Archival Society who was involved with the transcription of the Philip Nase diaries, for introducing me to the concept of “Niagary Fever.” Elliott notes that some families also moved from Kings County up to Carleton County as farmland there was opened for settlers. See Daniel F Johnson’s New Brunswick Newspaper Vital Statistics, Volume 90, No. 1983, Kings County Record, May 4, 1894, http://archives.gnb.ca/Search/NewspaperVitalStats/Details.aspx?culture=en-CA&guid=3e86415e-a9e4-441d-8bb0-f4d2f312a2db&r=1&ni=67225; Davidson, “That Peculiar New Brunswick Malady.” For reference to the opening of land in Carleton County, and rapid population growth there in the 1830s, see Graeme Wynn, “Population Patterns in Pre-Confederation New Brunswick,” Acadiensis 10, no. 2 (Spring/Printemps 1981): 128-29. For reference to the various places to which British subjects considered emigration in the first half of the 19th century, and the ecological push factors on Prince Edward Island, see Rusty Bittermann, “The Promise and Perils of Out-Migration: The William Cooper Family in California,” Island Magazine 66 (Fall/Winter 2009): 19–25.
Crawford’s journal thus represents a key tension within the Loyalist experience in British North America. Perhaps because he was six or seven years old when the family moved from New York to Nova Scotia, Crawford appears to have missed out on, or overcome, the alienation and estrangement that some Loyalists experienced in New Brunswick. The family’s transition may have been eased by the fact that they do not appear to have been upper crust elites back home.\(^97\) In 1801, at age 23, he took up land in Upper Canada. At the time New Brunswick was not granting land. With the support of his extended family, Crawford tended roots in New Brunswick. Yet he may always have planned to move West, perhaps after his parents passed away, as he kept the deed to the North Oxford farm. He may also have been surprised to win the heart of Jane Catherine Lyons upon his return to New Brunswick; the couple was wed in 1805. She may have influenced him with her desire to stay close to family as they raised their 13 children. Yet despite Crawford’s commitment to place, as expressed through his praxis of observation, he did not ultimately choose to make New Brunswick his permanent home, and neither did his adult children. As historian Ann Gorman Condon has observed, Loyalist homes were the domain of family as well as culture. Kinship bonds were often more important than geographical bounds in settlers’ experience of ‘home.’ Economic and climatic considerations were also paramount in settlers’ minds.\(^98\)

In addition to abundant familial support, the Crawfords benefited in their homesteading endeavours from multiple social, ecological, and economic factors. Freshet flooding was not an issue, because the topography generally kept house and


outbuildings high enough above water level. Crawford was a justice of the peace for over 20 years as well as captain of the militia, an assessor of roads, and a member of the church vestry. In addition to income through the farm, including the sale of meat, butter, and eggs, and the small pay Crawford received for his administrative duties, the family earned money by boarding the local schoolteacher.

The Crawfords were also strengthened and guided by Christian humility, generosity, and faith. Although he did not always attend church with his family, Crawford kept the Sabbath in his own way. As he expressed it in May 1818: “Sunday is a day of rest from our labour and serve God it is a comfort that we are in a land of liberty of conshence we aught to be than[ful]”. Several times, he also witnessed neighbours breaking the Sabbath because of the challenges and needs posed by living weather. For example, following “as severe a snowstorm as …ever we had” in February 1810, several of his neighbours got wood on Sunday after burning all they had to keep the sharp cold at bay. Then as now, New Year’s was a time for reflection. As 1823 wound to a close, a 46-year old Crawford penned one of his longest prayers, including the request that God may “be pleased to inliten my mind in wisdom’s ways.” The journal provides evidence of Crawford’s compassion for family and community. He observed his children’s first ‘creeps,’ standing, and steps, and the births, illnesses, and deaths of family, friends, and neighbours. While Crawford recorded account-book-style entries about barter and

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99 In 1813, he referred to water to his cellar stairs after heavy rain in spring. Crawford Diary, April 14, 1813.
100 Crawford Diary, May 23, 1818.
101 For example, Crawford Diary, August 17, 1811, July 7, 1814, October 4 and November 16, 1829.
cash lending to his sons, other family, and acquaintances; he also reported involvement in many work bees or frolics on neighbouring farms.

When the Crawfords decided to relocate to Upper Canada in 1834, this, too, was a communal endeavour. The previous year had been punctuated by particularly cold. And challenges to transportation and agriculture, prompting Crawford to report in late February, “[t]he snow is deeper than ever was known since the country was settled and the worst storms.” In early October, he explained, “this is what we call a hard season very cold and very little raised of grain.”102 The Crawfords left Saint John in 1836, part of a movement of outmigration that has been a recurring, if not a consistent, pattern over the past 200 years.103 While Winslow decried such mobility in the early-19th century, it reflected a pattern with historic roots in the lives of settlers’ families that in some cases stretched back hundreds of years.104 In another example of following “established migration streams,” the Crawfords emigrated to North Oxford around the same time as members of the neighbouring Nichols, Flewelling, and Holder families.105 In August, 1837, Crawford wrote to his brother James in New Brunswick to let him know that they were able to raise good crops in their new home, including potatoes “as good as yours and raised with half the labour.”106 He continued to record his praxis of observation

102 Crawford Diary, February 28, October 7, 1833.
104 “Letter of Edward Winslow to the Royal Gazette [July, 1802],” Raymond, WP, 468-472. This letter, signed “Tammany” referred directly to cries of: “Let us move — pray let us go. Oh Niagara; Niagara oh!” as settlers fled the province. A footnote on page 472 admits that “[i]t is not quite certain that Edward Winslow wrote this letter, … but the internal evidence is so strong that there can be little doubt that he was the writer.” Stephenson, Recollections Of A Long Life, 17; Baird, Seventy Years of New Brunswick Life, 1-2. Bittermann notes that many emigrants to the region were well accustomed to seasonal and peripatetic labour patterns in the British Isles. Bittermann, “Farm Households and Wage Labour,” 68, fn 123.
105 Wallace, Joseph, and Crawford each settled on their own farms. Crawford Diary, July 11, September 21, November 1, November 10, 1836. Other neighbouring families sent ‘scouts’ to Upper Canada, including the Seeleys and Britneys, but it is unclear whether or not they relocated.
106 “Ben Crawford Oxford to James Crawford,” Crawford Diary, August 18, 1837.
until three weeks before his death on January 26, 1859. Crawford’s son Daniel completed journal entries for the rest of the year. Perhaps inspired by his father’s practice, another son, James Augustus, kept journals between 1865 and 1881. James’ son, Leeman Wallace, went on to keep a journal of his own for the year 1887.¹⁰⁷

Reverend Frederick Dibblee, November 8, 1803 - December 31, 1825 (b. December 9, 1753, d. May 17, 1826)¹⁰⁸

Frederick Dibblee was a man of conviction and energy. In his lifetime, he lived in seven different villages or towns, and answered to at least four vocations; farming was the second after business, with religious calling and education third and fourth. His farming life grew from necessity following his family’s move to western Nova Scotia, soon to be New Brunswick, with the Loyalists in 1784 after facing persecution in Stamford, Connecticut, and Long Island. Initially settling in Kingston, Dibblee and his wife, Nancy Anna Beach, moved to the Woodstock area in 1788 with their infant son, John, where they made their home, bringing 12 more children into the world by 1804.¹⁰⁹

The family relocated to the Woodstock area at the behest of the Society for the Propagation of the Gospel among the Indians, called the New England Company in New

¹⁰⁷ Crawford Diary.
¹⁰⁹ Edkins, “Children;” Butler, “Dibblee, Frederick,” says 1787. Jo Edkins’ “Timeline” dates the family's settlement at Woodstock to 1788, but notes he was appointed 1787; http://gwydir.demon.co.uk/Jo/genealogy/earlydib/frederick1.htm#timeline.
Brunswick, which tasked Dibblee with establishing an ‘Indian school’ on the upper Wolastoq/St. John River. The purpose of the Company’s schools, which were the first Protestant schools for Indigenous people in the province, was to convert the Natives from Catholicism, and teach them trades so they could be apprenticed out to neighbouring settlers.\textsuperscript{110} Dibblee coordinated the building of the school, which taught Indigenous adults and children, as well as settlers, and was semi-residential. “They are Constant in their Attendance,’ he wrote, ‘and exceeding quick in receiving Instruction, five of them in Particular are amazing so, having made great Improvement both in Spelling and Writing.” In stark contrast to the reports of administrators’ exploitation of students at the later school at Sussex Vale, it appears that Dibblee had positive relationships with the Wolastoqiyik. When Bishop Charles Inglis visited in 1792, he observed that Dibblee was “much beloved by the Indians and respected by the Whites,” and that the two groups enjoyed harmonious relations. Dibblee himself was learning to speak Wolastoqey, although “a necessary attention to his Farm, in order to subsist his family,” made it challenging for him to progress in his studies. Dibblee acted as superintendent until 1794, when the New England Company centralized their schools at Sussex Vale. The Company’s commissioners, including especially Major John Coffin, believed that taking children from their families at a very young age was the most effective way to convert them, as well as affect the sedentarization of the communities to which students would return.\textsuperscript{111} The cultural genocide perpetrated through the

\textsuperscript{110} As quoted in W.O. Raymond, \textit{The Old Meductic Fort and the Indian Chapel of Saint Jean Baptiste [Microform]: Paper Read before the New Brunswick Historical Society} (Saint John, NB: Daily Telegraph Steam Book and Job Print, 1897), \url{https://archive.org/details/cihm_12322}.

\textsuperscript{111} For quotes from Dibblee and Bishop Inglis, as well as the date of the centralization of the schools, see Butler, “Dibblee, Frederick.” See also Judith Fingard, “The New England Company and the New Brunswick Indians, 1786-1826: A Comment on the Colonial Perversion of British Benevolence,” \textit{Acadiensis} 1, no. 2 (Spring 1972): 30-32. By the early 19\textsuperscript{th} century, the Company had failed to
residential school system across Canada has been well documented, most recently in the reports of the Truth and Reconciliation Commission.\textsuperscript{112}

Following his appointment as the school superintendent, Dibblee became a deacon in the Anglican church, and in 1792, he was ordained as a priest. The son of a Reverend, young Frederick may have felt an inkling of the calling in his earlier days. He had been a lay reader when the family lived in Kingston, New Brunswick, a role that was also part of his father Ebenezer’s journey to ordination in 1748. Rev. Frederick Dibblee became the “first missionary to all the settlers living on the River St. John above St. Mary’s and Kingsclear.” He ministered on horseback, snowshoe, or by canoe, to farmers in the parishes of Prince William, Queensbury, Woodstock, as well as North Hampton, comprising a 240 km stretch of dynamic landscape up and down the River from his home.\textsuperscript{113}

Having studied at Kings College in New York, Dibblee was quite at home with a pen, and his journals, written between the ages of 49 and 72, maintain a lively account of living weather while homesteading along the Wolastoq/St. John River. He kept detailed entries describing seasonal changes during late fall, winter, spring, and the first half of summer, then ceased writing during late summer and early fall. Dibblee’s expressive successfully apprentice Native students to local settlers, despite 15 years of the school system. For evidence of exploitation at Sussex Vale, see 34-37. A tradition passed down by a Church of England historian, and by Dibblee’s family as well, tells that the mission was meant to be centered close to the Meductic Falls. Dibblee fell asleep in the canoe on his way upriver, and the Indigenous guide paddled through the Falls, so Dibblee decided to make Woodstock the center of the mission instead; Lee, \textit{The First 50 Years of The Church of England}, 98, 100; W. O. Raymond, “W. O. Raymond Scrapbook,” Articles Based on Frederick Dibblee’s Diary, 2012, \url{http://gwydir.demon.co.uk/jo/genealogy/earlydib/scrapbook.htm}.


\textsuperscript{113} Raymond, “W. O. Raymond Scrapbook;” Lee, \textit{The First 50 Years of The Church of England}, 97-100, quote on page 97.
personality comes through his writing, which breathes with visceral testimonies of the ecological edges on which settlers found themselves. On April 17, 1810, he described the ice breaking and running “from above in a monstrous manner … for one hour when it stopted; and is now jamed up full to Captn. Smith's Island and as high as a Common Fresh. we greatly Fear it will Do a great Damage when it Runs.” The following day, Dibblee updated his observations of ice conditions, adding: “We greatly fear the people below will be very much Injured, as we never had so great a Body of Ice and so High ran off at one Time before. Very warm.” While there was little difference in the spirit of his entries over time, or in the subjects he recorded, Dibblee did develop his ecological knowledge, as evidenced in entries about crops as well as the freshets. For example, on September 17, 1824, he stated: “Corn never so Backward, it is now only geting too hard for Boiling - … This Day it Rains fast, but never warmer - we fear if it Continues long the wheat [reaped but not yet stored] will grow - ... Had not this very warm weather set in, there would have been no Corn; and if it doesn't continue until after the Equinox, there will be but little that is Hard.” The Diblees needed the corn to harden so they could hang it to dry, then grind it into meal for use throughout the winter. At the same time, wheat that continues to grow once harvested is more likely to become moldy in barns or granaries. The family raised multiple types of grain as an adaptation to address the uncertainty of any one crop. Still, in this account, the reader can feel the tension inherent in living weather. Crops had different needs, and farmers were loathe to lose any portion of the harvest upon which their family would rely for at least the next eight months.

114 See, for example, pages 212-13 in chapter 5 below.
The Dibblees drew on various physical, emotional, and spiritual resources for their continued sustenance and eventual prosperity. Dibblee’s employment by The New England Company, his rural missionary work for the Society for the Propagation of the Gospel in Foreign Parts, and his rectorship at Woodstock, earned money for the farm. Like most settlers, the Dibblees had to clear at least some of their own land. Dibblee’s sons, William and John, worked together, with the assistance of younger brothers, to clear forest when they received grants in 1809. After several years of felling trees, and rafting the logs down the Wolastoq/St. John River to market, they were able to use the land for hay and livestock pasture, and finally to plant crops. The family also sold vegetable produce from the farm. Their first home was a log house beside the River, which they replaced with one of the earliest frame houses in Woodstock in 1811.115 In 1822, Dibblee received a grant of 500 acres in Woodstock, which may have been a ratification of his prior ownership of the land. The family also had access to the glebe land of the Church of England, giving them extensive acreage on which to raise crops and graze livestock.116 Furthermore, the Dibblees produced maple honey and sugar, and as the boys got older, they made a quantity of maple beer each spring. Multiple able-bodied family members reduced the physical demands of pioneer life on individuals, particularly once they had grown to young adulthood.117 Finally, Dibblee’s deep faith

115 For a detailed description of the log house, see Raymond, “W. O. Raymond Scrapbook.”
116 Dibblee Diary, December 16, 1817, January 2, 1818. Dibblee’s middle sons, George Jarvis, Frederick Beach, and Henry Ebenezer, also received 200 acres each in 1824, while two of his eldest, Richard and William, each received 250 acres in Wakefield in 1826; Jo Edkins, “Land Grants and Maps” (2012), http://gwydir.demon.co.uk/ho/genealogy/earlydib/woodstock.htm.
117 Raymond, “W. O. Raymond Scrapbook;” “Much of the difficulty experienced in providing for his family in the early days of Mr. Dibblee’s ministry was lessened by the industrious habits of his sons. So early as 1795 the fact is recorded in his diary that his son Jack when eight years old assisted in ‘hoeing in’ wheat on the intervale. The ‘hoeing in’ was necessary because the stumps were then so thick that a harrow could not be used.”
and his bright disposition - conveyed by his jocund and prayerful style – no doubt buoyed himself and his immediate family through the challenging times. Dibblee’s approach and capacity were in contrast to those of his brother Fyler and sister Polly, who both struggled with mental illness after the war. Fyler committed suicide within the first year following emigration to New Brunswick; his illness in response to the cumulative effects of war and challenges in establishing himself as the family’s breadwinner in a new country, was probably not uncommon. For all of those people whose struggle with mental illness in these historical circumstances is known, how many others were ‘lost’ to history?

The tradition of keeping a journal was picked up by Rev. Horace Dibblee, one of Dibblee’s great-grandsons, for at least five years between 1898 and 1905. Although Horace never met the Rev. Frederick, it is tempting to think that he read his great-grandfather’s journals and felt a kinship with him.

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118 As just one example among many, see Dibblee Diary, October 3, 1816.
119 For example see, Gray, Sisters in the Wilderness, 114, 260; Critchlow Harris was another man who was not fortified for pioneer life in mind, body, or spirit; Robert Critchlow Tuck, The Island Family Harris: Letters of an Immigrant Family in British North America 1856-1866 (Charlottetown, PEI: Ragweed Press, 1983). See also Henry Nase Diary, King’s American Regiment, October 11, 1782. Census returns classified people as being “of unsound mind;” unfortunately, this term tells us nothing about what ailed them; David Wright and Renée Saucier, “Madness in the Archives: Anonymity, Ethics, and Mental Health History Research,” Journal of the Canadian Historical Association 23, no. 2 (2012), 65-90, https://www.erudit.org/fr/revues/jcha/2012-v23-n2-jcha0589/1015789ar.pdf.
120 These texts are held at the archives of Kings Landing Historical Settlement in Prince William, New Brunswick.
122 Fidler, “Kings Landing Research Note Dibblee Family.”
Thomas Tredway Odber Miles, March 11, 1815 – April 19, 1818, March 8, 1841 – January 3, 1845, January 1, 1846 – January 22, 1855 (b. April 20, 1789, d. June 5, 1858)

Thomas Miles did not appreciate his “cumbersome” signature. Hence, he eliminated the ‘Tredway.’ Miles was a man who would sign his name often in life, not least as a commissioner on the roads, justice of the peace, member of the House of Assembly, and lieut. col. in the militia. A descendent of Puritans who crossed the Atlantic in 1637, he grew up in polite company among Maugerville’s families of means. His father Elijah had been a member of the House of Assembly, and lieut. col. in the militia, before him.123

Miles was a shrewd man of business as much as he was a farmer. He had grown up on his parents’ Maugerville farm before going into shipbuilding in Oromocto. Miles also spent at least one winter on the Nepisiguit River, supervising a crew of lumbermen hauling timber out of the northern forests to be driven downstream in the spring. In January 1820, he wrote to his brother-in-law Samuel Carman at St. Mary’s: “This being rather a warmer day than common I shall endeavour to use my benumbed fingers to the best of my abilities.” Miles confided that he regretted leaving his wife alone to bear the brunt of cold winter blasts and reflected that while he had come to the North country for gain, he would be content to live with “a sufficiency in the Society of my Dear little Family and Friends.”124 Miles’s first journal entry in 1815 had referred to his union with Sarah Carman. The couple moved to Oromocto for several years before relocating to Maugerville, raising three children. Their two sons worked with Miles on the farm into manhood, and after daughter Sally married, her husband Woody was a great help on

123 Hill, Maugerville, 81, 22.
124 “Thomas O. Miles to Samuel Carman, Nipisiguit,” January 30, 1820, MC451 MS2, PANB.
the farm as well. Miles also hired a number of men to work for him throughout the year. In multiple account-book-style entries, he enumerated their labour for him and for one another, the time they spent working his livestock on their farms or plots, and his own physical and intellectual labours. He was engaged in multiple profitable arrangements with these men, including raising crops and a dairy cow on shares, and his records reflect that although there were reciprocal elements to these relationships, the power dynamics were unequal. Miles had the upper hand, and he used it to drive hard bargains.

Late in November 1844, Edward Mersereau declined his lease for a lot Miles owned because Miles refused to remit him money for his livestock’s manure. Yet Miles charged a sliding fee to Tom Doherty for rental of the lot at Portobello several years later. He asked 5 pounds per year for house and land, as the previous tenant had paid, “or 6 if the season is good for Crops and he is able to pay it.”

While Miles did not see fit to invest in the benefit of one man’s farming on his property, he hoped to profit from the effects of good weather and another man’s labour. He may also have reaped the economic and ecological benefits of the previous tenant’s livestock grazing and fertilizing of Tom’s cropland.

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125 Typescript of Miles Diary, November 20, 1844; Miles Diary Microfilm, March 21, 1846, Thomas O. Miles fonds, MC 451, MS1, F11125, PANB.
126 Historians of labour and class dynamics in rural Atlantic Canada have deconstructed the myth of autonomous households and the concomitant partial myth of autonomous communities sustained through mutual aid, although in some communities, self-sufficiency and reciprocity were significant elements of daily life. Their research has demonstrated the prevalence of paternalistic relationships between wealthier landowners and their tenants or waged labourers, as well as between business owners and the men, women, and children who worked for them, including between merchants and fishermen. The ‘informal economy’ encompassed a network of relationships such that labourers might work for a farmer who in turn paid them in access to goods at a particular store. (For example, Bittermann, MacKinnon, and Wynn, “Of Inequality and Interdependence,” 17-18, 3-35; Bittermann, “Farm Households and Wage Labour,” 38, 46, 55, 62-63, 65-66; Cadigan, “The Moral Economy of the Commons,” 27.) This credit would have cost the farmer in produce, but not in cash. Miles’s journal demonstrates a multiplicity of such arrangements. As Daniel Samson warns in *The Spirit of Industry*, “we need to recognize the differential bases from which these exchanges could occur and the difficulty of interpreting the precise meaning of any one such exchange. If such an exchange was not part of the calculus of profit and loss, it equally may not be
While displaying keen individualistic business acumen, Miles also valued reciprocity based on Christian community values. In a lengthy entry, Miles described his brother’s final days of life on Earth in 1842, reiterating Frederick’s devotion to the “Salvation of souls” through Jesus Christ. He then named some of Frederick’s friends whose “kindness and attention… should ever be remembered with gratitude by all his relatives,” so “that my children and all my friends, may never forget the obligations we are under to go and do likewise.” Miles’s zealous expression of the transcendence of Christian love between friends, neighbours, and even acquaintances in times of need, shines a light on other entries in the journal about helping widows, sharing food, and other kindnesses. It also poses tantalizing questions about how much of a person’s inner self can be known through a household journal, particularly when their daily business requires heavy emphasis on quantification to manage a complex system of labour, barter, and trade. And yet, Miles himself was complex. Like many of his peers, he practiced his Christianity through the lenses of class, his Protestant work ethic, and ethnicity, expressing prejudice toward drunks, laggards, and “the Irish.” Still, when it came to matters over which people had no control, including freshet floods, Miles extended a hand to his neighbours near and far.

Living weather at Maugerville centred around water. Like Coleridge’s Ancient Mariner, settlers found ‘water, water, everywhere,’ and if their wellheads were breached

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127 Typescript of Miles Diary, February 2, 1842.

128 For an example of the variables he tracked in his account-book-style entries, see Typescript of Miles Diary, November 16, 1843. Refer to the same source, January 2 and 3, 1843, for entries reflecting his prejudices towards “the Irish” during an election.
or their pumps were underwater, then they, too, had ‘not a drop to drink.’ Water’s effects were numerous. In late fall 1848, Miles observed: “The roads are in the worst state I ever knew them – mud 6 inches deep in many places – the land is filled with water.”

Miles’ journal furnishes lively and useful accounts of farmers’ adaptations to living with seasonal inundation, including erecting staging for vegetables in cellars as well as for cattle in barns. Transportation routes were transformed, as roads became both impassable and invisible, and people canoed to and from their own front doors. Maugerville’s farmers also benefited from the nourishing silt deposited on their fields by the freshet’s flood. So, too, did they need and want water as much as other farmers during dry spells. For example, after crop-parching weather that contributed to fires that destroyed grain in the field, Miles reported June 16, 1849: “begins to rain at six, a beautiful shower, may the Lord make us thankful for this and all his other mercies.”

As a man of letters, Miles took his record-keeping seriously. Although he wrote inconsistently in the extant first years of the journal, once he resumed his record in 1841, Miles was a devoted reporter of daily weather and tasks at his Maugerville farm. During the planting, growing, and harvest seasons, Miles assiduously tracked the hours and labour of the men who worked for him. Throughout the rest of the year, his entries were somewhat more descriptive, including details of his own business, family members’ mobility, trips to market, and visiting. Like P. Nase, Miles sometimes wrote

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129 Miles Diary, November 1, 1848.
130 Given the diverse formats of Miles’s journal for the 1840s held at the Provincial Archives of New Brunswick (ie. typescript, microfilm, CD ROM), Miles may have kept other records that were neither saved nor recovered.
lengthy entries about politics, and took pride in his involvement in a just, orderly, and Christian society.

Jacobina Campbell, August 19, 1825 – November 26, 1843 (b. 1796 or 1797, d. Unknown)\textsuperscript{131}

“Under the cross of Christ I sit
Redeem’d and plac’d beneath his feet
‘Tis done, my chains are broke, my heart is free.”\textsuperscript{132}

These words, part of an acrostic written by Campbell in her Commonplace Book, testify to the lifelong commitment she made to Christ and her religious community.

Born of Scots who settled on the Nashwaak with the Highland Regiments in 1784, Campbell was predominantly raised in Fredericton, where she received a young woman’s “classical” education that included literature, French, and needlepoint.\textsuperscript{133} After her father’s death, she and her family relocated to their farm near the confluence of the Nashwaak and the Macktuguack (Tay) Rivers.\textsuperscript{134} Campbell had already discovered John Wesley and Methodism by 1818, when Methodist missionary William Burt came to the Nashwaak and encouraged the construction of a chapel at Taymouth. Local settlers raised the chapel on land that the Campbell family deeded to the church, suggesting Jacobina and her mother, then household heads, were both in support of the

\textsuperscript{131} Campbell, “\textit{I Wish to Keep a Record},” 15-16. Campbell Diary, 15. She was 55 in 1851.

\textsuperscript{132} Campbell Diary, 16.

\textsuperscript{133} Campbell Diary, 15; pages 19, 20, and 34-35, regarding the family’s class, wealth, and assumptions about their significance.

initiative. The two were among the Nashwaak women whose names predominated in local Methodist records in the 1830s.\textsuperscript{135}

In her Commonplace Book, Campbell revealed her love of God and learning through passionate prose and poetry – some of which was her own, but most of which she copied from the sermons, hymns, and lectures, of various ministers. Her journal, the first several years of which overlapped with the end of her Commonplace Book, was written in another register, yet illuminated the same commitment.\textsuperscript{136} In words she copied from Wesley’s sermon on Numbers xxiii, 23: “Whosoever thou art whose heart is herein as my heart give me thy hand, and let us magnify the Lord together and labour to promote His kingdom upon earth. Let us join hands and hearts in this blessed work in striving to bring glory to God in the highest by establishing peace and goodwill among men.”\textsuperscript{137} Campbell lived these words. She was an avid organizer, coordinating and attending small Methodist class meetings, visits by itinerant preachers, and a Sunday School, in addition to working to establish a school house in the community. On top of these roles, Campbell became the head of the household; two of her brothers lived on their own farms, and her brother Patrick began constructing a house in April 1826.\textsuperscript{138}

While her spirituality was her sustaining strength, Campbell and her family were also fortunate to have other material sources of resilience. Since Mr. Campbell had been a military officer, his wife was awarded a pension by the government upon his death.

\textsuperscript{135} Campbell Diary, 16-18.
\textsuperscript{136} Campbell Diary, 11.
\textsuperscript{137} Jacobina Campbell’s Commonplace Book, 1817-1825, pp. 90-96, York Sunbury Historical Collection, MC300, MS 2/126, PANB.
\textsuperscript{138} Campbell Diary, 36, for map with the Campbell home and Ludlow and Sandy's farms. See pages 19, 20, and 134, n145, for details about Campbell’s various activities and roles.
Furthermore, his three sons inherited his high status in colonial society, becoming militia officers; Sandy and Patrick also served as justices of the peace.\textsuperscript{139} Hence, the farm had some cash income, although the family still needed livestock as a source of food, labour, and wool, as well as to grow much of their own food. They benefited from having received a land-grant with extensive intervale. The soils beyond it were nourished by the rich alluvial heritage of much of the low-lying soils in the immediate vicinity of the Wolastoq/St. John River. Campbell’s brothers harvested the bulk of the family’s wealth in the woods, working in lumber camps in the winter and on the lumber drive each spring.\textsuperscript{140} She managed the household’s dairy, churning butter and making cheese. In five years out of Campbell’s 18.5-year record, the family also made maple syrup. Despite various conditions amenable to success, including investments from London via the New Brunswick and Nova Scotia Land Company in the 1830s, the Campbell family fortunes were rocky.\textsuperscript{141} Like many who settled in the region, Campbell’s relatives did not all live out their lives on their farmsteads. Brother Sandy and his family, sister Ann, as well as possibly Jacobina herself, all moved to Upper Canada between 1847 and 1855. The depression of the 1840s had led Sandy’s creditors to sell his farm. Whether his wife Caroline had relatives in Upper Canada, he was eligible for a land grant after serving in the war of 1812, or both, the family was part of the tide of out-migration at this time. It is likely that Ann joined them, followed shortly thereafter by Jacobina,

\textsuperscript{139} Campbell Diary, 19, 28, 32, 34.
\textsuperscript{140} Campbell Diary, 29, 21.
\textsuperscript{141} Campbell Diary, 25, 34; 19-21 regarding the family’s participation in “the New Brunswick rural squirarchy.”(21)
perhaps when Sandy received his share of an inheritance from their mother’s ancestors in Scotland.\textsuperscript{142}

Campbell is tied with Nase for the most concise entries; she made fewer entries about weather than any other farmer of focus in this study. As a busy woman overseeing familial, religious, and educational, activities in the community, she was concerned most with precipitation, as rain and snow could hinder or prevent settlers’ mobility. Yet Campbell’s journal, like others, demonstrates that poor conditions did not necessarily prevent rural people from getting out, and portrays the risks they undertook while living weather day-to-day. For example, on May 3, 1836, her brothers rafted downriver despite the fact that it was “[c]old and rainy.” These conditions could have made for poor visibility and choppy waters, and would most certainly have increased the slickness of the logs. Early the following January, Campbell had recorded “Go to town with Betsey,” followed by the description: “Bad storm.” The storm may have hit after their arrival; Jacobina returned home the following day.\textsuperscript{143} Yet it is possible the two women were caught in the storm. While Campbell had ample time to observe the skies once she was engaged in outdoor labour on the Nashwaak later in life, she and her siblings did not grow up on the farm. She may not have had the opportunity to learn certain weather portents in the wind and skies. Campbell’s brothers worked in the woods with farmers, and likely had more practice with local weather knowledge in action.

\textsuperscript{142} Campbell Diary, 27, 35.
\textsuperscript{143} Campbell Diary, 172, 180. The latter date was January 6, 1837.
Janet (Hendry) MacDonald, January 1, 1857 – February 8, 1868 (b. February 7, 1795, d. April 27, 1887)\(^{144}\) (The first three months of the journal were kept by her son William.)

Janet MacDonald often observed the sky, land, and waterscape from the commanding home of white pine that she and her husband Alexander had built when their family outgrew the log cabin on the shores of the Wasetemoik\(^{145}\) (anglicized ‘Washademoak’) Lake.\(^{145}\) Full to overflowing with children and love, visitors, faith, music, and books, the cabin had given way to the house on a height of land from which she could view Gagetown Island and Upper Musquash Island as dark pools in the River below.\(^{146}\) To the southeast, Janet could see the lake on whose shores she had lived since birth. It was across those very waters that Alexander had rafted with a team of men in the fateful fall of 1817, when a wind propelled them up on her father’s shore.\(^{147}\) Long before they were grounded, the men had spotted a broad field of ripened wheat. Unbeknownst to Janet, Alexander sought her good graces when he asked her father how many sickles he could gather. “I’d say I could raise a dozen,” George Hendry replied. And before that wind died down, the raftsmen had harvested the entire golden expanse.\(^{148}\)

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\(^{144}\) Campbell, “I Wish to Keep a Record,” 311-12. The typescript held in the University of New Brunswick archives was salvaged and typed by H. Gertrude Paxton, in 1904, for one of MacDonald’s grandchildren, Dr. W. C. MacDonald, who was living in Malden, Massachusetts. Excerpts of the journal were also published in Marion Gilchrist Reicker, Those Days Are Gone Away: Queens County, N.B. 1643 – 1901 (Queens County Historical Society, 1981), 118-152. Typewritten transcript held at the UNB Library Archives at the University of New Brunswick in Fredericton; MacDonald Diary transcript typewritten for W.C. MacDonald, M.D., grandson of MacDonald, “at Malden, Mass., by H. Gertrude Paxton, in 1904.”


\(^{146}\) Christie and Reicker, The MacDonals, 23-24. For reference to the family’s love of literary works and sharing them, Campbell, “I Wish to Keep a Record”, 14-15, and 361, fn 34.

\(^{147}\) I am surmising that it was the fall of 1817; the couple was married on July 9, 1818. It is possible that MacDonald could have looked South to see Hog Island, Long Island, and Spoon Island, as well.

\(^{148}\) Christie and Reicker, The MacDonals, 23.
The winds of time had blown many unexpected twists and turns into the annals of the MacDonald and Hendry families. Like many emigrants, their histories were flushed with dramatic loss and joy and reflected the melding of worlds that characterized much human experience following the bridging of the oceans by sustained trade and imperialism in the 17th century. As a child, George Hendry had narrowly escaped the cannibalistic cravings of his fellow passengers on the crossing from Scotland. Hungered by the off-course sailing of their drunken Captain, the passengers and George were liberated from terror by a French vessel with provisions to share. The Hendrys lived in Bermuda and New York before moving to Saint John in 1783.\textsuperscript{149} In 1794, George married Susan Belyea, whose father James was a Loyalist from Long Island with Huguenot roots. Janet was the first of twelve children.\textsuperscript{150} Alexander's ancestors, in contrast, were more recent arrivals in North America. They had fought the English in Scotland and many were slaughtered in cold blood at Glencoe in 1692. His father Donald left Skye and landed in Saint John in 1785, where he faced persecution because his first language was Scots Gaelic.\textsuperscript{151}

Like their neighbours around the Washademoak, the MacDonalds raised crops and livestock for consumption, barter, and sale. The MacDonald women gardened and picked and preserved wild and domestic fruit. They processed the fibers from flax, as well as wool from the family’s sheep, slaughtered fowl, and made soap. MacDonald also knit, and made sausages, candles, and quilts, as well as possibly sewed clothes. She visited the sick and was involved in religious community. MacDonald attended the

\textsuperscript{149} Christie and Reicker, \textit{The MacDonalds}, 24. See also MacDonald, “Sketch of the Life and Ancestry of Janet MacDonald,” MacDonald Diary.
\textsuperscript{150} Christie and Reicker, \textit{The MacDonalds}, 25.
\textsuperscript{151} Christie and Reicker, \textit{The MacDonalds}, 6-7, 17; Reicker, \textit{Those Days Are Gone Away}, 82-92.
Baptist church, having converted from Presbyterianism following a period of Baptist revival in the 1830s; the initial spate of Baptist organization along the lake in the ‘20s began in the MacDonald barn! The MacDonald men were also very involved with the church; Alexander Junior became a Baptist minister in October 1858. Donald organized a singing school, and later in life, he remained involved in the church. As well, the men were responsible for livestock, field crops, and harvesting and chopping firewood. They also worked at the sawmill at the head of the lake, likely the very mill to which Alexander had been rafting in 1817. In the winter, the men hauled logs, and in the spring they chopped the ice out of the mill race to release a flow of water to power the mill. Livestock slaughtering and marketing throughout the year also fell to the men, as did the construction of fences, vehicles, and often the mending of shoes and boots, as well as the dusty task of threshing grain during the fall and winter.

The family came together following their separate labours, and MacDonald cherished and yearned for these times. In 1859 she wrote: “We used to be all together but now we are all scattered, one here and another there. Perhaps we shall not all meet again on the shores of time.” Janet and Alexander raised seven children. Their son George, and daughter, Susan, passed away in the years covered by her journal. MacDonald felt loss keenly, and allowed herself to express it in her writing. She kept a journal from girlhood, and continued one until the last week of her life, writing on any

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153 Christie and Reicker, *The MacDonalds*, 17, 41-42; Campbell, “*I Wish to Keep a Record,*” 191.
154 At some point, Alexander Black MacDonald Sr. invested in the mill enterprise, and his sons continued to work it. Christie and Reicker, *The MacDonalds*, 24.
155 MacDonald actually spelled it “Prehaps” in her journal; December 31, 1859. It was also spelled this way October 17, 1864. It is possible that the typist made these spelling mistakes.
paper she could scrounge, from old calendar pages to small scraps.\textsuperscript{156} Many entries depict MacDonald carrying the gravity of time in her heart, as well as marking it by changes in the natural world. Death was often on her mind – the deaths of loved ones gone before, her own mortality and that of her family members, and the passing of neighbours, too. Although she lived in the company of her husband, son James and his family, and often at least one or more of her children and grandchildren, MacDonald sorrowed for the loss of her greatest joy, which was having all of her children alive and well, around her. Son George, married with two children of his own, drowned after falling off a raft in sight of home on October 29, 1861. George was used to the water; he had years of sailing experience in the \textit{Brunswick}, the woodboat he had built with Donald’s assistance. He also worked with his brothers at the family mill, and likely developed considerable skill in rafting as in all lumbering tasks. Yet a raft of logs was slippery when wet or icy, and the challenge of balancing alone or in addition to wind or waves, could have knocked him to his death.\textsuperscript{157}

MacDonald was often heart-sick for George, and drew on her faith as a saving grace. Four months after his death, she wrote: “how his father and I grieve after him, but still we want to be resigned to the Lord’s will. He gave him and now has taken him. I trust to himself, we must not mourn.”\textsuperscript{158} For Janet, being alive meant living alongside death. She recorded the anniversaries of deaths as well as birthdays of those who had died, for example, on February 17 and 18, 1858: “This day twenty-three years ago my

\textsuperscript{156} For a note about the paper she used, see Christie and Reicker, \textit{The MacDonalds}, 24. For a description of the scene while she concluded an entry, see MacDonald Diary, December 22, 1861. For an exemplary entry weaving weather observations with contemplation and emotion, see MacDonald Diary, June 25, 1864.

\textsuperscript{157} Lower, \textit{The North American Assault on the Canadian Forest}, 27, 37-38.

\textsuperscript{158} MacDonald Diary, March 7, 1862.
father died;” “This day fifty-five years ago grandmother Hendry died.” In another entry, she referred to visiting “the Mansions of the dead” as “a melancholy satisfaction,” saying that she loved to go.\textsuperscript{159} Janet and Alexander lost their only daughter, Susan Ann, to tuberculosis on April 12, 1867.\textsuperscript{160} The deaths of her children marked two of the three rare occasions when she stopped writing in her journal for months at a time. Yet, Janet always returned to her record, perhaps because for her, being alive also included witnessing to the life of her family and changes in nature. Each entry was grounded in the concrete present, regardless of Janet’s grief or fear, by multiple descriptions of changing weather conditions and the activities of her family and neighbours “living weather.”

Indeed, despite their heartache, the MacDonalds had much to be grateful for. Their faith kept them generous and humble, confident in everlasting life with God. The land had been good to them, for which they thanked their maker. Living along the Washedemoak, as well as within the larger heatsink of the Grand Lake Meadows, furnished them with the longest growing season in the province. The lake effect moderated extremes of heat and chill throughout the growing season. It often prevented frost on clear, cool nights by keeping the temperature of the air at or above the dewpoint. The Hendry estate fronted on the lake, so the MacDonalds owned intervale land in addition to farming rich soils that had once underlain Glacial Lake Acadia.\textsuperscript{161} Janet’s

\textsuperscript{159} MacDonald Diary, September 11, 1862. See also February 25, 1863.  
\textsuperscript{160} Christie and Reicker, \textit{The MacDonalds}, 26, 43. He may have died in sight of his home at MacDonalds Point where he lived with his wife Rebecca and their two children, as well as in sight of the MacDonald’s farm at Central Cambridge. For Susan’s death by tuberculosis, see MacDonald family fonds, MG H 108, Series 1, Barry Grant, “Susan MacDonald,” Card catalogue, HIL SPECAR.  
\textsuperscript{161} Zelazny et al., \textit{Our Landscape Heritage}, 315. For further discussion of Glacial Lake Acadia, see pages 12-13 above.
husband served as road commissioner and justice of the peace. Their son Donald played a role in the colonial court system (he may have been a justice of the peace as well), and became an assessor in 1859 if not before.\textsuperscript{162} Hence, her family was bound up, if only in several small ways, with colonial administration and the economic, political, and social capital that it conferred. The MacDonalds were also able to work together on chores outdoors and inside; the children were able-bodied, and grew to adulthood, although they did not all have long lives. Finally, MacDonald had the ability to appreciate the intertwining of nature and God. As she wrote May 7 1863, “Still, clear, beautiful morning as can be everything looks so delightful. The apple trees in full bloom and lilacs. Everything seems to praise the maker of all things.”

Concluding Thoughts

The words of these ten farmers invite us to sit beside them at the hearth, whether a large open chimney hearth or a Franklin stove, and to be present to a shadow of their days. They each formed their unique way of being-knowing in the context of supportive families, at least to the extent that they had the necessaries of life, and a source of encouragement that pushed them onward and allowed them to develop inner reserves of strength. As adults, they met the challenges of daily life with faith and with family by their side. Their faith informed their praxis of observation, as many of them appear to have interpreted weather through a lens of Christian morality, at least to an extent. Each

\textsuperscript{162} For Alexander’s role as Road Commissioner, see Reicker, \textit{Those Days Are Gone Away}, 85; for Donald at the courthouse as well as in the assessor business, see Grant, “Donald MacDonald,” Card catalogue, HIL SPECAR.
farmer cultivated and strengthened their praxis over time in particular home places where they were fortunate to be landowners.\textsuperscript{163} In addition to these riches, their lands included fertile intervale, which supported their families with the challenges of living weather in numerous and varied ways, depending on where and when they lived in the Wolastoq/St. John River Valley. The farmers whose journals are studied herein were also people with personal histories, genealogical knowledge, and a sense of legacy about how they had come to be in their place and time. For some, their Loyalist roots were of utmost significance, while for others, their spiritual identities as baptized Christians held great prominence. Regardless of their personal identifications, they lived within a communal culture, one in which family and community were still extensions of oneself, to a degree atypical in Northern North America today. This meant that whatever their experience of living weather in the River Valley, they shared vulnerability and risk, adaptation and resilience, with others throughout the seasons.

\textsuperscript{163} I do not know whether this was true for I. K. Hoyt.
Chapter 4
Glib Ice, Sposh, and Open Water:
Ice Formation and Break-up on the Wolastoq/St. John River

Farmers’ families and communities looked forward to the winter ice season they depended on each year. Solid ice and deep snow formed bridges and furnished roads that connected people and places much more readily than the ecological conditions of any other season. Enhanced mobility facilitated greater sociability, as well as easing the burden of hauling logs to mills, moving hay to feed livestock, sending goods to market, or simply going to church on Sunday. The seasons of Wolastoq/St. John River ice formation, thaw, and break-up influenced farmers’ mobility and posed unique risks and adaptive challenges to farmers. Although ice travel enhanced mobility, it also appears to have been one of the more immediate dangers that people regularly faced in colonial New Brunswick.¹ Due to the often precarious nature of transportation on the ice, settlers developed a repertoire of strategies to mitigate vulnerability and maximize ideal conditions, including closely monitoring the changes in ice and water and assessing the implications for transportation on foot and by conveyance. They also frequently communicated about conditions with family, friends, and other travelers. Settlers’ journals illuminate individual, collective, and administrative responses at cusp seasons.

¹ J.I. Little, “Life and Death in the St. John River Valley: The Diary of Alexander Machum, Jr., 1845 – 1849,” *Acadiensis* 22, no. 1 (Autumn 1992): 125. Out “of the 50 deaths for which causes are identified by Machum,” 23 were accidental, “including nine drownings and five cases of frostbite.” The journals are replete with references to drowning deaths, including Crawford Diary, December 16-31, 1833. Over this brief stretch of time, Crawford referred to 4 drownings and reported that another man had fallen into the ice.
and during winter transportation. Their records also contribute to understandings of changing weather trends over time in the Northeast.

Freeze-up

The freeze-up period was particularly dynamic, with temperatures fluctuating between freezing and thawing being the norm. Thus it called for close observation, flexible planning, and quick decision-making. Settlers often did not allow freeze-up to deter them from traveling. They accepted that the season posed certain risks, while also trusting their personal praxis. The high value settlers placed on mobility at all times of year influenced their willingness to engage with potential challenges on the River and its tributaries.

The process of ice formation created a dynamic water- and icescape with which settlers necessarily interacted in the course of most days in the late fall and early winter. During freeze-up, ice in the landscape was worthy of note, as a guide for planning travel routes, and as an indication that winter may begin to ‘set in’ and freeze the main bodies of the Wolastoq/St. John River and its tributaries. On November 6, 1804, “the weather ha[d] been so Severe” in the Woodstock area, that Rev. Frederick Dibblee’s pond froze “so as to Bear the Boys, and scarcely thawed any during the day;” ice formed in the River six days later. Similarly, on October 29, 1821, a “heavy Northwind” brought snow and then temperatures “so cold that it froze the Madusnecneck [“Meduxnekeag”] over above the dam.”

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2 This dynamism lasted for varying periods of time, and hazards existed throughout the season.
3 The name “Madusnecneck” refers to the River spelled: “Meduxnekeag” on current maps. The original Wolastoqey name is rendered as “Medeockseenecasis” by John Gyles, writing about a branch of the Wolastoq/St. John River he visited with the Maliseet in 1689. Meduxnekeag River Association, “You say
River a month later. Ice formation in the late fall and early winter was a halting process, progressing in fits and starts, sometimes leaving the River ice-free for days or weeks between ice runs. In late 1794, Henry Nase wrote, “The Nerepis froze over three times to the 24th and opened again and now the last of November the river strong but the weather pleasant, the Nerepis River opened and good Boating to the 29th December.”

In at least 40 years between 1786 and 1892, the River or one of its major tributaries froze and opened at least once while the ice was initially forming. Depending on what conditions were like on land, this could create particular travel vulnerabilities and challenges for weeks at a time. Ice became solid on some routes more rapidly than on others during freeze-up, so that settlers could still make use of ice roads and bridges if conditions prevented them from traveling the full distance on an iced-in waterway.

Farmers observed ice and weather dynamics to try to predict when the River would close. Prediction usually involved communication with people up- and downstream and comparisons with changes in previous years. On Christmas Eve and Christmas Day 1807, Dibblee observed: “Ice now thick and Slow, a Proof that the River is going to close,” and: “The River last night Closed from Dr. Earle’s Old Place up to Pine Island - and has Shut up very Smooth.” Fifteen years later he observed: “River

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4 Henry Nase Diary, November 30 and December 30, 1794.
5 This tally includes evidence from Annis Forman’s testimony about the ice jam and breakup of 1833; Trail, Bear Island, 18-19, as well as from Fredericton Athenaeum, The New Brunswick Almanac and Register for the Year of Our Lord 1850 [Microform] : Prepared under the Superintendence of the Fredericton Athenaeum (Saint John: H. Chubb, 1849), 126, https://archive.org/details/cihm_38430; Rick Fleetwood, Environment Canada, “Freezeup-breakup_saint_john_river_2016-updated-file (master),” Shared with the author August 2016. Note that the Athenaeum appears to be a year ahead of the records of Environment Canada, such that one of these sources lists incorrect dates for freeze-up and break-up for years between 1825 and 1849. On page 43 of his Report on the Agricultural Capabilities of New Brunswick, Johnston included a table of ice freeze-up dates for 1825 to 1849 that are generally in agreement with the Athenaeum’s dates for freeze-up.
now Froze acrost in Several Places where there is no Current. Never before so Early.”

The speed and strength of the water’s movement interacted with the cold temperatures to initiate or delay freeze-up. On November 19, 1823, reflecting his more sophisticated knowledge of local weather dynamics, Dibblee surmised: “The Ice now Runs very Slow, a sign that the River is Froze over below as well as above.” In another journal entry dated November 16, 1820, he reflected his understanding of typical River and ice interactions: “The Ice has Jamed up to my lower Bar, but settled down again - The River Rising very fast as Usial when the Ice is closing. Never had the River Closed in November before; nor so Much Snow on the 16th. We fear a long tedious winter.” A neighbour, John Bedell, had traveled to Fredericton in his boat, and Dibblee surmised that lack of word from him was because he had “been Caught by the Ice, on his way from Fredericton.” Dibblee went on to report that Bedell “left His Boat at Mr. McLaughlins and is hawling his goods up in Sleds.” Janet MacDonald who lived on the Washademoak, also observed and recorded weather conditions that affected ice formation including the strength of the wind. On December 6, 1863, she predicted: “Very cold and clear… It is still now. I think the lake will freeze tonight.” Sure enough, the next day she observed: “The lake is froze, some air holes. Quite cold.” The following year, on December 12, MacDonald reported: “Some ice making in the Lake but can’t freeze, the wind is so heavy.”

Farmers’ comparisons of the timing of ice formation from year to year relied on a disciplined consultation of their own records. Dibblee’s journal reflects how an individual’s recourse to memory alone when responding to changing conditions in the

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6 Dibblee Diary, November 25 and 29, 1822.
moment could lead to inaccuracy. On November 12, 1820, he recorded: “The Ice now very Thick and Strong – It is closed back of the Island – Never known before at this season… The major had to leave his Boat and load at mr. Bedell’s.” The timing of this closure was unprecedented within his record, as was his report on November 16: “Never had the River Closed in November before.” Yet his statement on November 23, 1825, that “[t]he river has frozen somewhere over above which we never knew so early,” appears mistaken. Even if the River ice formation of November 16, 1820 had not included upriver ice, the ice had frozen “above” on November 19, 1823. Significantly, some farmers generally refrained from using terms such as “never” unless relating people’s immediate perceptions of cold or the magnitude of storms.7

Most inhabitants in the Wolastoq/St. John River Valley exercised caution during the cusp seasons of ice freeze-up and break-up, aware that transport conditions varied in relation to the River’s medium, the quality of ice, and the time of day. Travelers needed to be flexible, prepared to change routes or conveyances or even stay put, as conditions dictated. On December 25, 1787, H. Nase reported: “The River and the Nerepis not safe - went the new Road from Handay’s, to Round Hill - and crossed over to Major Coffin’s in a boat, spent the day.” On December 12, 1811, Azor Hoyt left from the Kennebecasis for Saint John by water and returned on the 15th by ice. Dibblee often commented on water transportation during freeze-up, providing evidence of the risks taken by members of his family and other settlers. On November 23, 1805, he observed “The Ice now Runs Thick, but Canoes Cross the River.” In late November three years later, he

7 See for example, Crawford Diary, December 15, 1834. Note that Dibblee was an exception and often used the term “never,” as well as other hyperbole.
observed “A Pleasant Morning after a Still, Clear, Cold night, which has Produced for the first time, Some Ice in the River but not to stop a Birch Cannoe which Poled up this Morning.” On November 16, 1809, Dibblee reported that his sons “Jack and William went to mill with the birch canoe,” although the ice was running. Five days later he observed: “Considerable Ice Runing,” noting “the River is very low and all the bars covered with ice, and from the shores some distance into the River and so strong that […] may drive an ox team upon the ice.” Nonetheless, William and a couple of neighbours had gone to the mill in “Mr. Beardsley’s Log Cannoe.” While this vessel was much less likely to spring a leak when sharing the rapid waters with flotillas of tiny icebergs, the family had previous experience with how rapidly cold temperatures or snowfall could render the river impassable. After a particularly rapid freeze-up on November 11, 1804, Dibblee recorded: “In the morning James Upham and Joseph Cunliffe Breakfasted with us on Their way from Fredericton and at Night Mr. Beardsley arrived from St. John. having left my Cannoe Two Miles below Fredericton, where the Snow fell Three feet and filled the River so Thick that no Cannoe could Stir, no more than if it was Solid Ice.” Similarly, on December 5, 1813, Benjamin Crawford recorded: “The river froze last night. Joe and Robert got up as far as Mrs. Seeleys with the boat.” Travelers often had to leave vessels or other vehicles with friends or strangers along the River; they retrieved them after “a sledding Frost,” or once the ice had broken up in the spring.8

8 Dibblee Diary, November 25, 1808.
9 The journals are full of other examples of travelers thwarted by ice or water, when their mode of conveyance was not fit for that medium. For example see Crawford Diary, December 5, 1813.
10 For sledding frost see Robert MacKinnon, “Roads, Cart Tracks, and Bridal Paths: Land Transportation and the Domestic Economy of Mid-Nineteenth-Century Eastern British North America,” The Canadian Historical Review 84, no. 2 (June 2003): 199; see also Dibblee Diary, December 18 and 31, 1825.
Annis Forman’s testimony of the ice freshet of November 1833 reflects the potentially frightening circumstances ensuing from unanticipated freeze-up. Foreman was keeping house for her brothers on Fraser Island (referred to as Long Island in other accounts and maps) while her husband went to Upper Canada to find a suitable place for the family to relocate. Forman’s brothers set out downriver to procure winter supplies at Fredericton. While they were gone, temperatures dropped and ice began to form around the island, stranding Forman with all of her children save her eldest, a son who boarded with a family on the mainland to attend school. An ice jam formed, and Foreman was terrified of it sweeping over the island, but instead the temperatures warmed up and rain began to fall, breaking the jam below. By noon the next day, the River was clear of ice, and Forman and her children stood out near the shore so they could be seen by her parents and son on the mainland, who had not dared to cross to rescue them during the sudden jam and break-up. Her brothers’ boat had been damaged by the ice, but they were able to return home with their supplies before the River’s frigid waters turned to ice once more.11

While the above examples demonstrate that it was not always possible to predict or prepare for freeze-up, many boat owners still attempted to store their vessels safely from the scourge of ice. MacDonald’s son George took his boat “to Mr. Colwell’s to lay her up” on November 22, 1858; the lake had partly frozen overnight, but the ice cleared out again. Similarly, Crawford noted on November 19, 1823, that a neighbours boat had

11 Gunter Trail, *Bear Island*, 18-19. Forman’s testimony says that her brothers lost their boat in the ice, and does not say how they made it home with supplies. Environment Canada’s records indicate that the River froze up at Fredericton November 5, 1833. The Athenaeum’s Almanac reported the same freeze-up date, although it also reported that the River opened November 19, and closed again the 20th. Fleetwood, “Freezeup-breakup_saint_john_river_2016-updated-file (master);” Fredericton Athenaeum, *The New Brunswick Almanac and Register for the Year of Our Lord 1850*, 125.
frozen in when the ice initially formed, “but afterward went to town.”

The River froze again six days later. Winter freeze-up could affect boats even once they were laid away for the season. On November 24, 1859, MacDonald recorded: “Water is coming up fast. A great drive of ice and snow come down from up the River from the Grand Falls, they had crossed there on the ice filled the river full. It took George’s and Allen’s wood boats that laid at Mr. Colwell’s. George’s to the passage nearly and Allen’s below Mr. Day’s, and the mouth of the lake was full.”

Despite the potential for rapid freeze-up, captains of wood boats and other vessels were willing to take risks as they attempted to reach Saint John “before it was too late – plowing through the ice.”

Steamships with their own source of power, and later with steel-clad hulls, were often better able to force their way through the ice than wooden, sail-propelled vessels. Although these technological changes did not completely preclude vulnerability to ice and weather conditions, steamers became more common on the River after 1830.

On November 13, 1848, Thomas Miles reported: “The ice stops at Fredericton and Oromocto Island- the Steamer St. John forced her way through & goes to St. John with much difficulty.”

12 See also Crawford Diary, November 26 and 28, and December 4, 1811.
13 While she did not say whether the men secured the boats, and made no entries between March 24 and June 1 the following spring, MacDonald noted on November 25 “it is all fast below the point,” and on November 30 that a neighbour “crossed from the point just below the mill on the ice.”
14 Blom and Blom, Canada Home, 78; Ewing noted the curiosity of seeing wood boats and others attempting to reach “S. John before it was too late – plowing through the ice.” She also reminded her sister Dot about sending the Negretti & Zambra thermometer that Rex had requested. “He wanted to test this climate accurately. Common thermometers vary so, and people’s accounts are so vague & exaggerated. However, if it is omitted – never mind.” Her outsider’s commentary nonetheless captures the idiosyncratic nature of some people’s perceptions and analyses of weather. Ewing’s dismissal of the omission of the thermometer may reflect the fact that she and her husband did not depend on detailed knowledge of the weather for their subsistence.
16 Miles Diary.
The historian reconstructing freeze-up seasons on the Wolastoq/St. John River must rely on the types of records left by historic observers, meaning that these seasons are constructed twice, first by settlers in their journals and colonial observers at Fredericton, and then through researcher interpretation.17 Table 1 depicts the longest freeze-up seasons occurring near Woodstock and Maugerville, with River transportation at particular locations disrupted for less than half a week to longer than nine weeks. Shorter freeze-up seasons lasting one or two days to just over a month, occurred along the Long Reach and the Kennebecasis. The journals reveal that ice-up could begin as early as the first week of November and as late as the second to third week in December.

As a result of the years in which each farmer wrote, as well as the influence of local weather and topography and proximity to interconnecting waterways, there is very little overlap in the record that would suggest distinct weather patterns influencing the onset of the ice season throughout the central and lower River Valley. Table 1 reveals that the date on which the ice began to freeze did not necessarily correlate with the length of time it would take for the Wolastoq/St. John or the Kennebecasis to freeze entirely. It also indicates that ice formed later in some fall seasons in the latter half of the 1820s,

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17 Some record keepers kept more detailed observations of the freeze-up process than others. While I calculated farmers’ ice seasons beginning with the first reference to ice in the River, I determined the end of freeze-up in Dibblee’s journal based on the dates he observed that the River had shut up or frozen over. For Miles’ and Crawford's records, I gauged the end of freeze-up by the date on which people began to use the ice. Environment Canada researchers define freeze-up as “[t]he EARLIEST date on which the water body was observed to be COMPLETELY covered with ice (and did not subsequently thaw);” William Richards. “Ice Cover on the St. John River at Fredericton 1825 – 2005: Where did the ice go?” Fredericton, NB: Environment Canada, 2006, PDF file.
and in the late 1840s. These patterns are corroborated by Environment Canada’s record. Between 1825 and 1844, there are only three instances of freeze-up at Fredericton occurring in December as opposed to November, and all fell between 1826 and 1831. The next time that the River froze up in December at Fredericton was in 1845, followed by 1849, 1852, and 1854. After that, it did not freeze in December until 1861.

The fact that the earliest complete freeze in the Hoyt journal and Miles’ records occurred in 1853 raises a question of what these individual journals can tell us about larger weather patterns. Did winter begin earlier that year in the central-lower

Table 4.1: Freeze-Up Dates and Durations

<table>
<thead>
<tr>
<th>Category</th>
<th>Dibb, below WS</th>
<th>Crawford, LR</th>
<th>Hoyts, KB</th>
<th>Miles, MV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earliest partial freeze</td>
<td>Nov. 3 (1810)</td>
<td>Nov. 10 (1827)</td>
<td>Nov. 14 (1848)</td>
<td>Nov. 8 (1853)</td>
</tr>
<tr>
<td>Earliest complete freeze</td>
<td>Nov. 29 (1823)</td>
<td>Nov. 24 (1827)</td>
<td>Nov. 7 (1853)</td>
<td>Nov. 28 (1853)</td>
</tr>
<tr>
<td>Latest final freeze</td>
<td>early Jan. (1809)</td>
<td>Jan. 7 (1830)</td>
<td>Jan. 11 (1811)</td>
<td>by Jan. 15 (1847)</td>
</tr>
<tr>
<td>Longest freeze-up</td>
<td>66 days (1805)</td>
<td>34+ days (1829)</td>
<td>32~ (1828)</td>
<td>54 days (1847)</td>
</tr>
<tr>
<td>Shortest freeze-up</td>
<td>12 days (1816)</td>
<td>2 days (1824)</td>
<td>1^ (7 years)</td>
<td>3 days (1841)</td>
</tr>
</tbody>
</table>

Env Can, F’ton**

Earliest complete freeze: Nov. 5 (1833)
Latest complete freeze: Dec. 12 (1852)

* Abbreviations: Dibblee, below Woodstock; Crawford, Long Reach; Hoyts, Kennebecasis; Miles, Maugerville; Environment Canada, Fredericton.

~ It is not completely clear that the initial and final dates in this 32 day span each referred to the Kennebecasis.

^ Given the lack of detail in many ice records in the Hoyt journal, it is likely that these single dates often represented final freeze-up, the culmination of a days-long process.

** Freeze-up dates for 1825 (the first year of data) through 1854, the last year covered by Miles’ journal.
Wolastoq/St. John River Valley? The River froze on November 25 at Fredericton, just three days earlier than it did at Maugerville, but not particularly early within the roughly 30 years previous, or the three decades following, according to Environment Canada’s record. As meteorologists use 18 to 30 years of weather records to establish “climatic normals,” the journals are limited as sources for historic climatic reconstruction; only Dibblee and Crawford recorded consistent data over 18 years or more, and none of the farmers recorded 30 years of ice seasons. Yet “normals” can only provide an artificial sense of “average” weather conditions, as well as of “extremes” of temperature and precipitation, and climatic changes over time. For the purposes of understanding how Euro-American settlers historically made local knowledge of weather and climate in the River Valley, Environment Canada’s almost 200-year record becomes an artificial construct in itself. The only late 18th- and 19th-century farmers in the River Valley of European ancestry who could call upon social memory of this duration were those of mixed Indigenous and European descent, and Acadians. Their cultures had learned to carry generations of knowledge for adaptation, long-term resilience, and survival.

The degree of variability demonstrates to the outside observer just how skilled farmers needed to be when prioritizing tasks in the fall. They made choices about when to plant winter grains, sell produce, and butcher or sell livestock, in preparation for the winter season ahead. While settlers could not always anticipate the timing or nature of freeze-up, their skill-set rendered this ability unnecessary. They practiced a repertoire of

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19 Surette, Métis/Acadian Heritage 1604 to 2004.
strategies, from watching weather conditions and their changes, to accepting that their own plans and preparations might require adjustment, to talking and traveling with others. Settlers thus navigated the dynamism of the season and used the routes and other resources available to them to mitigate or limit disruptions to their mobility.

Transportation

Settlers looked forward to the relatively low friction transport of goods and people afforded by snow and ice roads. Local rules of thumb about safe ice depths influenced when settlers began to travel on River roads, while multisensory observations supported their understanding of safer and riskier routes. Colonial legislation and practices of marking safe routes, combined with the local customary practice of testing ice depth oneself, lowered the risks to travelers from accidents. For many farmers, the sociability and leisure afforded by winter travel was a welcome break from the hard labour of the agricultural round.

Farmers made choices about transport through interconnected land-, ice-, and waterscapes based on their multi-sensory awareness of cues in nature. Anthropologists Tim Ingold and Teri Kertilla have framed knowledge as ‘skill in interaction with the world.’ Kirsten Hastrup, an anthropologist who works with hunters in the far North, details their skill in action on the sea-ice and points to some of the environmental cues that were also available to historic travelers on the Wolastoq/St. John River and its tributaries:

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The hunters know that the sea-ice is susceptible to the forces of temperature and wind, but also to more hidden oceanic conditions, among which unpredictable currents were often mentioned. Hunters also knew that the closer we got to the ice edge, the more fragile the sea-ice was, and the more attentiveness driving demanded; cracks were not visible from the sledge until they were close, but cues were taken from the color of the ice, the slush on the surface… More long-distance cues were taken from distant flocks of seabirds known to congregate over open water.21

Farmers in the Wolastoq/St. John River Valley became accustomed to reading nature’s cues as to ice conditions. “Posh,” “sposh,” or “slosh,” as Crawford and MacDonald termed slush on the surface of the River during thaw, indicated melt and potential soft spots that caught and slowed sledge and sleigh-runners and increased the efforts of draft animals.22 Before slush had a chance to form, a skim of water on the ice could portend thaw.23 The journals indicate that settlers tracked the effects of water currents and the tidal influence of the Bay of Fundy on the River ice. Farmers also recorded landmarks, including particular islands and points on shore, demarcating recently safe crossing places. Birds perched on the ice could be a marker of holes or carrion, while discoloration or dark patches could indicate openings or thin ice.24 MacDonald’s synoptic observation on December 14, 1863, that “[t]his morning the ice don’t look much like going on it,” which can appear deceptively simple to the 21st-century reader, captured her skill of visual appraisal. Ice conditions could also be audible, and settlers could even interpret impending weather based on the River’s sounds. On a day when the ice was smooth and firm and traffic was busy, MacDonald

23 Diary of Janet McDonald, January 8, 1860.
24 Blom and Blom, Canada Home, 299.
reported that the ice was “roaring,” suggesting the extent to which her daily chores were
distracted or at least accompanied by an audible din, and demonstrating settlers’ acute
aural attunement to nearby waterways in all seasons. Conversely, George Head, a
colonial administrator traveling from Halifax to the Canadas and bereft of any local
experience, was most unsettled by the “repeated loud cracks” from the Wolastoq/St.
John River ice as his hired driver guided a two-horse sleigh along the route.25 Author
Joseph Whitman Bailey recalled that when the temperature fell rapidly, the ice always
“terrorized us by those sharp explosive cracks.” New Brunswick writer, Wayne Curtis,
 retains local knowledge of how the River ice often “settles with a hollow thump” before
a storm.26

Winter transportation in colonial New Brunswick centred on iced-in waterways,
and Euro-American legislators quickly adapted to the need to regulate the marking and
use of safe winter roads on rivers, frozen marshes, and land. A 1787 act stipulated that:
“[A]fter the first snow, and as soon as the rivers and marshes are safe for the passing of
cattle on the ice,” the local highway commissioners were “to order the surveyors of
highways and roads, for the said town or parish, to summon forth so many inhabitants as
the said commissioners shall in their discretion think are necessary, between the age of
16 and 50 years, to work after such manner as the said surveyors shall direct, in cutting

25 MacDonald Diary, February 28, 1863; George Head, Forest Scenes And Incidents In The Wilds Of
North America: Being a Diary of the Winter’s Route from Halifax to the Canada’s, and During Four
Months’ Residence in the Woods on the Borders of Lakes Huron and Simcoe by Sir George Head
(London: J. Murray, 1838), 50. See also Miles Diary, December 6, 1853.
26 Joseph Whitman Bailey, A Boy’s Life in Fredericton Anecdotes and Reminiscences (Fredericton, NB:
University of New Brunswick Libraries, 1999), 27; Wayne Curtis, Sleigh Tracks In New Snow: Maritime
Christmas Stories (Lawrencetown Beach, NS: Pottersfield Press, 2014), 79.
and carrying bushes, or marking ways.”27 Farmers, as well as their horses, teams, sleds, or wagons, were conscripted by the surveyor of highways for road breaking, shoveling, or marking, in winter time. This work was in addition to clearing roads on their own properties. Settlers marking winter roads cut, carried, and erected evergreen bushes along paths “as straight as may be,” indicating a safe and relatively direct route along the River and major tributaries.28 On December 24, 1858, MacDonald reported “[t]his afternoon James, Donald and George bushed the road across the lake to the Point.” As proof of the necessity of marking a safe route, she observed on January 16, 1861: “The going is very bad they cannot cross till they get to the staked road.” Travelers also needed markings of a safe route because they often faced greater challenges perceiving dangerous ice conditions than locals. As Head described in 1829, no period or degree of intensity of Frost [can] suffice to render the traveling upon the rivers perfectly free from accidents, owing to the insecurity of the ice; the confined areas continually subject to burst its way from underneath, leaving chasms, which, becoming immediately lightly skimmed over with a new coat of ice, deceive the traveller by their appearance, and give no warning whatsoever till the surface breaks in under the horse’s feet: and these air-holes, as they are called, are met with at times, no matter what the thickness of the ice may be.29

27 “An Act in Addition to an Act for laying out, repairing, and amending Highways, Roads, Streets, and for appointing Commissioners and Surveyors of Highways within the several towns or parishes in this province,” Acts of the General Assembly of His Majesty’s Province of New-Brunswick passed in the year 1787 (Saint John, NB: J. Ryan, 1787), 27 George III – Ch. 5.
28 “An Act to regulate the Winter Roads in the Counties of York and Sunbury,” Acts of the General Assembly of His Majesty’s Province of New-Brunswick passed in the year 1805 (Saint John, NB: John Ryan, 1805), 45 George III – Ch. 8. Wayne Curtis recalls watching as the River froze over a period of days when he was a child: “and we know that it will stop one night soon and freeze solid and after a day or two, someone will pick their way across and with the axe put the tiny bushes in a staggered row for us to follow. The new winter road. Only the elderly know how to do these things safely;” Curtis, Sleigh Tracks In New Snow, 78.
29 Head, Forest Scenes And Incidents, 47.
MacDonald noted the presence of air holes on the frozen lake on December 7, 1863. Two days later, she reported the tragic drowning of Albert Fowler.\textsuperscript{30} Lucy Everett Morrison recorded the drowning death of George Parks, who fell through an air hole on December 13, 1879.\textsuperscript{31}

Winter road labour was credited to the statute labour required of all able-bodied settlers. In 1805, lawmakers – who were exempt from road work – recognized the onerous nature of labour in winter conditions by limiting such obligations; men could only be expected to work four days per winter and within three miles of their own homes.\textsuperscript{32} The 1805 law made allowance for passing places, and specifically recognized the presence of slow-moving wagons and sleds carrying bulk goods such as hay and produce, as well as people driving cattle on the winter roads. An 1812 amendment repealed passing regulations, which had required drivers on the River to use passing places to allow more rapid conveyances to circumvent those slowed by loads. The amendment may indicate that social custom was enough to regulate transport.\textsuperscript{33}

The advent of ice travel every year was worthy of note; for many settlers, it signified a level of mobility unknown throughout the rest of the year. Crawford typically recorded the first person, horse, or team on the ice, as well as the first time he

\textsuperscript{30} For a description of Fowler’s accident and an analysis of the community’s response, see pages 168-69 below.

\textsuperscript{31} Diary of Lucy Everett Morrison, December 14, 1879.

\textsuperscript{32} A. Hoyt’s diary entries in the winter of 1832-1833, suggest that sometimes local conditions could require further labour on the roads; settlers may have been removed or rated for additional work. As well, there were times when settlers had to shovel themselves out and open roads around them in order to maintain mobility; Hoyt Diary 54-55, and 32, February 25 and 26, 1823.

himself traveled on the River Road.\textsuperscript{34} Two days after noting that the River had “pretty much shut up,” on December 12, 1810, he reported: “two men crossed the River between Rocky island and fosters upper island,” and on the 16\textsuperscript{th}: “the ice hard that people are on with slaigh and horses.” Yet, though the River “prity much froze” on December 3, 1812, people exercised caution, such that on the 11\textsuperscript{th} Crawford observed: “the river keepes froze no body goes on it yet.” He only recorded people traveling along the shore on December 13, and crossing the ice December 17, while his family’s first foray on the ice was for a visit on Christmas day. Similarly, on December 13, 1817, Crawford reported that while the River had been frozen for a week people had not yet traveled on it. Although he did not explain why people refrained from using the ice, his accounts about travel routes in other years indicate that travelers sought out the safest routes they could find. If they appraised all routes as unsafe, then the presence of ice could be a hindrance to transport, and present serious problems.\textsuperscript{35} For example, on November 16, 1858, MacDonald reported: “The river is all froze. The lake is froze down below James Reed’s. It is uncommon weather for so early in the season. This morning James started for Gagetown for the doctor but could not get there for ice.” Only two days later was George able to complete the mission successfully. Keeping a record of the first travelers and their routes as well as accidents and weak spots or open water throughout the season allowed farmers to plan their own travel accordingly, assist others, and gauge the parameters of what they could expect from particular conditions.

\textsuperscript{34} Other farmers made such comments as well, for example Hoyt Diary, 11, December 28, 1813; MacDonald Diary, December 25, 1861.
\textsuperscript{35} Crawford Diary, December 26, 1812.
Locals recognized the changeable and fragile nature of the ice, and had strategies for mitigating transportation risks, including rules of thumb about ice thickness, assessments of the strength of the ice, and communication about their observations. According to the Hoyt’s 20th-century editors, “[i]t was always considered that it took 4 inches of ‘black ice’ to carry a team of horses safely, while 2 inches would carry a man.”36 As proof, on December 3, 1835, Crawford reported that: “The River is good crossing 4 inches at Mr. Ben white’s.” Some people waited for the ice to be even thicker; on December 9, 1815, Crawford noted “the River is as thick as a man and hard,” yet only the next day did people start to cross the ice. Local knowledge passed down in Queen’s County informs that the ice road was staked only after the ice had reached 8 inches in depth.37 Crawford’s entry of December 7, 1822 contained further evidence of the practice of local ice appraisal. “The River froze up so that people went on it and said it was hard a nuff to bear a hors.” Farmers also recorded when the ice was strong enough to hold particular loads; H. Nase reported on November 26, 1786, that he crossed the Nerepis below the Point with oxen hauling a sled piled with hay. His account attests to the incredible strength of the ice at an early point in the season; while ice typically formed in the River in November over the course of his journal, there were some years in which it opened again and only closed in December or January.38 There was not always ice in the River by the end of November, let alone ice strong enough to support oxen hauling a heavy load.39

36 Hoyt and Keirstead Thorne, eds., Hoyt Diary, 21, fn 69.
37 Reicker, Those Days Are Gone Away, 83.
38 It is clear from H. Nase’s account that ice formed in the River in November in 9 out of 12 years. In 1784, ice likely formed in November (on November 21, 1784, he wrote “The winter begun, about this time”), and in the remaining two years, H. Nase made scant reference to ice formation.
39 Dibblee made a similar observation in his journal on November 21, 1809.
Farmers’ praxis of observation became encoded in their characterizations of the ice, which they recorded in their journals and discussed with neighbours and family. Curtis recalls eagerly watching the initial formation of “board ice” along the banks of the Miramichi River, particularly over eddies where the water was still. Board ice was a sign that the River would soon close up. Crawford noted the presence of “glare ice,” often created by rain that froze atop a previous layer of ice, which may have presented visibility problems, or may simply have served to further reduce friction. Settlers typically sought to take advantage of the relatively low-friction surface of the ice, outfitting their sleds and sleighs with iron runners or “shewes.” When ice was unsafe and travelers were forced onto the land, the increased friction and potentially more circuitous route could lengthen the journey considerably. Philip Nase referred to “glib ice,” which was so slick that livestock were unable to cross on the hoof. Such conditions may have led Dibblee to report losing a cow “by falling on the ice” in early April, 1804. Weather conditions could compound challenges faced by livestock on particular types of ice. On February 21, 1859, with “[t]he wind blowing a gale and the ice bare” on Washademoak Lake, “[i]t was dangerous for teams to travel, they would slew so much.” MacDonald was observing conditions carefully because “[t]he teams is

40 Curtis, Sleigh Tracks In New Snow, 77-79.
42 For example, Crawford Diary, February 6, 1816. MacDonald Diary, November 20 and 25, 1858.
43 For a variety of colloquial terms for different types of ice, see Deborah and David Stewart, “Winter Travel,” Island Magazine 19, no. 7 (Fall and Winter, 1979), 19-24, http://vre2.uleth.ca/islandmagazine/fedora/repository/vre%3Aislemag-batch2-98/OBJ. The authors quote Hudson Jeffery: “It was a bright moonlight night and the ice as glib as glass and we were trotting along. … So what was I to do with the heifer? [She] couldn't walk on the glib ice.”(23)
44 Dibblee Diary, April 2, 1804.
returning from meeting this afternoon.”

Ice is a multidimensional medium, and if sleighs and sleds broke through the surface, they could become ‘bound’ or stuck, a circumstance that was particularly serious if a load was heavy. On March 8, 1865, P. Nase and his wife “narrowly escaped having a serious time” when their “horse and sleigh went through the top ice… We got clear of the difficulty all right, or nearly so.”

Characterizing and recording ice conditions allowed people to explain and understand their visceral experiences, and to communicate them effectively to others. Due to the centrality of transportation on the ice for months at a time, ice conditions were sometimes appreciated in their historic context. On January 24, 1817, Crawford wrote “the Ice is as good I sepose as it ever was known this thirty years past.” His report reflected the social memory of the settlers around him, as Crawford himself had only lived in the area since late 1801.

Some settlers mitigated risk by using a stick to test the strength and depth of the ice, adding physical interaction to their observational toolkit. Journals provide evidence of the strength-depth test leading to caution, as when Crawford “[t]ried the Ice to go to the Iland and it was no[t] sificient,” on February 21, 1820. Similarly, MacDonald’s sons surveyed ice conditions, including those ahead of them on the River, on February 9, 1863: “James and Alexander started for Gagetown, but they come back. The ice is

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46 Stewart and Stewart, “Winter Travel,” 23-24. From Hudson Jeffery interview: “It had frozen some and we got into what they call top ice. About two inches thick. We had the wood-sleigh. And we got in a little deeper. And we stopped the horse. Didn't know what to do. Couldn't turn around on account of the ice binding the sleigh. So we kept going on and going on and finally the horse stopped and wouldn't go any farther. And he pranced up and down and went right through the ice. But not all the way. I ran for help and Melbourne stayed with the horse. A couple of fishermen came and we got the horse out. So Melbourne took off to Summerside with the horse to get him warmed.”
busted on the main River so they thought it was not safe. The ice is very poor in some places…. This evening James, Donald and Fred skated over to meeting.” The men skated despite varied ice conditions, following a route that was familiar to them, and in the evening when ice was potentially more solid than during the day. At the same time, traveling in the darkness of evening challenged the skaters’ visual acuity.47

Yet even people who attempted prudence could be inaccurate in their assessment of safe ice. For example on December 9, 1863, MacDonald reported:

Just before noon Albert Fowler crossed over from Amos Mott’s to A. Bulyea’s cove without trying the ice. Everyone that saw him was astonished. No one knew who it was. He skated down to D. Fowler’s. When he come back he skated up with Alfred MacDonald to where he crossed. He looked for his skate tracks and found them. He started on them but growing dark, they think he lost them and skated into a hole that was open the day before. He holloed a good deal. There was a good many heard him but no one answered him nor offered to go to him, so he was drowned. No one knew yet who it was. There was a good many skating. Them at the sand beach did not hear him, but them further up heard him and them on the other side, them boys he had just left. He was drowned opposite George MacDonald’s, about half a mile from this shore. It was dark the ice full of holes. They thought it was on the other side. Oh! what a dismal night. The wind came from the N.E. in the afternoon and was very cold and in the evening it was a gale of wind and snow. It appeared dismal to think of some poor fellow in the water.

MacDonald was loath to imagine a helpless young man drowning in the presence of onlookers. Her son George had drowned in sight of shore when he fell from a raft October 29, 1861, and she was heartsick for him every day thereafter. On December 10, 1863, MacDonald reported that searchers deemed the ice unsafe, and Fowler’s death remained unconfirmed until the 11th, when they

47 Stewart and Stewart, “Winter Travel,” 24, for Charlie Sark’s observations that “the older people” recommended that you cross the ice in the daylight from the Mi’kmaw community of Lennox Island, as you could see the safe path, and they could see you.
found where he had tried the ice and found some pieces of bark off the stick and a piece of ice turned up. They cut a hole and the second time they put down the grapple they brought him up. The water was one hundred and 5 feet. How strange to think they got him when no one knew where he went in, almost a miracle.

Had observers from afar really been unable to see whether or not Fowler had tested the ice, or was that supposition based on his tragic fate? Onlookers may have felt a moral need to divest themselves of responsibility for his death, as well as having personal investment in the prudence of the strength-depth test. And yet Fowler’s use of this local custom to mitigate risk became his means for redemption within his community; he did not die for lack of prudence.48 The following December, MacDonald watched a man skate “from Gerow’s point up through the middle of the lake without trying the ice.” Ice often formed last in the centre of the River; this man’s risky route was worthy of note because he could have become another casualty. That she did not provide his name, as well as the fact that he apparently did not use customary protocol, suggests that he was either not local, or oblivious; MacDonald’s terse phrasing suggests she thought he should have known better.49

The simple practice of using a stick to test the strength and depth of the ice placed responsibility in the hands of the individual, yet reports of ice accidents as well as of ice rescues indicate that settlers helped those in danger when they could. Frances Beavan

48 With thanks to Jason Hall for discussion on this point.
49 MacDonald Diary, December 16, 1864. It is possible that MacDonald was also recounting an observation by a family member or neighbour. She preceded the observation with the report: “Skating on the Lake anywhere;” he may have been a local who made the same observation and assumed that the ice was indeed completely safe. If her observation is considered gossip, whether based on second-hand knowledge or not, it may be understood as a reinforcement of appropriate behaviour, and a cautionary tale that rehearsed personal and community awareness of risk. Joan C. Chrisler and Donald R. McCreary, *Handbook Of Gender Research In Psychology*, vol. 1 Gender Research In General And Experimental Psychology (New York: Springer, 2010), 395-96.
observed how a young man who plunged through the ice was saved by people laying poles on the solid ice next to the hole, so that he had something to grab and hoist himself onto while they provided a solid base for leverage.\textsuperscript{50} When “Mr. Peters was on the ice and like to be drowned,” in March 1860, MacDonald recounted: “Six men went to his relief… Mr. Carpenter crossed the ice today with a team.”\textsuperscript{51} This entry reflects the importance of community ethics of mutual aid and of personally and continuously testing one’s path; while one man was able to cross with a team, another man almost drowned on the ice the same day.

Two further strategies to mitigate risk included crossing only at particular times of the day, and the reliance of travelers upon those with local knowledge. For example, in early April, 1822, when the Ice was “very Strong,” travelers passed by the Dibblee farm “on the river in the Mornings.” Travelers hedged their bets by taking the river’s road after the solidifying cold of the night before.\textsuperscript{52} Despite the ice appearing strong, daytime temperatures in the spring could climb to above freezing and travelers were cautious later in the day. Similarly, on March 29, 1865, MacDonald reported: “T.E. McDonald and Wellesley was over this morning on the ice while froze and went to the mill.”\textsuperscript{53} A further strategy was for travelers to seek out people with expert local knowledge about safe routes on the ice. On January 28, 1832, Jacobina Campbell recorded that “a man and woman stop. Patrick shows them over the ice.” Locals were better able to interpret the interrelationship of weather dynamics in their home places because of their

\textsuperscript{50} Beavan, \textit{Life in the Backwoods of New Brunswick}, 142.
\textsuperscript{51} MacDonald Diary, March 23, 1860.
\textsuperscript{52} Dibblee Diary, April 10, 1822. On April 29th, he claimed “We have not had so bad a spring since the year 1817.”
\textsuperscript{53} MacDonald Diary. The typing is unclear; she may have referred to “T.N.” instead of “T. E. MacDonald.” Further examples can be found in the Miles Diary, April 25, 27, and 28, 1850.
familiarity with weak spots where springs, creeks, or other tributaries ran into the mainstream, personal travel experience, communication with neighbours, and awareness of recent accidents.54

Testimonials of river crossings indicate the ways that some colonists benefited from local Indigenous understandings of risk and responses to it.55 Frederick Vieth’s account of being guided across the Wolastoq/St. John River ice by a Wolastoqey man at Fredericton in the winter of 1855 is evocatively detailed:

The ice cakes had congealed, but they were unsafe, or rather treacherous, so each of us was provided with a pole which he carried just as a tight-rope dancer does. It was most exciting, for the cakes constantly moved under you, and you had to skip from one to the other. Some were firm and strong enough, but others would tip, and if you are not quick, down you would go. There was a novelty about it though, and after getting halfway over I rather enjoyed it. When quite close to shore I heard a shout, accompanied by a sort of splash and a loud laugh from Peter, and there was Gabe up to his armpits, but the pole he held kept him from going completely under. He yelled to Peter in Milicete to come to his assistance, which Peter did and got him up. I was glad my help was not called into requisition just at that moment, for I found myself on a nasty wobbly piece of ice and it was quite a toss up whether or not I was going to have a cold bath too. But by some fluke I did not, and at length we all stood on \textit{terra firma}, and throwing aside our poles scampered up to a more congenial temperature within the barrack walls. But a good deal of quiet fun was for a time poked at Gabe, for he had bragged before starting that if anyone fell through it would not be he. Unfortunately for him many lookers on had seen his involuntary plunge.56

54 It was appropriate to the scale of risk for travelers to consult with locals about safe routes, similar to the practice of having local experienced pilots take vessels through the Reversing Falls; Rev. Christopher W. Atkinson, \textit{The Emigrant’s Guide to New Brunswick, British North America} (Berwick-upon-Tweed, UK: The Warder Office, 1842), 89.


56 “Peter” was Peter Polties, and “Milicete” is a reference to “Maliseet,” the name Europeans used for Wolastoqey, which was taken up by the people themselves through processes of colonization, and is sometimes still used by Wolastoqwiik and settlers alike; Frederick Harris Dawes Vieth, \textit{Recollections of the Crimean Campaign and the Expedition to Kinburn in 1855, Including Also Sporting and Dramatic Incidents in Connection with Garrison Life in the Canadian Lower Provinces} (Montréal: J. Lovell, 1907), 284, \url{https://archive.org/details/recollectionsofc00vietrich}, with thanks to Jason Hall for bringing this source to my attention.
Vieth’s narrative tone is in agreement with the title of his work, which promised that he would narrate: *Sporting and Dramatic Incidents in Connection with Garrison Life in the Canadian Lower Provinces*. Yet this passage is more significant for how it illuminates the expectations of Vieth’s Indigenous counterparts; they were willing to use this risky strategy, knowing that someone may end up in the water. Crossing the Wolastoq/St. John River was a necessary part of existence for many Indigenous inhabitants of the area, as well as for many settlers. Their economic activity between the late fall and early spring often required that they risk crossing the River during cusp seasons, or on potentially unsafe ice at other times. As well, Indigenous people have been crossing iced-in bodies of water in the River Valley and beyond for thousands of years; social memory transmitted understandings of how to do so with as much awareness and skill as possible. Practice honing their senses of proprioception and kinesthetics over the life course gave individuals opportunities for enskilment.57

Depending on weather conditions, settlers sometimes gauged ice safe to cross when it was jammed or recently refrozen. On April 2, 1840, Campbell’s brother Patrick got “home on the ice jam.”58 On December 17, 1863, MacDonald observed: “People crossed here today on the ice where it jammed in.” Other entries indicated people might cross even when the ice had recently broken up, perhaps before or after a jam. Thus Crawford reported on April 15, 1833: “Northwest wind cold froze the floating ice so that people could walk on it.” On almost the same date two years later, he wrote: “Froze hard last night. Nat Flewelling and Sprag crost the River right to flaglor’s p[o]int on the

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57 Parr, *Sensing Changes*, 9, for proprioception and kinesthetics; see also Introduction, page 17; Grasseni, “Learning to See,” 152, for direct reference to enskilment.
58 Campbell Diary, 211, April 2, 1840.
Ice for a cake went from this side and lodged against the pint and that was what they went over on.”

When the River was iced over, settlers used skates for rapid individual transportation, as well as for fun and entertainment. Skating was often the initial activity on the ice, perhaps because skates allowed travelers to distribute their weight across the newly formed ice. As well, young people with the lowest weight to distribute were sometimes able to get on the ice earlier than the adults (they were also the only ones reported to play on the crust some winters). Having observed that the River froze December 4, 1818, the next day Crawford reported: “the Children hes Been on the Ice scating.” Skating was faster than walking, which made it practical as a means of transportation, as when MacDonald recorded that “Fred skated to the post office today after papers and got a letter from the boys,” in January, 1863. On January 4, 1864, “Susan’s girls come over and could not get back again, blowed off on the ice. Donald had to skate them over.” Donald likely pushed the girls on a hand sled, which MacDonald mentioned in a similar context that December. Hand sleds, often pushed by someone on skates, allowed travelers to make use of relatively low-friction transport for small loads, including loads of hay from islands. The smoother the ice, the better the glide, and people of all ages skated as a form of entertainment. Only in 1865 did Saint John open the majestic domed Victoria Rink, where members of the elite could relax without concern for the weather, or the need to anticipate dangerous or changing ice

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59 Crawford diary, April 19, 1835. See also Dibblee Diary, December 31, 1809.
60 See also Crawford diary, December 5, 1826.
61 For a reference to the use of a hand sleigh to haul hay from an island, see Crawford Diary, December 17, 1824.
conditions. In the early 1870s, members of the Whelpley family – neighbours of the Crawfords – produced skates, including the “Long Reacher” speed skate, at a factory near the eponymous stretch of river. The Long Reacher facilitated rapid long-distance skating, such that it was possible for healthy people to skate the 80 miles from Saint John to Fredericton in just under seven hours!

The ease and rapidity of transport on ice, and the fact that fields could not be worked and snow precluded many forms of outdoor labour, rendered winter time a favorite season for amusement for rural and townsfolk alike. From sleigh races on waterways and through the streets of town, to horse races on deep-frozen rivers, ice and well-packed snow provided a medium for entertainment that was accessible to most settlers, in some form. The Dibblee and Crawford journals evidence the parties, dances, and other social gatherings of families, youth, or adult friends, that punctuated the winter season in their respective communities. Festivities at this time of year

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65 Ronald Rees, *New Brunswick’s Early Roads: The Routes That Shaped The Province* (Halifax: Nimbus Publishing, 2012), 54-57, including an image of the painting “New Brunswick Fashionable’s, Fredericton, 1834,” by John Campbell, on 56; Graeme Wynn, *Canada and Arctic North America: An Environmental History* (Santa Barbara, CA; Denver, CO; Oxford, UK: ABC-CLIO, Inc., 2007), 166: “For those who had achieved a modest competence, in short, winter in the city or the countryside had its charms;” Hugh Gray, *Letters From Canada* (Bedford: Applewood Books, 2006), 247-248, describes the diversity of carioles or sledges on runners, and 249 describes merchants as well as “civil and military gentleman,” and gentle ladies, spending time together in winter “amusements,” from dancing to playing card games such as whist; for horse races see Crawford Diary, February 7, 1815, and Gerald Boyd, personal communication, 2005 and 2006; for social “slay-riding,” Crawford Diary, February, December 20, 1810.
literally supported the reproduction of farm life. Dibblee performed a number of marriages in the winter months. Historical geographer Graeme Wynn observes that “the incidence of late summer and fall births” in the demographic record reflects climatic influence even on human intimacy.67 Snowshoes and sleds allowed backland settlers to hunt, trap, and visit neighbours, despite the fact that they were likely to be snowed-in following storms for longer periods of time than their counterparts inhabiting intervale. Winter snows in forested and open country gave these settlers access to subsistence and sociability that boggy land, stumps, and lakes could impede in other seasons. Controlled exposure to fresh, ‘bracing,’ air was considered healthy in colonial society, as Edward Winslow’s reference to taking his first “airing” of the season in a sleigh on January 11, 1800, attests.68 The urban poor, often without the means to protect themselves from the cold indoors or out, were some of the only settlers in the province for whom winter could be a season of dramatic hardship.69

The iced-in season had multiple economic dimensions, depending on how people sought to use the Wolastoq/St. John River, or how their business efforts were linked to its medium. Farmers and others who relied on the River for transport saved on ferry costs if they could afford to wait and use the ice road.70 Farmers benefited when ice conditions and prices aligned to encourage rural people to take goods to market. In March 1846, some farmers with hay to sell risked waiting until the 11th hour for ice

67 Wynn, Canada and Arctic North America, 166.
68 Blom and Blom, Canada Home, 271, 277-78; Zilberstein, Temperate Empire, 98.
transport to move this colonial gold to market when it was at its highest price in the late winter season. In an entry for March 18 and 19, Miles reported: “a great quantity of Hay goes to town to day,” and on the 25th he observed: “saw five loads Hay going up on the Ice to day very few places that you can get on the Ice and very poor when you do get on.” Indeed, the conditions were sufficiently risky that “Jas McKeen drowned one of his horses - a few days since.”

When ice conditions were conducive to safe and rapid transport, settlers sometimes moved goods to market in order to gain access to items through barter or sale, regardless of price, such as during the festive Christmas and New Year’s season. As Miles reported on December 23, 1848: “good travelling on the ice- great run to Fredericton today- they will be well supplied for Christmas -for very little money.” At other times, traffic was busy because conditions were good after having been poor, as on February 28, 1865, when MacDonald pronounced: “Looks very stormy tonight. There has not been such good traveling this winter as today, nor so much traveling. Nearly a dozen loads of hay and straw past here going to St. John. Two teams past this afternoon got almost over to the point, something happened to one team, they got loose and run away. Robert Crafts horses.”  

71 MacDonald Diary, February 28, 1865. Note that MacDonald spelled the city’s name with an abbreviated form of “Saint.”

72 Philip Nase Diary, 32, February 14, 1863.

Similarly, in February 1863 P. Nase declared: “This has been a splendid day, good sledding and persons are making the best of it in traveling, etc. I think I never saw as many teams pass along in the same time as has this forenoon, conveying Hackmatack, Knees, Hay, Oats, etc.”
remember,” and reflected delight due to his involvement with the lumber business and marketing. The term, “open winter,” referred to a season of generally mild conditions often accompanied by patches of bare ground, to which P. Nase testified in entries over the course of the winter. He used the term “open weather” on January 16, describing how more than a week of rains had “broken up” the sledding conditions.73 A busy day of teams bringing goods to market and to grocers like himself for sale or trade offered welcome respite from the generally slow winter season, which would have been even slower when bare ground posed intermittent challenges to travelers using sleds or sleighs. Throughout his journal, P. Nase commented on how the closure of open water navigation on the River led business to slow, while ice-out in the spring was a boon to his shop.74

The mid-winter thaw of January or February, and other rapid periods of ice melt, could hamper and even interrupt transport on ice roads, as well as pose risks to infrastructure and private property. Immigrant farmers learned to anticipate the thaw, which could include mild temperatures, rain, soft spots on the ice, and even wide stretches of open water in the Wolastoq/St. John River and its tributaries. Reflecting his learning process, when H. Nase experienced “[t]he first freshet, or thaw this season” on January 10, 1788, he made an uncharacteristic note about local weather patterns: “it is to be observed, that about this time annually, a thaw and break-up of creeks, rapids etc. takes place.” There was a January or February thaw in 46 of the 107 years for which I

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73 Philip Nase Diary, 32, 31, February 7, January 16, 1863. Farmers also used the term “open winter” to speak about generally mild conditions accompanied by patches of bare ground, although “open weather” in winter could reflect a thaw. For example see Hoyt Diary, 42, January 15, 1828, and Philip Nase Diary, 32, January 16 in February 7, 1863. The terms are still in use, at least among older farmers. Lewis Corbett, personal communication, February 2016.

74 Philip Nase Diary, 38, March 10, 1864.
have records between 1784 and 1893.\textsuperscript{75} As not all of the journals used in this
calculation included details of ice or thaw, additional sources and records for the years
not covered by the journals would greatly increase this number. The likelihood of a
mid-winter thaw meant that settlers learned to observe signs of mild weather so they
could safeguard belongings near the frozen shoreline and make prudent transportation
choices. Yet they were not always able to anticipate a thaw, or protect themselves and
their property. When the River opened after having been frozen for longer than a week
in December 1829, Crawford recorded that several stacks of hay floated off Mistake
Point.\textsuperscript{76} During warm weather in January 1816, all of A. Hoyt’s entries concerned
consequences of thin ice or mild weather. He himself fell through the ice with a span of
horses, and reported another man falling through the ice, a separate drowning, and heavy
gale of rain that took the snow off.\textsuperscript{77} Many settlers, motivated by access to a relatively
low-friction surface to move animals, goods, and people, were willing to accept the risk
of traveling in inclement weather or uncertain conditions; in some seasons, it was nearly
impossible to avoid traveling in one or the other.\textsuperscript{78} Sporadic thaws and the process of
break-up itself could last for days or weeks, hence often settlers could not stop traveling
even when there were obvious risks. Finally, human perception was not necessarily
enough to avert tragedy. During the open February of 1828, A. Hoyt sorrowed at the
accident that befell “Mr. William Simpson while driving a 1 horse sleigh past my house;

\textsuperscript{75} Note that I did not consider a January thaw to follow “open” or “soft” conditions in late December,
particularly if the River had not already frozen up for a substantial period of time. The only gap in the
records I am working with is between June, 1797, and April, 1799.
\textsuperscript{76} Crawford Diary, December 14, 1829.
\textsuperscript{77} Hoyt Diary, 15, January 3, 17, 20, 30, 1816.
\textsuperscript{78} For example Dibblee Diary, March 17, 1819; Miles Diary, April 1816.
the slay upset and the horse ran away and went into a hole and under the ice at the head of Darlings island.”

Even when the ice itself was deemed safe, low or declining temperatures could threaten people with frostbite and hypothermia in the course of winter travel and labour. Journals and contemporary accounts report the use of rugs made from the hides and fur of buffalo and bear, as well as beaver hats, other fur wraps and clothing, coarse stockings, woolen long coats, and double-knit mittens. Not all settlers had access to resources for keeping warm, and moderating one’s own temperature on a journey required anticipating the required layers and preventing overheating as well as dangerous sweating. Cold winds, biting sleet, and low temperatures, potentially threatened all winter-time travelers regardless of means of transport: foot, snowshoe, sled, sleigh, or horseback. Journals reflected this vulnerability in entries such as Crawford’s on January 24, 1827, that “Joel went to town and perished” on his return journey up the Kennebecasis River. Two days later, Crawford sadly reported that Joel’s body was found on the ice near the main road. On the 27th, in a rare entry bearing emotional inflection, Crawford witnessed: “Joel is brought home a lifeless lump of clay.” He recorded another freezing death in the area around January 30, reflecting

79 Hoyt Diary, 43, February 24, 1828.
80 For the use of Buffalo rugs see Stewart and Stewart, “Winter Travel,” as well as Diary of Lucy Everett Morrison, which includes references to bear rugs and other furs, April 14-25, 1874 and April 29, 1875. For a reference to coarse stockings, see Henry Nase Diary, May 23 1786. For double-knit mittens, see Campbell Diary, 154, November 25, 1834. For beaver hats see Grace Aiton, The Story of Sussex and Vicinity (Sussex, NB: Kings County Historical Society, 1967), 59.
81 Joel Crawford was a cousin and he and Crawford worked side-by-side on their farms to make a living. Joel was 52 at the time of his death, and Crawford turned 50 that August. He might also have been shaken because he recognized the potential of his own mortality.
how common it was for travelers to be unprepared for the cold; the tragedy of losing
Joel had sensitized him to freezing deaths.\textsuperscript{82}

Frostbite due to overexposure to cold was a reality of winter travel in early New
Brunswick. On March 29, 1809, Dibblee reported: “The Ice never Stronger and
Yesterday so Cold that Col. Jarvis and self almost Froze in Driving from Coln Barbarie's
to Captn. Morehouse’s.” Extreme cold improved the safety of ice conditions, but posed
the danger of overexposure. On January 15, 1817, Crawford recorded that “[w]hen
James Williams came from town last night he had lick to perish with the cold.” January
28 was “the coldest day yet – Hamlin went to town and back a gann and froze him self
some.” By Crawford’s estimates “this was as cold a day as his been this winter.” P.
Nase suffered frostbite while helping the mail coach get through the snow on February
14, 1865.\textsuperscript{83} Just as it was customary for settlers to come to one another’s rescue on the
ice, colonists had a protocol for responding to another’s frostbite – at least in Québec.
English sojourner Hugh Gray recounted that perfect strangers might approach one
another bearing “a handful of snow, calling out, ‘your nose, sir, – your nose, – you are
frostbitten;’ and, without further ceremony, either themselves rubbing it without mercy,
or making you do so.”\textsuperscript{84} Thus the risks of severe injury could foster intimate
interactions even among complete strangers.

\textsuperscript{82} Crawford Diary, January 30, 1827. In the mid-19th century, River Valley settler Alexander Machum,
Jr., reported the cause of 50 deaths, including 23 that were accidental, “nine drownings and five cases of
\textsuperscript{83} Philip Nase Diary, 47, 1865.
\textsuperscript{84} Gray, \textit{Letters From Canada}, 293.
The journals reflect high variability in the length of ice seasons – the time between
the first ice and the completion of breakup – the timing of ice break-up, and the duration
of the break-up process. Table 2 above indicates that ice seasons could last anywhere
from 120 to 180 days (roughly 17 to 25 weeks), depending on the year and one’s location
in the Wolastoq/St. John River Valley. In each of the journals, the shortest and longest
ice seasons occurred within several years of one another, illustrating the extreme
climatic variability with which New Brunswick’s farmers had to contend from year-to-
year. Such variability left farmers with a high degree of uncertainty when gauging what
conditions might be like in a given year, and thus when planning woods work, the
slaughter of livestock, and other strategies for farm production and winter subsistence.
The extent of farmers’ uncertainty was accentuated by the potential for midwinter thaws,
which rendered ice seasons discontinuous. Periods of ice melt and re-freezing
exacerbated the risk of River travel. The disruption of conditions suitable for ice travel
forced settlers to seek overland routes to market, church, and the homes of family and
friends, as well as to places of work. The interruption of the winter ice season could also
exacerbate the life-threatening nature of accidents, illness, and childbirth. Just as
farmers faced extreme variability in the length of ice seasons within several years of one
another, research into historic growing season temperatures and ice conditions in
Atlantic Canada in the 19th century reveals a similar pattern; the highest and lowest
mean temperatures during growing seasons and amounts of ice that formed in the Gulf

| Table 4.2: Duration of Ice Seasons on the Wolastoq/St. John River |
|--------------------------|--------------------------|--------------------------|
|                          | Dibblee                  | Crawford                 | Miles                     | Environment Canada |
| Shortest                 | 151 (1818-1819)          | 120 (1825-1826)          | 142 (1850-1851)           | 122 (1845-1846, 1852-1853) |
| Longest                  | 174 (1820-1821)          | 172 (1827-1828)          | 180 (1853-1854)           | 174 (1837-1838) |
of St. Lawrence during the winter, often occurred within several years of one another.\textsuperscript{85} While aspects of the climate became less erratic in some parts of the region after 1860, the continuation of extreme variability in growing seasons and ice formation within a several year span at the century’s end highlights farmers’ need to maintain constant vigilance and the capacity to respond to conditions as they arose.\textsuperscript{86}

Location on the River, local and upriver weather conditions, and other factors influenced the timing of ice formation and break-up, hence ice seasons cannot simply be correlated with temperature changes.\textsuperscript{87} Dibblee, Crawford, and Miles each lived close to islands in the River, which could lengthen the local ice season because islands act as moorings for ice to form, but can also catch ice jams during melt. The dynamic factors influencing ice seasons mean that even if all journals had overlapped temporally, it is likely the farmers would still have recorded different years for the shortest and longest ice seasons. Although there is a wide discrepancy among the shortest seasons listed in Table 2, the similarity among the longer season lengths could be read as a validation of these results.\textsuperscript{88} Unfortunately, it is not possible to directly correlate extreme ice seasons

\textsuperscript{85} Teresa Devor, “The Explanatory Power of Climate History for the 19th-Century Maritimes and Newfoundland: A Prospectus.” \textit{Acadiensis} 43, no. 2 (Summer/Autumn 2014): 72; Teresa Devor, “A Climate History of the Gulf of St. Lawrence Region: A Climatic Reconstruction of the Nineteenth Century and Discussion of Its Implications” (MA thesis, University of New Brunswick, 2012), for example, 87. This research focused on growing season temperatures in Halifax, Nova Scotia, Charlottetown, Prince Edward Island, and in St. John’s, Newfoundland.


\textsuperscript{88} I surmise that the similarity among the longer season lengths can be interpreted as validating the results according to the rule of comparability sometimes used in historical climatology. One technique to gauge
from the journals, as no two farmers wrote during the period spanned by all four of their combined extreme dates. However, Crawford kept records for Dibblee’s shortest and longest season years, and his results diverged from Dibblee’s. The ice seasons Crawford described at Long Reach were 142 and 143 days long in 1818-1819 and 1820-1821, respectively, and therefore fell somewhere within the mid-range of season lengths in his record. Environment Canada’s record covered the years of Miles’ shortest and longest seasons, and although it too differed somewhat from his in the length of ice seasons, it bore close resemblance in the longest season. Miles’s longest ice season occurred in 1853-1854, which was the third-longest ice season in Environment Canada’s records for the years 1825 to 1854. That season tied with 1873 for fifth longest between 1825 and 2015, making it remarkable within the full extent of years recorded. During Miles’s shortest ice season (1850-1851), the ice at Fredericton held for 150 days, placing it in the mid-range of ice seasons between 1825 and 1854, and closer to the longest season in Environment Canada’s record as a whole, than the shortest.

Ice seasons could vary greatly in length from year-to-year, yet what mattered to settlers was the quality of the ice, incidence of thaws, knowledge of air holes, and whether the timing of good conditions allowed them to execute woods work, hauling, marketing, and socializing. The Wolastoqiyik method of crossing on ice cakes using a pole does not appear to have caught on among settlers. It thus demonstrates the role of

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89 A comparison between the length of ice seasons in Crawford and Dibblee’s diaries for 1811, and 1816 through 1825, reveals that seasons that were longer in one record were often shorter in the other. Yet in five out of 11 years for which both farmers recorded ice seasons, the difference in length between the two was three days or less. In four out of 11 years, the difference in length between ice seasons at the two locations ranged between 20 and 40 days. In a given year, ice seasons were typically longer near Woodstock then on the Long Reach.

whether the quantification of qualitative weather descriptions has rendered an accurate reconstruction of temperatures is to compare the shape of a graph of reconstructed averages with the shape of a graph of 20th-century normals. Piper, “Backward Seasons,” 36, 42-43.
culture in acceptable approaches to risk and its mitigation, as well as the ways that
spatial forms of knowing were related to cultural practices. Settlers adapted their own
strategies for contending with the changeability of transport conditions, including the
adoption of Indigenous snowshoe technology. For many farmers, opportunities for
gatherings and leisure made the challenges of the season worthwhile.

**Break-up**

Like freeze-up, ice break-up could be a long or short process, and could happen all
at once, or in fits and starts. Once again, settlers had to be prepared to combine boat and
ice transport, or circumvent waterways altogether until they were fully open. Settlers’
praxis of observation kept them aware of the local weather and geographical factors that
could influence the onset and duration of break-up. Communication with others kept
them abreast of changes in other parts of the watershed.

English sojourner in Fredericton, Juliana Horatia Ewing, recognized that people
approached transportation risks on the ice based on their purposes for being there. In a
letter to her father dated April 17, 1869, Ewing posited:

> I think this is the last day of even the most foolhardy traffic on the snowroads for
1869. One or two dark blots on the river – surrounded by *crows* – remind one that
2 or 3 horses generally fall victims to ‘dangerous’ spots toward the Spring.
Wonderfully few human lives are lost on the whole however, and medical men –
indians – farmers etc. to whom it is very inconvenient when the river is neither
safe for passage – nor clear of ice – do cross at wonderfully critical times. \(^{90}\)

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\(^{90}\) Blom and Blom, eds., *Canada Home*, 299.
Ewing’s observations reflect the potentially extreme inconvenience of cusp season transportation conditions, even as individuals faced a need to cross the River. People who attended to the physical and spiritual health of others might also risk their own personal health at such times. On April 20, 1807, Dibblee reported that the ice chunks running in the Wolastoq/St. John did not “Prevent my Crossing the River to Marry A. Carney and Mary Tompkins.” When conditions were safe, iced-in waterways offered the year’s most expedient method to reach those who were ill, injured, or in labour.

Settlers valued a high degree of mobility and exercised it for as long as it was available to them, including in spring when break-up was imminent.91 Crawford observed that speed was literally a saving grace when the ice was thin, characterizing the Kennebecasis as ‘strong enough for fast people to cross’ on April 18, 1815.92 It appears from the journals that accidents were common in the cusp seasons; even after break-up had begun, settlers continued to travel on the ice despite other people and horses falling through it.93 Just as farmers recorded the beginnings of ice transportation in the late fall and early winter, they evidenced settlers’ responses to the worsening of ice conditions in the spring. On March 19, 1865, MacDonald noted that most folks traveled to the meetinghouse with horses, and observed: “good going only the holes.” While Miles reported on April 9, 1844: “Some are driving on the ice yet – and some fall through it is

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91 For example, on April 16, 1802, Benjamin Chappell of Charlottetown noted: “The Ice fixt as yet and people go Over Though it is thin and Sun Shines yet Cold Days.” It was Good Friday, and people were likely motivated by the desire to attend services, and to go visiting on a day that was set apart from the work week. They also trusted the cold temperatures, despite the fact they were on thin ice. Benjamin Chappell and Douglas Sobey, Daybooks of Benjamin Chappell, ed. R. LaVerne Chappell (Charlottetown: Prince Edward Island Genealogical Society Inc., 2003).

92 This description is not a direct quote. Crawford had observed that fast people could cross the Wolastoq/St. John River during ice-up on December 21, 1833.

93 For example, see Dibblee Diary, April 9, 1818 and April 17, 1820. On April 7, 1823, he observed that horses were “continually” falling through the ice.
time to quit it,” he himself walked on the ice on the 12th, then pronounced it unsafe the following day, as people continued to traverse it.\textsuperscript{94} Similarly, MacDonald anticipated that the ice would no longer hold teams after March 23\textsuperscript{rd} in the spring of 1865, yet she saw one on the ice four days later. The ice went out the earliest in her remembrance that spring.\textsuperscript{95}

The perils and uncertainty of transportation required that travelers exercise skills of anticipation and flexibility of means and time of transport in order to reduce their vulnerability to bodily harm. On April 18, 1818, Miles recorded a journey from Maugerville to Fredericton and back again on ice and water.

Crossed the river from above Mr. Perley’s to the Courthouse about half way by ice and hawled a canoe then took the water with the canoe to the shore. Went to John Dows, hawled 2 teeth for Miss McMonagle, one for Eliza Ann Dow & one for Betsy Dow- returned to the sloop Provenance lying at Mr. Hazen’s wharf- Capt. Corey on board. Begins to rain- the ice starts in the main river- leaves an opening at the Courthouse about 4 rod wide and stops again. Crossed in a canoe from shore to shore with Charles Miles. The wind hard with rain- our canoe very small and leaky. This night a violent storm of rain with considerable thunder about midnight.\textsuperscript{96}

Were this scene incorporated into a novel, it would undoubtedly bear heavy pathetic fallacy, or the interpenetration of characters’ moods and the weather, illustrating the parallel “hawling’s” with visceral detail, exploiting the mutual wetness of rain and blood. While the entry was highly dramatic within Miles’s journal as a whole, in its broader historic context, the drama of Miles’s stormy crossing was merely par for the course during spring break-up. His experience reflects once again the risks that settlers

\textsuperscript{94}Miles Diary Microfilm.
\textsuperscript{95}MacDonald Diary, for example, March 21 and April 8, 1865. See also Dibblee Diary, April 13 and 26, 1818.
\textsuperscript{96}Miles Diary, 43. For another example of a round-trip involving ice and water, see MacDonald Diary, April 21, 1862.
were willing to take during the cusp season, when flexibility was required regarding mode of conveyance, transportation route, and whether to pursue a journey once planned or embarked upon. It also reiterates the parallel vulnerability of those in need of medical assistance and those who went to their aid.

Settlers had strategies to work with the cusp season when the Wolastoq/St. John River remained safe, although the shores had broken up. In March 1859 MacDonald observed that the water was “so high along shore they have to ferry off and on the ice.” While a “loaded team” had gone up before noon, “[t]his afternoon there was a team over on the Point trying to get on but they could not. They went the road.” A week later she related: “this afternoon Joseph Mott fetched a load of logs to the mill with his horses on the ice. It is good enough, only there is no getting on and off the ice.”97 Family members and neighbours looked out for one another when crossing this edge.98 In the late 19th century, settlers used planks to make temporary walking or driving bridges so individuals and vehicles could cross the broken ice or high water along the shores of the Wolastoq/St. John River at Fredericton.99

Farmers’ praxis of observation was evident in their record of the geographical patterns of spring break-up, as well as their commentary on the season. Two years after moving to the Nerepis, H. Nase recorded on April 24, 1786: “The River is full of floating ice, is supposed to be open to St. Ann’s.” On March 12 the following spring, he reported that rain had begun, and the River was expected to “break-up at the rapids.” Unusual break-up patterns were also worthy of commentary. For example, on April 15,

97 See MacDonald Diary, March 19, 21, and 26.
98 For an example of people helping one another off the ice, see MacDonald Diary, April 7, 1864.
99 Susan Squires, Reminiscences of St. Mary’s Indian Reserve and Inhabitants 50 Years Ago – 1880 – 1890 (Fredericton, c. 1940), 18-19.
1818, Dibblee observed, “There is now a Streak open in the Middle of the River, as far as we can See up, and Down to Mr. Streets - The Ice never Broke in this manner before.” He surmised that the River must have been low for it to open in the middle, as “the Ice remains on the Bars and the Shores.” MacDonald also commented on an unusual break-up pattern on April 14, 1861: “Before noon today the ice that George crossed on yesterday was broke up considerable about his Point and below it is cracked. We never saw it so before. Last Thursday Joseph Mott hauled a load of logs to the mill on the ice along shore the last team.”

Farmers’ praxis involved situating their personal observations of ice break-up within the social milieu of their community as transportation was a favorite topic of conversation, especially from late fall through spring. On April 24, 1786, H. Nase recorded “the River is full of floating ice, is supposed to be open to St. Ann’s.” On March 12, 1787, he reported: “it is expected the River will break-up at the Rapids.” Crawford demonstrated awareness of the provisional nature of some local observations, reporting in April 1820 that while one of his neighbours claimed that the River was open, others disagreed. The following day he recorded: “the River opend a bout this time.” These entries demonstrate the value farmers placed an accurate intelligence about weather and travel conditions, while at the same time reflecting the potential for hearsay or simply different interpretations of what constituted an “open” waterway after months of ice.\(^\text{100}\)

\(^{100}\) Crawford Diary, April 20 and 21, 1820. For another example, see his entry for April 28, 1816. Crawford made a similar series of entries in the spring of 1814, when on May 4 he reported: “freashet up to the higth as people thought tho it is not.” His personal observations were much more accurate; he assessed the water level on May 19 to be the height of the freashet, and reported that the River began to fall just two days later.
Weather conditions had a significant influence on when break-up began as well as how long it lasted. For example, on March 24, 1811, a day after the conclusion of a ‘dreadful’ and lengthy rainstorm, Crawford set out in a sleigh and observed that the River ice was “very bad ben white’s horse got in a crack … the river broke down to the lower end of Caton’s Iland the las time we or any one went on the ice.” Weather and the hydrology of the River system could result in a discontinuous break-up process. Hence, in at least seven years of the farmers’ journals, the Wolastoq/St. John or one of its tributaries opened in March and then appears to have frozen again – partially or completely – before final break-up commenced. As well, in six years of these records, ice started to refreeze in April or May after break-up had begun or ice-out was complete.

Settlers’ attention to break-up was evident in their analyses of its pace and timing. They noted the speed of break-up, as when MacDonald remarked on April 18, 1861, “it is wonderful to see the change in the ice in so short a time. It is broke in every direction. It is open from Spruce Point across to the graveyard on Gerow’s point.” As well, some farmers commented on an early or late break-up. During the unusually late break-up of April 1864, P. Nase recorded “splendid” sleighing conditions on his trip to Saint

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101 Atkinson, *The Emigrant’s Guide to New Brunswick*, 56. Atkinson veiled this spatial and temporal variability, or was ignorant of it himself, promoting a spring break-up that began around the beginning of April; settlers knew better. In 1764, Beamsley Glasier interviewed colonists and Indigenous people as an Agent with the St. John River Society, and claimed that the River usually broke up about mid-April. See Raymond, *The River St. John*, 179. On page 195, Raymond cited the correspondence of Simonds, Hazen, and White, for evidence that “a century and a half ago the navigation of the River St. John, as now, opened early in April.” In 1867, Ewing was told to anticipate break-up at Fredericton in April or May; Blom and Blom, *Canada Home*, 58.
102 Crawford Diary, March 24, 1811.
103 1811, 1815, 1818, 1821, 1822, 1825, 1826.
104 1813, 1816, 1817, 1862, 1863, 1865.
105 For another example, see Crawford Diary, March 2, 1815.
John on the 14th, adding, “[t]his of course is very unusual for the time of year to have snow road.” The following day he estimated that sledding was “nearly done.” The next year MacDonald observed on April 8, 1865, that it was the earliest she recalled the ice disappearing. She collected some fine pieces drifting along the shore for her son Malcolm to reduce the swelling on his neck.

Weather conditions during break-up could lead to poor transportation conditions on land, preventing or severely circumscribing the mobility of settlers. In early April 1829, Crawford observed that deep snowdrifts on land rendered horse travel almost impossible, at the same time as ice conditions on the River were deteriorating. In early April 1851, Miles reported: “No traveling on the ice – nor below this on the land, the snow being deep in some places and in others quite bare.” Similarly, he observed the end of safe transportation on the ice, and the closure of certain land routes, in April and May 1854:

April 22 – “The ice is getting poor in some places- horses begin to drop through.”
April 23 – “No travelling by ice or land below our place.”
April 26 – “The ice remains firm in the River, foot passengers cross anywhere between my place & Fredericton.”
April 30 – “Ice starts a few rods”
May 2 – “The ice moves off moderately- the water is not high- does not run in the ditches yet. I work some in garden and ride back of Portobello- snow nearly all gone.”
May 4 – “Ice running yet smartly. Water begins to fill the ditches in swamp.”
May 5 – “Ice runs thick yet. Water begins to cover our causeway.”

106 Philip Nase Diary, 40, April 14 and 15, 1864.
107 MacDonald Diary, April 5, 7 and 8, 1865.
108 Similarly, the period of freeze-up could be accompanied by impassable waterways and roads. For example, MacDonald Diary, December 19, 1862.
109 Crawford Diary, April 10 -13, 1829.
110 Miles Diary, April 6, 1851.
111 Note that this format denotes a selection of quotes; it does not include full entries, and excludes entire entries.
Miles’s attention to water in ditches and atop the causeway reflects the way Maugerville settlers and others living on low-lying lands typically contended with increased water levels in multiple areas during freshet.¹¹² When these land-waters became too high for wagons or carts to traverse, residents had to find other routes or wait out the freshet. On May 16, 1852, Miles reported that Maugerville’s residents were still anxiously waiting for the flood pulse to run off their causeway and that there was “no traveling below Charles nor above Sterling’s Creek.”

Table 3 (below) indicates the wide span of time between the earliest and latest completion of ice break-up farmers experienced along the Wolastoq/St. John River, corroborated by Environment Canada’s record from 1825 to 1854, and along the Kennebecasis. These numbers demonstrate a three to five week difference in the timing of open water in the spring. Farmers and lumber crews hauling on the main River and its tributaries or in the woods knew that they could lose the ice and snow before they had completed preparations for spring fencing or the log drive. As well, the melt could proceed slowly or rapidly once break-up had begun. Depending on settlers’ activities at this season, shorter break-up periods, whenever they ultimately occurred, could be less disruptive than long drawn-out processes such as break-up near Woodstock in 1821 and on the Long Reach in 1818. Crawford lived along a wider stretch of the River than Dibblee or Miles, and this combined with other morphological factors (such as the changing shape of the River’s channel upriver from Crawford’s farm, location of local islands) might have contributed to his shortest and longest break-up seasons lasting longer than those recorded by the other farmers. Crawford was also extremely diligent

¹¹² For example, Typescript of Miles Diary, April 26, 1843.
about recording his observations, which augments our understanding of ice season
dynamics along the Long Reach.

Table 3: Ice Break-up In the Spring
(All references are to ice out of the Wolastoq/St. John River except for those from the Hoyt
journal, which are from the Kennebecasis. Blank spaces indicate an absence of data.)

<table>
<thead>
<tr>
<th>Category</th>
<th>Dibb, below WS</th>
<th>Crawford, LR</th>
<th>Hoyts, KB</th>
<th>Miles, MV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earliest beginning</td>
<td>March 25 (1811)</td>
<td>March 2 (1834)</td>
<td>April 2 (1851)</td>
<td></td>
</tr>
<tr>
<td>Latest beginning</td>
<td>April 29 (1817)</td>
<td>April 6~ (1825)</td>
<td>May 3 (1817)</td>
<td></td>
</tr>
<tr>
<td>Earliest completion</td>
<td>April 16 (1805)</td>
<td>April 7 (1824)</td>
<td>March 25 (1830)</td>
<td>April 16 (1851)</td>
</tr>
<tr>
<td>Latest completion</td>
<td>May 6 (1817)</td>
<td>May 7 (1817, 1832)</td>
<td>April 29 (1817)</td>
<td>May 6 (1854)</td>
</tr>
<tr>
<td>Span for Ice Out:**</td>
<td>21 days</td>
<td>31 days</td>
<td>36 days</td>
<td>21 days</td>
</tr>
<tr>
<td>Shortest break-up:</td>
<td>8 (1817; 1822)</td>
<td>12 (1827)</td>
<td>3~ (1815, 1843)</td>
<td></td>
</tr>
<tr>
<td>Longest break-up:</td>
<td>35 (1821)</td>
<td>47 (1818)</td>
<td>15 (1847; 1851; 1854)</td>
<td></td>
</tr>
</tbody>
</table>

* Abbreviations: Dibblee, below Woodstock; Crawford, Long Reach; Hoyts, Kennebecasis; Miles, Maugerville; Environment Canada, Fredericton.

** This category refers to the difference between the earliest and latest completions of break-up, as per the previous two columns.
~ Crawford's first reference to ice breaking was March 10, but it was not clear that it was the beginning of break-up.
^ The 3 day season in 1815 isn't necessarily accurate; Miles did not provide much detail about break-up that year. There was a great flood in 1843, and he made several ice observations before detailing rising water levels.
^^ Ice-out dates for 1825 (the first year of data) through 1854, the last year covered by Miles' journal.

Table 3 (above) provides some evidence of the effects of larger weather patterns on ice seasons in the Wolastoq/St. John River Valley. The year 1817 shows up five times in the dates for latest beginning and latest completion of break-up, reflecting the effect of unseasonably cool temperatures on the timing of ice-out. Dibblee and Miles
recorded the latest beginning of break-up in spring of 1817, suggesting that seasonal changes occurred unusually late that year. Dibblee and the Hoyts recorded the latest completion of ice-out in 1817, which was tied with 1832 for latest completion in Crawford’s record. On April 1, 1817, he testified to “the hardest season that we have ever had for many years.” When the freshet waters began to subside in mid-May, Crawford reported that “it was as high as was ever known I Believe.” While 1817 was tied with 1822 for the shortest ice-out season in Dibblee’s record, it was the fifth-longest break-up in Crawford’s record, demonstrating that local weather and other ecological factors influenced the break-up process in different locations along the Wolastoq/St. John River. The year 1854 was the latest completion of ice-out at Maugerville and nearby Fredericton between 1825 and 1854. Atmospheric factors may have influenced the lateness of this ice-out date, which was the latest breakup in Fredericton’s record to that point. As well, 1854 was tied with 1873 for the fifth-longest ice season at Fredericton between 1825 and 2015. It is possible that volcano weather from the 1853 eruptions of Usu in Japan and Chikurachki in Russia (the latter of which continued to erupt until 1859) may have contributed to the late break-up.

Atmospheric circulation patterns such as the North Atlantic Oscillation and the Atlantic Meridional Circulation, which affect winter weather in the Northeast, could also have acted alone or in concert with these eruptions to affect weather in the Wolastoq/St. John

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113 Piper, “Backward Seasons,” 44, cites the Crawford Diary for April 1 and May 15, 1817.
114 Daschuk, “Climate Forcing Mechanisms and their Effect on the Canadian Plains;” “Chikurachki Volcano,” Volcano Discovery, https://www.volcanodiscovery.com/chikurachki.html, accessed January 15, 2018. Ice-out at Fredericton is defined as “[t]he EARLIEST date on which there were definite indications that the ice was beginning to melt during the final thaw period of the winter;” Richards, “Ice Cover on the St. John River at Fredericton 1825 – 2005.”
River Valley. When researchers Timothy Patterson and Graeme Swindles studied the timing of ice formation and release in lakes in New Brunswick and Maine, they identified the strong influence of these coupled ocean-atmosphere circulation patterns. Their research demonstrates the careful detective work required to prove a relationship between larger ecological factors and specific weather conditions in a given location at a particular time.

As climate historians, historical climatologists, climatologists, and other researchers caution, the correlation of extreme or anomalous weather and a particular transformation, event, or challenge in human society, does not necessarily prove causation. Climate historians and historical climatologists have developed various methodological approaches, including the idea of levels of causation, to talk about the relationship between weather and climate and human life. This study approaches the interrelationship of climate and society at the level of farmers’ daily personal experiences with weather. It is interested in the direct and specific interactions between predominantly rural people and the weather, especially as settlers engaged in agriculture

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115 For examples of how ocean-atmospheric circulation systems like the North Atlantic Oscillation affected weather in Atlantic Canada in the 19th century, as well as how they have shown up in tree rings, see Devor, “A Climate History of the Gulf of St. Lawrence Region,” 66, 70, 81, 86-7, and 90. See also Timothy Patterson R. and Graeme T. Swindles, “Influence of Ocean-Atmospheric Oscillations on Lake Ice Phenology in Eastern North America,” Climate Dynamics 45, no. 9–10 (November 2015): 2293–2308.

116 Patterson and Swindles, “Influence of Ocean-Atmospheric Oscillations on Lake Ice Phenology.” In their abstract, the authors explain the calculations they used to determine that lake ice break-up dates could serve as a proxy for temperatures in March and April [MA]. The ice left three lakes in Maine “progressively later” between 1836 and 1876, “indicating cooling MA conditions,” but furnishing us with no fine-grained data for year-by-year analysis.

117 Piper, “Colloquial Meteorology,” 117; climate is “a stochastic process, one where outcomes cannot be readily determined but rather appear random because of the degree of complexity involved.”

and transportation. The weather only ‘caused’ people to take specific actions in that it required them to pay assiduous attention to the multiple cues available to them in nature at all times, and to respond accordingly, as they were able.

Although dates of ice formation and break-up cannot serve as proxies for temperatures, the Hoyt journal suggests some tantalizing comparisons between patterns of ice-out dates and overall spring temperatures. Ice went out past A. Hoyt’s house in late March as opposed to April in five out of 18 years with data between 1813 and 1835; all of these early break-ups occurred between 1824 and 1834. Isaac Ketchum Hoyt made note of when the ice cleared out past his own house in five years between 1843 and 1854; 1846 was the only year in which he noted the ice cleared out in late March. Despite the sparse sampling from I. K. Hoyt’s record, can we deduce that spring seasons were unusually mild in the lower River Valley – or at least along the Kennebecasis – between 1824 and 1834? The record of winter thaws compiled from the journals indicates some milder winters and lengthier thaws between 1824 and 1834 as compared to the two decades following. Commentaries on spring weather by farmers and other observers include more references to “forward” weather in the spring (indicating seasonal change began early or progressed rapidly) between these years than in the preceding years or the two decades following. Their observations also include just as many references to “backward” weather (indicating lateness or slowness in the unfolding of spring), during this time (three years were proclaimed forward and three were termed backward).

119 Singh, “Break-up and Freeze-up Dates.”
120 Hoyt and his successor recorded ice-out in 23 of 37.5 years of the journal.
Returning to the Hoyt Journal, the two men reported that the ice cleared out the 1st of April in four years (1818, 1825, 1832, and 1848). As two of these years fell between 1824 and 1834, the Kennebecasis opened early in seven out of those 11 years.

Observers at Fredericton recorded three early openings between these years and one late.121 The early openings in 1827 and 1834 correspond to two of the years of early openings in the Hoyt journal.122 In the two decades that followed, four late openings and only two early openings were evident in Environment Canada’s record for Fredericton. On balance then, the evidence suggests that some spring seasons were milder in parts of the central-lower Wolastoq/St. John River Valley between 1824 and 1834. A respite from intense volcano weather and lowered solar radiation levels were among the influences on the River Valley’s climate at this time.123 Yet farmers were unaware of the broader ecological factors sowing patterns of cloud, sunlight, and wind. Rather, what mattered to them was their awareness of changes happening around them in nature and their capacity to respond in a timely fashion. While farmers sought to take advantage of the longest possible season for the heavy labour required on the farm in spring, it was most important for them to practice agility as they worked with conditions as they were.

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121 Fleetwood, “Freeze-up-Breakup_saint_john_river_2016-updated-file (master);” I classified ice-out dates falling within the first week and a half of April as “early,” while “late” break-ups occurred in the first week of May.
122 Years for Hoyt: 1824, 1825, 1827, 1830, 1831, 1832, 1834; years for Environment Canada: 1827, 1834, 1833.
Concluding Thoughts

Research into ice records by natural scientists has revealed changing climatic trends over the 19th and early 20th centuries. According to Patterson and Swindles’ study on ice-out dates of lakes in the Northeast, ice left three lakes in central and southern Maine at progressively later dates between 1836 and 1876, suggesting that spring seasons were cooler overall across these years. However, ice-out dates in 12 lakes, including three in Southern New Brunswick, reflect a warming trend between the late 19th century and the early 20th century, when ice went out an average of six days earlier as compared with the earliest period of records, following 1836.124 Environment Canada’s break-up records from Fredericton demonstrate that some of the earliest break-ups within the record as a whole occurred prior to 1841. Break-up dates between 1841 and 1890 include a mix of earlier and later dates. The closing decade of the century marked a clear shift and the beginning of a trend toward earlier break-up dates through the first decade of the 20th century. As well, the ice opened before May in every year between 1883 and 1925.125 Some scientists have dubbed the warming between the late 19th and early 20th century, “thermal recovery” following the Little Ice Age, which they attribute to increasing solar insolation (radiation reaching Earth).126 The ‘signal’ of thermal recovery in climatic data and proxies such as ice-out dates cannot be

124 Patterson and Swindles, “Influence of Ocean-Atmospheric Oscillations on Lake Ice Phenology.” The authors nuance this description with details including: “Across the region the interval from 1876 to 1953 was characterized by progressively earlier mean ice out dates, punctuated by decadal scale reversals of the trend from 1902–1917 to 1936–1944.”

125 Fleetwood, “Freeze-up-Breakup_saint_john_river_2016-updated-file (master).” The dates of ice-out at Fredericton were earliest in the 19th century between 1830 and 1840, and the next earliest fell between 1900 and 1910. The trend across the decades in the 19th century shifted from later break-up to earlier break-up in the 1890s.

126 Patterson and Swindles, “Influence of Ocean-Atmospheric Oscillations on Lake Ice Phenology.” The authors also identified evidence of warming between the late 20th- and the early 21st-centuries, which they attribute to anthropocentric greenhouse gas emissions.
disentangled from anthropocentric warming, which the International Panel on Climate Change identifies beginning around 1850. Yet settlers, even those involved in professionalizing the science of meteorology, did not have access to the longue-durée data that climatologists use to create an understanding of climatic change today. Rather, settlers experienced dynamic processes of change and consistent variability from one day, hour, and year, to the next.

Settlers experienced time and lived weather viscerally. Because ice conditions varied during freeze-up, the iced-in season, and break-up, they learned to practice vigilant awareness and caution. Settlers cultivated flexibility so that they could respond to changing conditions individually, and communicated and collaborated amongst themselves so as to mitigate risk and enjoy the most rapid travel, and smoothest hauling conditions, of the year.

While we live in a culture in which the day’s electronic weather forecast is presented alongside climatic “normals” for this date, late-18th and 19th-century farmers would typically be more interested in the section on hourly forecasts. Through comparing weather conditions from one hour to the next, and particularly their implications for travel and outdoor labour, settlers determined how to proceed with their days. Awareness in the moment, and knowledge of nature’s signs and how to respond to them, allowed farmers to cultivate expectations that were rational and life-preserving.

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128 Thomas, The Beginnings of Canadian Meteorology.
Colonists’ perception of mortal vulnerability was further informed by an ever present awareness of how readily diseases could kill people of any age, at any time; each farmer of focus survived at least one epidemic disease outbreak. As MacDonald proclaimed on New Year’s Eve 1858, “I have seen sixty-four New Year’s Eves. Perhaps I shall never see another one. It is a solemn time. There is a great deal of sickness and death at present.”129 P. Nase reflected March 22, 1860: “Truly it may be said in the midst of life we are in death.”130 The climate of vulnerability within which settlers lived transcended their individual context or activity, no matter the time of year.131

This vulnerability helps to explain why communication about weather, water, and ice conditions was so ubiquitous in social life and in the journals. While communication could never substitute for personal experience, in some cases it proved equally vital. Farmers’ praxis as a working model allowed them to incorporate the observations and intelligence of others into their understandings of how weather interacted with the land-, ice-, and waterscapes of their homes.

Settlers on islands and low-lying lands were particularly conscious of the intersections of land, ice, and water, as they experienced ice jams in the spring and learned to recognize other indicators of potential flooding. During spring break-up, snow and ice run-off from upriver lands and tributaries raised water levels in the

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129 Philip Nase Diary, 42, May 16, 1864: “God is cutting our neighbors down, may we be also ready.” Nase made this observation after reporting 12 deaths within 12 days, although four of those deaths had occurred the month before.
130 Philip Nase Diary, 22; Hoyt Diary, 79, June 20, 1848, for Reverend W. Scovil’s funeral text, “‘There is but one step between one and death.’”
Wolastoq/St. John. The freshet, as the phenomenon is known, often had dramatic consequences for downstream residents, especially those living along low shorelines.
Chapter 5

Waters of Life, Waters of Destruction:

Spring and Fall Freshets in the Wolastoq/St. John River Valley

The dawning of spring brings a literal flood of vitality to floodplain ecosystems around the world. Stretches of the central and lower Wolastoq/St. John River Valley are no exception. Snow and ice in lower latitudes and at lower elevations typically melt first, raising water levels in creeks, streams, and tributaries of the River, all of which flow into and swell the mainstream. Snow on high deforested ridges follows, although on forested peaks and hillsides, the plant community can hold and shade deep snows for weeks after the first green grass has sprouted on the lowlands. The tiny velvet horns, fists, and flames of buds on trees and shrubs grow more felted and brightly coloured by the day. Wood anemones, mayflower, adder’s tongues, and heliotropes push their herald greenery up into the strengthening sun and prepare to offer flowery faces to the light. Tiny tree frogs known locally as “peepers” begin their shrill calls in the woodlands and along freshwater shorelines, while Canada geese, mallards, black ducks, and other migrant fowl wing and sing across the skies.

While the journals reveal farmers’ attention to all of these signs of spring, for those living on lowlands along the River and its tributaries, the freshet floodwaters required diligent awareness and adaptation over the course of minutes, hours, days, and years. The freshets encouraged some settlers to abandon these lands altogether. Those who stayed faced multiple risks during spring and fall freshets, and the journals
highlighted their adaptiveness as well as the variability that characterized the timing, onset, and duration of flooding each year. High freshets damaged personal, public, and community infrastructure. Farmers with intervale land became accustomed to removing fence rails and other items from floodplains or securing them to trees close to shore prior to or during freshet. The adaptive capacity of families and communities strengthened over time as settlers learned to build further back from the River, understood the need to build staging in barns on which animals would be stabled above floodwaters or plan evacuation strategies for livestock. Flooding also required administrative responses from colonial office-holders, for example when freshet-damaged bridges and mills required labour mobilization to rebuild.

Yet, the freshet following ice break-up in the spring was a boon as well as a destructive force to settlers with intervale fields. Those who farmed the low-lying riverbank had inherited the wealth of generations of freshets in the form of fecund, alluvial soils that supported rich crops and marsh hay. Intervale lands were more expensive and coveted and conferred microclimatic benefits to their farmers, as well as offering personal access to the Wolastoq/St. John River and its tributaries during most months of the year. Still, each spring the freshet brought chaos in its literal wake, as the combination of ice, higher water levels, the likelihood of rain, and changes to the land wrought by colonial settlement, conjoined to raise the River and its tributaries. The annually inundated floodplain is extensive; it begins on the Wolastoq/St. John above Fredericton and extends below Gagetown and the mouth of the Washademoak, and includes sections of the Nashwaak, Keswick, and Oromocto Rivers. In addition to the
annual flood, at least one settlement in the watershed often received a damaging deluge.¹

In the late 17th century, freshet floods on the Wolastoq/St. John forced Acadian farmers to plant their crops late and caused crop failures as well as loss of livestock.² In a recent appraisal of the French colonization of the River, Jason Hall indicates that distance from an accessible port, conflicts among Acadian administrators, and a low local population, were also significant factors in the French abandonment of the lower River Valley.³ Furthermore, in From Migrant to Acadian, Naomi Griffiths suggests that the distance between the administrative concerns in Paris and the experience of settlers on the ground in Acadia meant that officials were focused more on broader military and economic concerns than on the planting and harvest seasons of settlers on la rivière St. Jean.⁴ Writing in the early 20th century, W.O. Raymond had ascribed Acadian abandonment of the Fort at Jemseg in 1701 to the effects of the devastating spring floods.⁵

¹ Hall, “River of Three Peoples,” 2; Service New Brunswick and Environment and Local Government, “Flood Map Index,” 2018, http://elgegl.maps.arcgis.com/apps/PanelsLegend/index.html?appid=30b97c1830b84fbd8e581a6d05243bb9. As the maps on this site indicate, damaging flooding can occur even in locations beyond the River’s floodplain.
Early British settlers in the Wolastoq/St. John River Valley adapted to the spring freshet’s unpredictable heights and damages by relocating to higher ground on a seasonal or permanent basis, and building further back from the River on the higher points of land available. Residents of Long Island, which was flooded annually in the spring for at least part of the 19th century, moved to the mainland to wait out the water each year. Upon initial settlement in 1787, mainland settlers of the community of Bear Island built homes close to the River’s banks, and farmed on the two Bear Islands. As water was settlers’ main vector of transportation and a source of food at particular seasons, building on its banks had seemed practical. The remains of their abandoned dwellings, and the recollections of later settlers of distant growling ice jams, attest to the safety of higher ground. Thomas Miles’s younger brother drowned at the age of three in the freshet of 1803. His father Elijah Miles located his second home at Maugerville far from the River’s edge. Many long-term residences in Maugerville were built on land with the highest elevation, and it appears that in some cases settlers erected homes on earthen mounds. Jacobina Campbell’s brother Sandy and his wife Caroline lived in a house built on the highest land on the floodplain near the junction of the Macktuguack (Tay) and Nashwaak Rivers. In years of high freshet flooding, the house was surrounded by water and could only be reached by boat.

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6 “Diary of Lady Hunter,” August 8, 1804, cited in Hall, “River of Three Peoples,” 278; her report places Long Island near Hampstead, and there is a second island by that name on the lower Wolastoq/St. John.
7 Gunter Trail, Bear Island, 14, 15, 24, 26. See also Katherine MacDonald’s research on the Grand Lake Meadows. Katherine MacDonald, personal communication, September 2017.
8 Hill, Maugerville, 38.
9 Personal observations by the author, and Hall, “River of Three Peoples,” 278.
10 Campbell Diary, 34, 36.
Some settlers chose moving altogether over seasonal abandonment or potential flooding. For example, Robert Carlisle left his coastal home for an Inn close to McLeod’s Brook in Upper Settlement on the Kennebecasis, only to move on to Sussex Portage after he was flooded out by the spring freshet. Here he opened “Fountain Head” at “The Head of the Kennebecasis, on the Post-Road from Halifax,” where travellers could expect “the best attention… both in the house and stable.”\(^\text{11}\) W. O. Raymond claimed that freshet challenges propelled a number of Loyalist grantees of land at Maugerville to remove to other settlements, including to the River’s mouth and Gagetown. Eleven other men – almost all original grantees or their sons – moved across the River to Burton Township. Some chose to keep their fertile farm grants on the other side of the Wolastoq/St. John, as well.\(^\text{12}\) It is possible that of the 18 men Raymond named, some were motivated to sell or to move by other factors, as peripatetic land ownership appeared quite common among Loyalist grantees and other settlers in the late 18\(^\text{th}\) and early 19\(^\text{th}\) centuries.\(^\text{13}\) Along with inhabitants of low-lying intervale, people living on islands were most vulnerable to flooding. Around the winter of 1868-1869, Mr. Judson Gunter moved his home from Long Island over the ice to the mainland.\(^\text{14}\) In light of the annual inundation of the island during the freshet, it is likely that many had left before him, and others may have followed.

\(^{11}\) Aiton, *The Story of Sussex and Vicinity*, 72.


\(^{13}\) Gordon G. Whitney, *From Coastal Wilderness to Fruited Plain: A History of Environmental Change in Temperate North America From 1500 to the Present* (Cambridge; New York; Melbourne: Cambridge University Press, 1996), 237, regarding the mobility and propensity for speculative interest in “improving” farmlands among Americans in the 19\(^\text{th}\) century. Many “farmers” were in fact, only “farm-makers.”

\(^{14}\) Trail, *Bear Island*, 19.
Due to the low elevation and wetland character of much of the landscape at Maugerville and Sheffield, residents adopted adaptive behaviours in response to freshet flooding over time. As compensation for the ecological conditions of these lands, and in recognition of their own pioneering spirits, the original Planters who came from Massachusetts in 1763 received 1,000 acre land grants, as distinct from the 200 acres granted to many Loyalists in 1783 and 1784.\(^\text{15}\) Perhaps from the first freshet they encountered in 1764, Maugerville settlers began marking the heights of the Wolastoq/St. John River’s floods, sometimes noting water levels on barn doors where such marks can still be seen today.\(^\text{16}\) As surveyor-general of Nova Scotia, Charles Morris, wrote in a 1768 letter to Captn. William Spry, who owned land along the River: “[The River] rises so high in some Years, as to overflow all the Intervale as well as the sunken Lands. I measured the Overflowing in 1765, by the Marks the Inhabitants of Maugerville had set up, and I found the Water had flowed above the common Heighth of the Water in Summer, near seventeen Feet and an Half; last Year twenty Feet.”\(^\text{17}\) Morris recognized the record-keeping strategy of locals, variability in the timing of spring break-up, and the scale of freshet floods. His letter also reflected concerns held by other current and prospective residents of low intervale land throughout the River’s watershed.\(^\text{18}\)

Fifteen years later, Major Thomas Barclay made the following observations about some of the ways Maugerville’s residents had adapted to frequent freshet flooding.

\(^{15}\) Raymond, *The River St. John*, 164.

\(^{16}\) Pam Whitty and Richard Hornsby, personal communication, July 20, 2016.


\(^{18}\) For example, in a letter to Edward Winslow, Isaac Allen observed that the Kennebecasis was less likely than the St. John to have high freshet floods, yet claimed that its intervale lands were equally fecund as the fields of Maugerville. See “Isaac Allen to Edward Winslow,” August 7, 1783, in Hall, “River of Three Peoples,” 275.
Inhabitants are comfortably settled, and many of them have large stocks of cattle. Greatest inconvenience they experience, is the overflowing of the Banks of their River; which frequently is so great, as to expel the Inhabitants from the lower floor of their houses, into the Garrets; and they are after necessitated to go in canoes, from their doors to the Barns, to feed the cattle, who at such periods are placed on stages in the center of the Barn, erected for their security. A large sunken Meadow, dividing the low lands, on the bank of the River, from the upland in the rear, is the reason why they have built on the Intervale. Were it not for this sunken Meadow Maugerville might justly be termed the most valuable settlement on that side of the Bay of Fundy.  

Barclay was impressed with the adaptive capacity of Maugerville’s residents. Yet his sanguine reportage belies the devastating flood that had taken place just several months before. According to historian Jason Hall, the high freshet of 1783 at Maugerville was a key factor deterring Loyalist administrators from naming the community “a county capital.”

Miles’s journal provides evidence for the practices of staging cellared vegetables, as well as livestock, in the event of freshet flooding. He had his employed labourers erect staging for Odber’s potatoes in 1841 and in his own cellar during high spring freshets in 1843, 1846, and 1850. Miles’s workers also helped him remove a number of root vegetables from his cellar during the epic spring freshet of 1854:

May 15 – Cloudy, some rain, high wind SE. Water rose 3 inches last night. John rafts the poles round the hog pasture & takes some potatoes out the cellar. Geo H goes home to Mr. Gaynors. I fence my pig yard.

May 16 – Foggy morning- clears up warm. Water rises fast- begins to come in the cellar. Take out all the potatoes, carrots, turnips, beets. John plows in old pasture part of the day.

May 17 – Clear, warm- water rises fast, runs across the road near our upper line and fills up back fast. Odber goes to Charles with canoe- brings up Ann & Julia,

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19 Major Barclay, “Description of St. John River Valley,” in Wentworth Papers, MG 1, Vol 939, #13, 1783/07/1, p. 7, NSARM. For biography of Thomas Barclay, see Raymond, WP, 96.

20 Hall, “River of Three Peoples,” 274. Hall also compares the construction of staging for cattle in barns to the innovative architecture of Amazonian Pastoralists, whose methods for flood resilience include herding cattle onto floating rafts or platforms on stilts.

21 Thomas Miles Typescript, April 29, 1841, and April 26 and 28, 1843. See also Miles Diary, March 29 and March 30, 1846, and May 9, 1850.
Bell & Willy. The water is in their house & barn.

May 18 – Clear, warm, water still rising. Fences begin to move in many places all round the calf pasture & all fences back of the grave yard ridge; Can sail in a boat from our gate to Odbers door along the road. Drove our oxen from back barn to old barn. They had to swim most of the way. Water runs under the back part of our barn about 2 feet would bring it to our stables & one would put it in the hog pen. It is within 24 feet of our kitchen porch.

May 19 – Cloudy, strong breeze from SE. Water rose an inch last night. Rains hard most of the day. John securing rails & wood. Odber helps him. They work in the rain till they are wet to the skin.

Miles’s record reflected farmers’ attempts to gauge the moving targets of most vulnerable areas and potential risks during freshet. It also demonstrates how flooding challenged every activity on the farm, while interrupting any semblance of normal routine. Livestock, too, were stressed by such an ordeal, particularly those who were pregnant or mothering new calves and newborns.

Historically, some of the highest freshet flooding has been associated with ice jams, which prevent water from being released downstream, as well as turning the ice itself into a moving menace capable of taking to the land. During “the uncommon ice jam” of late April 1798, Rev. Frederick Dibblee reported “inhabitants suffered great losses – stock, houses (built on intervale land). French Village was almost destroyed.”

This “ice freshet,” as the phenomenon is otherwise known, also left two parishes in need of bridge repairs and replacements. Water came into Edward Winslow’s cellar at Kingsclear, and he expected the mountains of ice bulldozing large elms and maples to

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22 Gunter Trail, Bear Island, 24. See also Kindervater, Flooding Events in New Brunswick, 54.
sweep away his house as well. While the Winslows’ house and livestock survived the ordeal, it is likely that some of their neighbours were not so fortunate.24

The comparison of the freshet records of various farmers over time demonstrates the high degree of variability they could anticipate in the onset, height, and length of the freshet. Records from Dibblee, Benjamin Crawford, and Miles furnished ample material to reconstruct freshet seasons. Table 1 below indicates that Dibblee, settled near Woodstock, experienced the widest range of freshet start dates (just over 7 weeks between his earliest and latest), and freshet durations (7 weeks difference between shortest and longest). Further downriver at Maugerville, Miles had the lowest range of difference between start dates (just over 2 weeks) and lowest difference in freshet duration (2.5 weeks). Dibblee also had the longest freshets, lasting between 4 and 11 weeks. Miles experienced the shortest freshets, which lasted from between 1 to almost 4 weeks, indicating how rapidly Maugerville and Sheffield’s floodplains could drain, as well as perhaps the different dynamics of weather and hydrography involved in the melt up- and downriver. The Dibblees had to contend with much greater variability in the timing of seasonal activities, and a longer disruption to River transportation, in the spring. Yet the damages caused by freshet were not commensurable with the duration of the flood, as they related directly to the height of farmers’ shorelines and the slope and elevation of the land they farmed. The Crawfords, dwelling on a wider section of the Wolastoq/St. John River as compared to the other two families, experienced both shorter and longer freshets (between 1 and 6.5 weeks) as compared to Miles, and shorter

freshets versus the shortest in Dibblee’s record. Freshets at Long Reach also generally
started and ended earlier as compared to Maugerville. Both areas fell within the Grand
Lake Lowlands area, which has the longest growing season in New Brunswick.25 This
freshet timing fits with a set of recently created frost maps for the province, which
depicts typical last frost at Long Reach up to 10 days before last frost at Maugerville.26

Determining patterns in the relationship between freshet timing and geography in
a given year is a challenge, as the years in which the three records indicate extremes of
freshet onset and completion, and freshet durations, generally do not overlap. Yet some
comparisons are possible. The data in Table 1 suggests that the date on which the
freshet began or ended did not necessarily reflect the seasons’ length, at least if it started
late. In Crawford and Miles’s journals, the earliest freshets started and finished earliest.

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<td>Dibblee</td>
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<td>May 3 (1822)</td>
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<td>May 16 (1823)</td>
<td>June 9 (1825)</td>
<td>25</td>
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<tr>
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<td>Maugerville</td>
<td>April 18 (1852)</td>
<td>May 10 (1847)</td>
<td>23</td>
<td>May 6 (1852)</td>
<td>June 5 (1841)</td>
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<td>Long Reach</td>
<td>April 11 (1831)</td>
<td>May 17 (1832)</td>
<td>37</td>
<td>April 25 and after*(1831)</td>
<td>June 7 (1835)</td>
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<td>77 (1824)</td>
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<td>8 (1817)</td>
<td>26 (1843 and 1854)</td>
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<tr>
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<td>Long Reach</td>
<td>5+ (1823)</td>
<td>45 (1834)</td>
<td>39+</td>
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</table>

* On April 25, Crawford wrote, "the freshit begins to faul." This year is potentially tied with 1811, when
Crawford’s last freshet report was that it was at the height on April 25.

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25 For a description of the ecological contexts within which the farmers of focus lived, see Introduction,
pages 12 to 13.
26 “Interactive New Brunswick Canada Last Frost Map,” PlantMaps, 2018,
When compared to springtime observations in primary sources, other patterns emerge as well. The freshets that started and ended early at Dibblee’s farm occurred in years that an observer noted or anticipated an early spring (in one case, the observer was Dibblee himself). The freshets that were latest to start all occurred in years during which an observer had pronounced the season or the weather “backward,” suggesting a clear correlation between the onset of freshet and the dawning of spring, despite the geographic separation of record-keepers. Yet while half of the years of longest freshets were also years when weather or the season was observed to be “forward,” one year was referred to as “backward,” and there was no related commentary for the fourth year. Differences between microclimates on each of the farms, as well as in the larger ecodistricts within which these farmers lived, means that spring could present itself at different times, and in different ways, in disparate places in the River Valley.

The timing, height, and length of the freshet depended in part on weather conditions upriver as well as closer to home. For example, on May 7, 1820, Dibblee reported that ice break-up in tributaries and lakes and warm weather were causing the waters of the Wolastoq/St. John to rise quickly. In years when rain raised water levels in the River or its tributaries near the end of the freshet, it typically prolonged the period when farmers could not plant on intervales. Rain could also raise soil moisture levels so as to hinder ploughing and planting in general. For example, after at least three days of rain in June 1835, Crawford reported: “the freshet falls slow.” This entry was the only time he ever remarked upon a freshet extending into June.  

Colder temperatures slowed snowmelt as well as ice-melt, and could maintain a certain freshet level during

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27 Crawford Diary, June 7, 1835.
the period of freshet height, or at any point while waters rose and fell. For example, despite remarking upon the “Prospect of a very early Spring” on April 17, 1805, two days prior Dibblee had observed: “the River is at a Stand – owing to the Cold North Wind.” On April 19, the River was “at a Stand and has neither Rose nor Fell for 8 Days owing to the Cold Norwesters – snow almost gone in the Woods.”

Farmers’ observations of the freshet reflected the broader spatiality, or geographic scope, of local weather, as well as their experience of learning to interpret the River’s changes over time. For example, Dibblee accompanied quantitative observations in April 1804 with hypotheses about larger changes in the watershed. On the 25th, he detailed: “8 o’clock the Ice Began to Run and Continued for Three Hours, Pretty Thick, but Small Pieces; Suppose it came from Toback [Tobique] and Rustick [Aroostook].- The River now falls again, and the Lakes being now broke, we hope it will Rise no Higher.” Dibblee and his family had lived in Woodstock for 13 years, and he already knew from experience that “a Common fresh,” as he called it, was higher still. Despite his hopes to the contrary, the water rose two feet in the night, and he had to move his fence rails even further from the River’s edge. Having gained experience over time, on May 7, 1820, Dibblee reported: “The River is now rising fast, from the Lakes Breaking, and the very warm weather.” He observed on April 27, 1825: “the River appears to rise a little but no prospect of a great fresh, without very heavy rains,” and on May 3: “We have had the greatest Fresh this Season, than for 7 years Past, and we fear that it will Rise again, there being a great quantity of snow above the Tobique.”

28 Dibblee Diary, see other entries including May 17, 1806.
29 Davidson, “A Loyalist Minister Remembers the ‘Joyful Season.’”
While “considerable Rain” on the night of the 29\textsuperscript{th} contributed to raising the River’s height, Dibblee’s awareness of the snow above the Tobique River was due to his son Patrick’s arrival from upriver by boat on May 2. Depending on the timing of upriver melting, the freshet could be a discontinuous process involving multiple fluctuations in water levels, or it could be a relatively unidirectional process. On May 3, 1821, Dibblee awoke to find “the Ice runing Thick, and continued till 12 o-C- We had supposed, the Ice had all Run, River is now up 4 Inches on the Rock - But after the Ice had done Runing it began to fall - and at Sundown - had fell 1 foot - It has been 6 In. higher than last Spring.”

The rock provided evidence of the temporal variability of floodwaters over the span of hours and days. There was an oak tree at the Crawford farm that served a similar purpose.\textsuperscript{30} These markers in the landscape allowed settlers to make concrete, quantifiable observations and hence to understand the implications of certain flood levels and potentially adapt to the freshet’s character within a given span of time. When Dibblee observed that the River had risen “4 inches on the Rock,” how far had it encroached on other elements of the natural and built landscape? When the River rose in the evening instead of falling, what precautions did the Dibblees need to take before retiring for the night?

Farmers’ concrete measurement of freshet heights often included proximity to homes and cellars. For example, on March 24, 1787, Henry Nase meticulously recorded that the freshet had risen “nine inches …over the threshold” of a neighbouring family’s

\textsuperscript{30} Crawford Diary, May 12, 1812.
door. On April 14, 1813, Crawford observed that a heavy rain had raised the brook
“Level with water at the wartering place much higer then I ever saw it before - the
warter in the sullar is up to the stares.” Miles also grounded his annual freshet
observations in the natural and built landscape around him, tracking the rise and fall of
water as it filled and left areas including Major Harding’s creek and the causeway. In
1842, Miles observed:

May 4 – “Water not yet in Major Hardings creek”
May 9 – “The water rises slowly it is a about a foot deep in Mr. Hardings creek”
May 14 – “the water rises slowly about 30 inches in Majors Creek”
May 21 – “Water rises, the ditches begin to fill up in the swamp.”

Miles’ record reflects how settlers accumulated markers to watch as they anticipated
incursions of freshet waters into local land- and waterscapes. His intimacy with
changing water levels and evidence for experiential relevance are conveyed by his use
of vernacular measurements in addition to concrete numeric ones. On May 19, 1847,
Miles recorded that: “The water still rising slowly- runs over the causeway at Cranes–
about knee deep in some places.” On December 14, 1847, during a fall flood, the water
rose “over the hubs of the forward wheels of waggon in Hardings Creek.” Hence the
creek was still traversable with a wagon, but barely.

Freshets threatened intervale settlers throughout the River Valley with the loss of
rail fences and other items left too close to the water’s edge. Dibblee and Winslow each
recorded the loss of fence rails in multiple years. Their journals reflect the learning
process over time. After a number of years of moving rails each spring, either in
anticipation of rising water levels, or because they were being swept downriver, the

31 Typescript of Thomas Miles Diary.
dramatic freshet of 1807 appears to have marked a turning point in Dibblee’s fencing strategy. That year the freshet was 6 feet higher than the Dibblees had ever seen before. It swept away fences from their lowlands, and those of several of their neighbours, and during a rainy day that raised the River’s height once more, two men bringing the English mail upriver drowned when their boat overturned. Henceforth, the Dibblees did not appear to lose any more rails, rather they constructed fences as required in spring and summer.\textsuperscript{32} Settlers in the floodplain areas of Maugerville and Sheffield learned to attach fence rails, docks, and animal barges to trees so as to prevent them from being swept along in the freshet’s wake.\textsuperscript{33} Farmers at Sussex Vale stacked their hay around poles they erected on lowlands in an attempt to secure it from the flood.\textsuperscript{34} Yet despite their proactive and spontaneous adaptations, even settlers who had lived on the River or one of its tributaries for decades could not always anticipate freshet heights, as the River’s variability included “uncommonly high” spring floods. For example, although Crawford had lived at Long Reach approximately 30 years by 1831, on April 12 he reported “the upriver Ice came down very much - Wallace got up his lathwood it was like to float away.” Two days later he related, “the Ice is along shower and the cakes froze to gether so that we Run over the Ice and picked up the poles and Railes.” The Crawfords were fortunate; more often than not, items caught in the freshet were lost to their original owners forever.

\textsuperscript{32} Dibblee Diary, including May 9, 1804, April 13 and 26-29, 1805, and April 15, 26, May 3, 4, 6, 15, and 21, 1807.  
\textsuperscript{33} Fisher, \textit{Notitia of New-Brunswick for 1836 and extending into 1837}, referenced in Jason Hall, “High Freshets and Low-Lying Farms,” 204.  
\textsuperscript{34} James Edward Alexander, \textit{L’Acadie, Or, Seven Years' Explorations in British America [Microform]} (London: H. Colburn, 1849), 106, \url{https://ia800300.us.archive.org/27/items/cihm_36221/cihm_36221.pdf}, with thanks to Jason Hall for bringing this source to my attention.
Freshets also affected public transportation and industry, including washing out roads, breaking lumber booms, destroying bridges. The most destructive freshets damaged personal and public property, such as the great ice freshet of 1798. Dibblee reported that “inhabitants suffered great losses – stock, houses (built on intervale land). French Village was almost destroyed.”\(^{35}\) The parishes of Prince William and Woodstock were left in need of bridge repairs or replacements.\(^{36}\) According to the newspapers of the time, many families “[a]t Fredericton and Maddeskesway (Keswick) and along the Nashwaak and Oromocto rivers … lost stock and provisions.” The flood, which lasted three days at its most extreme, prohibited grazing by covering pastures with sediment, and “[n]ot a mill dam was left intact” within a 30 mile radius.\(^{37}\) Such observations reveal the painful irony that rivers whose power permitted the expansion of settlement by grinding flour, sawing boards, and processing flax, were also capable of destroying the means by which humans benefited from their flow. Freshet damages could also compound to render roads unsafe for years at a time. Writing in 1825 about the road through Maugerville and Sheffield, New Brunswick historian Peter Fisher remarked: “The road, is however, unsafe in many places where the freshets have scooped away the banks and indented the road with small gullies, which being neglected

\(^{35}\) Gunter Trail, \textit{Bear Island}, 24. See also Kindervater, \textit{Flooding Events in New Brunswick}, 54.

\(^{36}\) “An Act for granting certain Sums for repairing and laying out Roads,” \textit{Acts of the General Assembly of His Majesty’s Province of New-Brunswick passed in the year 1801}.

\(^{37}\) Quoted by the Government of New Brunswick, Department of Environment and Local Government, “Flood Details - 1798-10-01 - 1798-10-03,” \url{http://www.elgegl.gnb.ca/0001/en/Flood/Details/9}. While this entry proposes the dates of the event as October 1-3, it admits uncertainty about the actual dates. We know this was a spring freshet because Winslow reported the dramatic event at Kingsclear in a letter dated April 29, 1798. See Raymond, \textit{WP}, 429-30.
by the inhabitants, endanger the overturning of carriages.”38 Miles recorded the effects of a road washout on transportation routes following the freshet of 1853:

Clear, cold, ground frozen hard. Ice in well trough - thick- high wind again. Richard takes McLean & daughter down to Taylors, with horses & waggon & goes to Dr. Wiggins for horse-chestnut Sions [sic] & takes dahlia root to Dr. The road having washed away he could get no further than George Hardings. He then returned and drove to Dan Sterlings where they got on board the steamer Anne Augusta.39

During the freshet of late May 1854, which Isaac Ketchum Hoyt reported to be the highest in 25 years, traveling was “nearly suspended on the Great Road” because high water inundated roadway and bridges. He observed further implications of freshet flooding for transport and homeowners: “Hampton Ferry Bridge afloat; Freeze moved upstairs in his house, water 6 inches deep over the lower flat.” On the 25th, when the water began to run off, I. K. Hoyt proclaimed that the River was 16 feet above the summer level.40 Philip Nase recorded that at its height, the freshet was “14 inches higher than in 1817, that being highest on record, 10 ½ inches over my counter (Cassidy Building), I. Town.”41 Finally, the length of the freshet could impinge on the plowing and planting season, although in rich intervale areas, this often did not pose a problem. Fisher noted that at Jemseg, for instance, the rich soil “deposited by the annual overflowing of the River, produces the most luxuriant vegetation, and although the

39 Miles Diary, May 2, 1853; “sic” in the original.
40 Hoyt Diary, 84, May 21, 24, 25. I surmise that the river I. K. Hoyt referenced was the Kennebecasis, as Hampton Ferry is located on the river of that name; David G. Keirstead, Reflections: The Story of Hampton, N.B. (Sussex: The King’s County Historical and Archival Society; Royal Printing Ltd., 1983), 33.
41 Philip Nase Diary, 19, May 23, 1854. For a description of damage caused to a smithy, boathouse, and store on the Maine side of the River at Fort Kent during a freshet in 1854, which also forced open a new channel for the River, see Béatrice Craig, Backwoods Consumers and Homespun Capitalists: The Rise of a Market Culture in Eastern Canada (Toronto: University of Toronto Press, Scholarly Publishing Division, 2009), 101.
farmer can seldom commence his labors till June, yet so productive is the soil, that in a few weeks the country exhibits the most exuberant vegetation.”

Fall freshets could cause devastation as well. Farmers recorded 34 years of fall freshets—periods of high water between September and mid-December—between 1789 and 1892, although not all of these occasions involved flooding or damages. The provincial flood database, which includes entries dating back to 1696, contributes to this history. It lists 165 floods in the Wolastoq/St. John River Basin and tributaries, including the Nashwaak, western sections of the Kennebecasis, and lower reaches of the Hammond River. The list includes 34 fall floods, generally caused by runoff from severe rain, including “the third freshet of the autumn” on November 15-18, 1937. H. Nase recorded a fall freshet in early October 1789 that covered the Island near his Mount Hope Farm, as well as the shoreline; he was concerned for his neighbour’s wheat that was still in the ground, possibly drinking in moisture beneath intervale waters.

One of the most dramatic accounts of fall freshet damages was recorded by Miles in 1853.

October 25 – “violent wind and rain till 10 – the rain then ceased, the wind increased and we set out for home.”

October 28 – “Rainy all day.…. Water rises fast.”

November 14 – “Rains heavy till noon- a great quantity of water falls. The back swamp is nearly all covered & the ditches in the front swamp are all full to

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43 Note that the database is not exhaustive, and it does not include all of the freshets noted in the journals. Government of New Brunswick, Department of Environment and Local Government, Flood History Database, http://www.elgegl.gnb.ca/0001/en/Flood/Search; The latest “fall flood” I included was December 20-22, 1973. For 1937, see Government of New Brunswick, Department of Environment and Local Government, “Flood Details - 1937-11-15 - 1937-11-18,” http://www.elgegl.gnb.ca/0001/en/Flood/Details/116. This fall tally does not include floods with uncertain dates, including those in 1701, 1768, or 1817, which was compared to the one in 1854, which was in May.
44 Henry Nase Diary, October 8 or 13 (writing unclear), 1789.
45 Between October 28 and November 14, Miles described one day of snow and two days of rain.
overflowing …rain continues till night.”

November 15 – “Clear not cold – water rises very fast in the river- a great quantity of logs comes out of the Nashwaak- two barns from Peter’s Island with about forty tons hay pass down the river and much loss and damage is occasioned in many places. The water is nearly two feet deep in Geo Hardings Creek.”

Miles’s entries demonstrate that, as Janet MacDonald had observed, a high volume of rain was synonymous with “real freshet weather.”

They also hearken to accounts of high water prior to or during harvest time damaging hay and grain in the field. Miles’s account of barns and hay swept from Peter’s Island reflects the vulnerability of island dwellers throughout the period studied, as well as in the 20th century. Peter’s Island, one of three Islands in the Penniac River (now known as Penniac Stream), was comprised of low-lying land at the junction of the Nashwaak and Penniac.

The vulnerability of its infrastructure was mentioned several times in the journals, as was that of Shore’s Island. In early April, 1846, Miles recorded that an enormous ice jam created conditions that drowned “Old Mr. Thomas Sewell,” swept a barn from Col. Shore’s Island, and decimated his livestock.

A few days later, Miles reported on a salvage scheme: “The

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46 MacDonald Diary, May 2, 1865.
47 Philip Nase Diary, 92, September 24, 1881.
48 Captain John Munro, “Captain Munro’s Description of the River St. John’s and the Lands in Nova Scotia, as also of the New Road from Kamouraska’s to the Lake Temiscouata,” in Douglas Brymner, ed., Report on Canadian Archives (Ottawa, ON: Queen’s Printer, 1892): 25-31, https://books.google.ca/books?id=268NAAAAYAAJ&pg=PA25&lpg=PA25&dq=%22Captain+Munro%E2%80%99s+Description+of+the+River+St.+John%E2%80%99s+and+the+Lands+in+Nova+Scotia%2C+as+also+of+the+New+Road+from+Kamouraska+to+the+Lake+Temiscouata%22&source=bl&ots=I0afPY4k7v&sig=kp7F6PTxSCOYH2GH5_1riP8Wo&hl=en&sa=X&ved=0ahUKEwj_zNr2-rZAhVPEawKHZaJAVAQ6AEIKjAA#v=onepage&q=%22Captain%20Munro%E2%80%99s%20Description%20of%20the%20River%20St.%20John%E2%80%99s%20and%20the%20Lands%20in%20Nova%20Scotia%2C%20as%20also%20of%20the%20New%20Road%20from%20Kamouraska%20to%20the%20Lake%20Temiscouata%22&f=false; Ganong notes that Peter’s Island was formerly referred to as “Pietetry” Island, which was the name Munro used; Ganong, “Place-Nomenclature of New Brunswick,” 261.
49 Miles Diary Microfilm, April 3, 1846. Another example can be found in a reference in the provincial flood database to the spring flood of 1831 or 1832, which flooded the Keswick Islands (which I believe includes Shore’s Island). Government of New Brunswick, Department of Environment and Local Government, “Flood Details - 1831-04-11 - 1831-04-11,” http://www.elgegl.gnb.ca/0001/en/Flood/Details/13. See also Kindervater, Flooding Events in New Brunswick, 107, for a reference to the spring flood of 1935 damaging and destroying Barns on islands in the Fredericton area, particularly “Shore Island.”
ice running quite thick early in the morning Richard Carman picked up a house adrift and Dennis DeVeber and others a Barn and Hay 4 Tons.” It could have been this rescue that became the stuff of legend; in 1868, Ewing recorded:

For now it is becoming a question how long the river will be safe. It is really rather exciting to hear all the ups and downs, and hopes, and fears, and prognostications about spring. Whether there will be an ice freshet this year for one thing. I only hope there may – we should have such a good view of it. An ice freshet is when the ice having been very thick breaks up and bursts out with awful force – sometimes carrying away houses &c. &c. one barn went down the river one year and some ‘cute parties put out in a boat and grappled it – and landed it!!!50

Dramatic flooding in the fall of 1854 also occasioned significant damage to private, communal, and public property. On November 14, I K. Hoyt reported: “THE GREAT FLOOD Every bridge on the Great Road between St. John and the Bend carried off; hundreds of tons of hay swept off; Barns, houses and Mill dams; The roads rendered for a time impassable.” The flood was precipitated by three days of rain.51 According to contemporary reports, “[f]arms were flooded, and it was necessary to take the residents of the old house on the Dobson Farm from a window.’ The water rose very rapidly, and from Sussex to Hammond River, cattle were drowned in their stalls,” and other domestic animals were also killed. On Mill Stream, five dams were washed out.52

High water at other times of year – sometimes referred to as a freshet – could pose the same challenges as the spring and fall freshets. For example, during several rainy days in mid-July, 1825, Dibblee reported losing “timber on the lower bar” when the

51 Hoyt Diary, 86. Miles’ journal also reported three days of rain between the 12th and the 14th, although he did not mention flooding.
River rose and stayed high for much of the month.\textsuperscript{53} Rain at any time of year could cause waters to rise, as it did when Campbell reported the bridge had given way on August 23, 1843.\textsuperscript{54} Almost exactly 40 years later, Lucy Everett Morrison reported dramatic losses for local lumbermen, as “1,000,000 logs run over Gibsons dam and Tom Robenson lost logs and deals.”\textsuperscript{55}

Changes in the River’s hydrology over time altered the duration and character of the freshet, and changes in communication technology affected the way news of potential freshet devastation traveled. For example, historian W. O. Raymond noted that prior to extensive forest clearance by the early 1850s, water levels stayed higher longer after spring freshets.\textsuperscript{56} The telegraph enabled people within the watershed to breach the limits of both distance and time and thus communicate details of an impending flood. On October 31, 1851, residents of Grand Falls observed rising water levels and sent a telegraph downriver to Fredericton. This timely alert allowed storekeepers and shipping interests to prepare for the deluge. Telegraphy became increasingly accessible and thus useful as more offices opened over the decade, including at “the Ferry” (likely Hampton ferry) in December of 1854.\textsuperscript{57}

\textsuperscript{53} Typescript of Dibblee Diary, July 15, 1825.
\textsuperscript{54} Campbell Diary, 242.
\textsuperscript{55} Diary of Lucy Everett Morrison, August 24, 1881.
\textsuperscript{56} Hall, “River of Three Peoples,” 306-7. See also Dorothy Dearborn, \textit{An Anecdotal History of Kings County New Brunswick} (Saint John, NB: Neptune Publishing Co. Ltd., 2001) 10, for the claim that rivers and streams were higher prior to deforestation for settlement. It was a challenge to assess the end of the freshet in some journals, because weather – particularly rain – could cause the Wolastoq/St. John River to rise after the freshet from run-off had abated. Yet given that rain was common at this time of year, I included elevations of the River's level that could merely have been attributable to rain, provided they were within 5 days of the previous reference to the water level falling. I made an exception if subsequent observations referred to changes in water levels that were characteristic of freshet, such as water filling a certain creek.
\textsuperscript{57} Hoyt Diary, 86, December 25, 1854. Kindervater, \textit{Flooding Events in New Brunswick}, 56. Note that the infrastructure for telegraphy had been in development for decades by mid-century. On August 3, 1812, Crawford reported in his journal, “the telay graf raisd on Addams hill Flualing.” Although the
Colonial administrators responded to freshet flooding by passing legislation to protect riverbanks, which required full participation by local landowners. In 1794 and 1795, legislative statutes were passed to preserve “the bank of the river Saint John in front of the parishes of Magerville, Sheffield and Waterborough,” and “in front of the Parish of Lincoln in the County of Sunbury,” respectively. The preamble to the first law recognized the considerable inconvenience to riverbank settlers caused by freshets, as well as recognizing that livestock grazing contributed to the erosion of intervale lands.58

In 1805, legislators recognized that freshets damaged the highways along the River, and passed an “Act to Enable the Commissioners of Highways in the Parishes of Magerville, Sheffield, and Waterborough, to lay out Highways, and to appropriate part of the Statute labor for securing the Bank of the River in front of those Parishes.”59 Labourers were to “secure the Bank” by planting alders or willows, or brushing, a practice still utilized down to the present day.60 As well, in 1816, administrators passed “An Act to prevent the cutting or breaking down the Bank of any River, Sea-bank or Dyke, and for the preservation of the same.” This act legislated the planting of trees to be protected for

original transatlantic cable failed in September 1858, a successful replacement was laid in 1866; Margaret Conrad and James Hiller, Atlantic Canada: A Region in the Making (Don Mills, ON: Oxford University Press, 2010), 119.

58 “An Act for preserving the bank of the river Saint John in front of the parishes of Magerville, Sheffield and Waterborough,” Acts of the General Assembly of His Majesty’s province of New Brunswick passed in the year 1794 (Brookville, NB: Christopher Sower, 1794), 34 Geo. III, Ch. 9; “An Act for preserving the Bank of the river Saint John, in front of the Parish of Lincoln in the County of Sunbury,” Acts of the General Assembly of His Majesty's Province of New-Brunswick passed in the year 1795 (Fredericton, NB: Christopher Sower, 1795), 35 Geo. III, Ch. 4. See Hall, “River of Three Peoples,” 312-13, for further elaboration of these laws and of the impacts of livestock grazing the riverbank.


60 Note that while willows and alders are native species, riparian ecologists recognize that planting native trees and shrubs of various species and ages, on the lower and upper reaches of riverbanks, most effectively stabilizes these areas; Paige Harris et al., Beneficial Management Practices for Riparian Zones in Atlantic Canada (Agriculture and Agri-Food Canada’s Greencover Canada Program and Island Nature Trust, between 2006 and 2011), http://nsfa-fane.ca/wp-content/uploads/2011/06/riparian-areas.pdf.
these purposes, as well as using “pickets, piles, brush, or other materials” to secure river
banks and interval lands. Miles’s journal reflected his compliance with provincial
laws, as in the fall of 1846, and summer of 1849, he and men working for him secured
the landing at the River with brush and stone.

The colonial administrative system was structured so that local commissioners of
roads and highways were responsible for calling out work crews for snow removal,
bridge repair, and roadbuilding throughout the year. The central statutory labour season
fell in late June and early July, after farmers had most crops in the ground, and before
they commenced haying. The second annual season for road labour came after harvest
in the late fall and before freeze-up. In order for the system to work efficiently, settlers
participated on-the-ground, notifying the commissioner responsible in event of damaged
infrastructure after freshets and storms. For example, after a powerful rainstorm
damaged a bridge during freshet in May 1865, Alexander MacDonald requested his
local commissioner bring men out “to mend the bridge so it would be safe to cross on.”
The MacDonald men joined in and the crew made quick work of it, accomplishing the
task in the span of a morning.

Low-lying areas along the Wolastoq/St. John River and its tributaries are
vulnerable to flooding to this day. In the early decades of the 20th century, farmers

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61 “An Act to prevent the cutting or breaking down the Bank of any River, Sea-bank or Dyke, and for the
preservation of the same,” Acts of the General Assembly of His Majesty’s Province of New-Brunswick
passed in the year 1816 (Fredericton, NB: George K. Lugrin, 1816), 56 George III – Ch. 9.
62 Miles Diary, October 17, 1846 and July 6, 1849.
63 For example, Typescript of Dibblee Diary, June 27, 1825. Journals often referred to road work in early
July.
64 MacDonald Diary, May 25, 1865. See also entry for March 28, 1861.
continued to lose barns and hay to the freshet’s swell. During the epic freshet of 1936, Mary Morehouse and her neighbours at Burtt’s Corner feared that people in Maugerville had all been drowned. The ability of the land to hold back floodwaters, as well as the timing of spring freshet, has changed over time. In the 1760s, colonial observers predicted the spring flood would begin in mid-May or before, while 100 years later, Juliana Ewing was told to anticipate freshet at Fredericton in April or May. While some 18th-century settlers had abandoned lands that flooded annually, or chose to maintain them simply as farmland, others had persisted in adapting spring and fall activities to mitigate risks to food stores, livestock, and infrastructure, in the event of flooding. Yet weather conditions in spring, summer, and fall were unpredictable, rendering settlers vulnerable once again to the interactions of weather in place with the land- and waterscapes of their homes.

66 Bird, Through the Eyes of Mary, 208.
Chapter 6

The Interdependence of Water Levels, Transportation, Milling, and Fishing

With population growth along the Wolastoq/St. John River over the course of the 19th-century, transportation networks intensified, expanding the movement of people and goods, as well as broadening the types of weather-related challenges to travel. Expansion of the colonial population and of industry altered the River system by increasing mill dams and water pollution and decreasing forest coverage and fish populations, while lowering water levels.\(^1\) Finally, the continued innovation in transportation toward increasing rapidity and energy-efficiency contributed to the cultural shift away from local awareness and solar time and towards the mechanization of temporal and natural systems.\(^2\)

Rushing up the River from the Bay of Fundy, the tides combine with the Wolastoq/St. John’s hydromorphology and the time of year to affect water levels and thus the mobility of canoes, steamships, and other vessels within the River system.\(^3\)

Two sets of falls at the River’s mouth required particular adaptations by settlers bound

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\(^1\) For a more in-depth discussion of these issues, see Hall, “River of Three Peoples,” especially sections of chapter 5, “A flood of colonists on the floodplains of the St. John River, 1760 to 1850,” and chapters 6 and 7, “Environmental Pressures: Fish and the shifting ecology of the St. John Watershed,” and “A Dynamic River and the limits of hydrological engineering, c. 1760 to 1850.”

\(^2\) Malmberg, “Steam Transportation on the Saint John River,” 13-16. Malmberg noted that steamships initially burned wood, and became more energy-efficient with innovative engine designs by 1830, which required far less fuel. Steam contributed to the literal explosion of the fossil fuel age. McNeill points to the feedback loop facilitated by the relationship between steam engines and coal; as engineers improved the efficiency of steam engines, and could put them in anything – ships, trains – these vehicles could in turn transport more coal to power more engines … and so on. John Robert McNeill, *Something New Under the Sun: An Environmental History of the Twentieth-Century World* (New York: W. W. Norton, 2000), 13.

\(^3\) Before the Mactaquac dam was completed in 1968, the tides were a more pronounced phenomenon in the River, bringing saltwater as far north as the island called Eqpahak (Aukpaque). See page 228 below.
for Saint John, or heading upriver from the City. The so-called “Reversing Falls” form a
narrow junction between the River and the channel opening into the Saint John Harbour.
Tidal waters must pass through a steep-walled gorge on their way up- and downriver
twice a day. There is a potential difference of 14.5 feet between the beginning and close
of these rapids, and thus, the direction of the falls depends on whether the tides – which
can be from 21 feet to 28.5 feet – are rising and flowing upriver, or falling and flowing
out to sea.4 Boats could only navigate the channel four times a day, at two periods of
“Low Slack Water” and two periods of “High Slack Water.” According to historian
John Whitman Bailey, quoting geologist Henry Youle Hind in 1894, it was possible to
traverse the falls for 10 to 15 minutes at a time, four times a day.5 In the mid-20th
century, scientist F. Keith Dalton described four navigable periods of about 45 minutes
at a time, at or just before slack water. This discrepancy may have reflected an
extension of navigation time through modern boat design and technology. Dalton also
detailed the factors influencing the length of navigable periods, including the volume of
the River’s flow, which changes seasonally as well as erratically due to precipitation,
and the height of the tides, which vary predominantly in relation to the moon’s distance
from Earth.6 In the early 19th century, Benjamin Crawford noted that “for a few days in
the spring of the year, the height of the water in the River renders the passage of the falls
extremely difficult.” During the spring freshet, passing the falls into the River was
particularly challenging. On May 21, 1833, Crawford observed “The freshet falls fast -

4 F. Keith Dalton, “The Reversing Rapids at Saint John, New Brunswick,” Journal of the Royal
5 Joseph Whitman Bailey, The St. John River in Maine, Quebec, and New Brunswick (Cambridge:
6 Dalton, “The Reversing Rapids,” 158-61. Tides typically vary predominantly in relation to the
maintenance phase and declination (157). See also Hall, “River of Three Peoples,” 162.
the boats got up through the falls,” and on June 8, 1835: “Wallace and Joseph set out for town in order to go to Canedy [Canada] – the boats gits up through the falls.” The considerable local knowledge required for navigating the gorge and understanding how seasonal and the lunar changes impact the water’s height and tides, explains why experienced pilots usually guided vessels through the rapids.  

The journals reveal that the double set of falls near the river’s mouth often required settlers taking loaded wood boats to Saint John’s market to plan their travel times according to the tide cycle as well as the time of year, and even then, traveling through them could be dangerous. Crawford reported his own night-time departures by boat for town, as well as late evening departures by family members bound for market. Crawford and Reverend Frederick Dibblee referred to the tavern and hotel kept by the Fowlers at Indian Point, where members of their families occasionally stayed en route to and from town, depending on the timing of their transport. Travelers also left goods or conveyances with the proprietor, such as when Joel Crawford walked from Fowlers Point up to Long Reach on December 1, 1816, then returned to retrieve the items he had left there on the 3rd. Even when farmers did not witness it themselves, they sometimes recorded the passage of a vessel through the Reversing Falls, indicating awareness of the risks involved. On June 21, 1815, Crawford recorded: “Come home from town John Britneys wood Boat went threw the fauls for the first time.” On May 11, 1816, Azor Hoyt reported: “The Steam Boat came through the falls; the first time.” More commonly, farmers took note of accidents in the falls, including drownings. Henry Nase

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8 Crawford Diary, October 5, 1813, October 27, 1814, and November 28, 1814.
9 See for example, Crawford Diary, November 15, 1813.
10 Crawford Diary, December 24, 1817.
recorded the tragic drowning of Lieut. Hunt in the deadly passageway on December 4, 1786.11 Navigating the dramatic passage required a high level of skill at any time of year, and accidents were always possible. On August 4, 1834, Crawford related that: “James Whelpleys wood bote got on the rocks in the fauls.” Despite the passage of time and increased personal and collective experience with the challenges of transport through the falls, vessels continued to sink. On August 12, 1846, Isaac Ketchum Hoyt noted: “Capt. Smith’s boat sunk in the falls; injured very much.” On December 30, 1853, Philip Nase reported the “total wreck” of the Ship ‘Recorder’” after it came into the falls, and on July 1, 1867 detailed: “Joseph Fanjoy a woodboat man … was drowned in the Falls by being knocked over by boom of woodboat.” The falls directly upriver from Reversing Falls, which Crawford referred to as “the neck rapids,” could also be dangerous to navigate.12

Some farmers observed the tidal influence on the River, as the waters and force of the tide reached above Fredericton to Eqpahak (sometimes written as Aukpaque), an island whose name means “at head of tide” in Wolastoqey.13 On November 13, 1813, A. Hoyt recorded “a long spell of warm rainy weather with high tides.” A week later he observed: “water very high.” The tide did not just bring waves or challenge transport. It also affected the ice, and could increase the risk for winter transportation. On January 26, 1863, Janet MacDonald wrote, “The ice is getting bad in places where the tide is strong. A team got in somewhere by Mr. Colwell’s. In some places it is open. The

11 See also Crawford Diary, November 15, 1832.
12 Raymond refers to the “upper falls,” where ledges below surface create “wild rapids”; these could be the falls that Crawford referred to as the “neck rapids.” See Crawford Diary, December 13, 1831. See Raymond, The River St. John, 19.
Lawson River is not fit to go on.” At other times, tidal influence could be a boon to boat traffic. In early August 1864, MacDonald reported: “The Brunswick came down and came to here, it was still and head tide.”

Early British observers had recorded evidence of the seasonal changes to mobility in the Wolastoq/St. John River and connected waterways. In 1768, Surveyor-General Charles Morris wrote in a letter to Capt. William Spry: “As to the Navigation of the River, there is Water at all Times, (except in dry Seasons) for Vessels of a Hundred Tons, to proceed as high as St. Ann’s and into all the Branches of the Lakes.” While conducting an economic survey of Kings County in 1803, George Leonard Junior described the Little Kennebecasis or Hammond River as “only navigable in the spring and autumn except for Birch canoes; its Intervals are however extensive and rich.”

Farmers typically reported the initiation and cessation of seasons of boat traffic, indicating the centrality of mobility on the River and its tributaries to daily life. Their frequent references to vessel activity reflected the high value settlers placed on water travel, which permitted the transport of heavy loads more readily than on land and sometimes on winter roads. Jacobina Campbell indicated that in the springtime, when water levels were high enough, her brothers could canoe the Nashwaak River to and from Fredericton, shortening their trip from two days to one, and enhancing the cargo they could carry. After the expansion of road networks in the 1830s, Campbell was

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14 MacDonald Diary, August 9, 1864.
15 “Description of the Harbour and River of St. John’s, in Nova-Scotia, and of the Townships of Sunbury, Burton, Gage, and Conway, Lying on Said River, as Received from Charles Morris, Esq; Surveyor-General of Halifax, and Contained in a Letter Wrote to Capt. W. William Spry, One of the Proprietors of Said Townships,” The Internet Archive, January 25, 1768, https://archive.org/details/cihm_39602, with thanks to Jason Hall for bringing this source to my attention.
16 Aiton, The Story of Sussex and Vicinity, 45.
17 Crawford Diary, April 27, 1822.
always able to complete the round-trip journey to Fredericton in a single day.\textsuperscript{18} In winter, when the River was iced-in, settlers at Long Reach were sometimes able to travel to Saint John and back during the same day.\textsuperscript{19} The first vessels on the River in spring often traveled alongside the ice, further reflecting the high priority settlers placed on mobility, as well as the risks ship captains and others were willing to take at cusp seasons. For example, on April 22, 1813, Crawford observed: “Boates goes up and down the reach,” even though ice still filled part of the waterway. Conversely on May 2, 1864, MacDonald noted that a “schooner and W. Blacks wood boat lays here waiting for the ice to go out.” When the ice left the waterway two days later she watched: “eight wood boats and a schooner” pass by her home on the shores of Lake Washademoak.

The rhythms of activities on land overlapped with changes in the River’s navigability, and with the type and number of vessels on the River. Spring break-up foreshadowed the freshet rise that lumbermen used to raft logs down the Wolastoq/St. John River and its tributaries to mills and markets. Tow- and horse-ferries, and later, steam ferries, carried passengers and freight across rivers and lakes. From spring through autumn, wood boats carried farmers’ hay, produce, live or slaughtered animals, as well as cordwood and lathwood, to markets and the port of Saint John.

Farmers’ observations of the initiation of a new route or the (local) maiden voyage of a new vessel reflected the fact that River activity, like the weather, was news-worthy.\textsuperscript{20} Their comments may have signaled new technology, new opportunities for

\textsuperscript{18} Campbell Diary, 25, for a reference to her brothers poling the canoe upstream as she walked home during the several weeks of high water in the spring, and page 26 for intensified transportation routes and one-day trips by 1837.

\textsuperscript{19} For example, Crawford Diary, January 12, 1815.

travel and trade, or simply reflected the increasing pace of colonial life. On May 13, 1816, the steamboat *General Stacey Smythe*, “went up for the first time and the first trip was ever a steamboat went in this river,” as Crawford recorded. On the last day of August in 1832, A. Hoyt commented that the “Steamer WOODSTOCK” was the first such ship to pass by his farm to Hampton Ferry. I. K. Hoyt included a reference to the first steamer of the fall rainy season on November 28, 1854. It went again on the 30th and on the 1st of December, five days before the River froze shut. P. Nase typically recorded the first and last steamer trips during open water season. He observed that the closure of River navigation often led to a decline in business while the opposite was true in springtime. Although many people continued to travel to town on the ice and overland snow roads, they typically provisioned themselves for the winter season in the fall. A tally of the months in which the Crawfords were most likely to travel to town (or their neighbours were most likely to buy or sell items for them) reflects this pattern, as they traveled to town most frequently during fall (in 16 years) or spring (in 10 years).

<table>
<thead>
<tr>
<th>Season</th>
<th>Number of years the Crawfords made the most trips at this time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>16</td>
</tr>
<tr>
<td>Spring</td>
<td>10</td>
</tr>
<tr>
<td>Summer</td>
<td>6</td>
</tr>
<tr>
<td>Winter</td>
<td>2</td>
</tr>
</tbody>
</table>

Farmers also observed how low water levels impeded transportation. Log rafts descending the River in the spring sometimes ran aground on sandbars or low intervales.

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21 For the reference to the General Stacey Smythe, see Reicker, *Those Days Are Gone Away*, 154.
22 For example, see Philip Nase Diary, 32, 38, February 14, 1863, and March 10, 1864.
23 Trips were tallied based on whether a member of Crawford’s family went to town, or a neighbour sold or purchased something for the Crawfords while in town.
In late June of 1820, Dibblee reported that William Simpson had “Ran His Raft of Timber on my Bar” on the morning of the 18th, and was unable to liberate his valuable cargo from the sand and continue on his way until the 21st. Water levels could fall at almost any season, but low water was most common during late summer and autumn. During a stretch of dry summer weather in August 1876, P. Nase recorded that the steamship “May Queen ran aground near the head of Stm navigation on 14th Inst and has not been got off yet.”

A January or February thaw was a seasonal phenomenon that could affect the River’s medium, and hence transportation risks and routes. In his 1828 guide for emigrants, John MacGregor explained: “A thaw and mild weather generally occur for a day or two, about the middle of January, and sometimes in February.” Farmers’ journals suggest the reality was much more dynamic, as the thaw could reduce the River system to a seething mass of ice and open water, or might simply increase the level of “sposh” or glare ice that settlers encountered on ice and land routes for several days or weeks. Farmers anticipated thaws, and recognized signs that one was pending. On December 3, 1823, Dibblee observed: “Still Cloudy but quite warm – Like for a Thaw.” MacDonald described the black sky that foretold thaw in the dead of winter. She typically observed signs of thaw on the River itself, including water on the ice that often

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24 Dibblee Diary, June 18-19, 1820.  
25 Philip Nase Diary, 84, August 17, 1876. The term “Inst.” referred to a date within the same month.  
27 According to Halifax-based meteorologist, Richard Zurawski, the January or February thaw can last for a day, a week, or a much longer period of time. “The January Thaw can appear once, many times or not at all. It is a quizzical break in the winter weather, and it’s virtually impossible to forecast.” While Charlottetown and Halifax can anticipate a thaw every year (at least, within the modern record), it is only 97% likely at Fredericton. Zurawski, *Richard Zurawski’s Book of Maritime Weather*, 32.  
28 For example, MacDonald referred to a black sky as a sign of impending thaw in her journal on January 26, 1862.
portended a continuation of warmth. Wolastoqiyik could predict the thaw based on changes in ice and weather conditions, as well as by the consistency of fallen snow. For example, a Wolastoqey speaker has nuanced the term, “puni-apuwockiya/there is a winter thaw,” with the description: “If a big river has water flowing from its edges out over the ice on a freezing cold day, then a big rain and thaw is coming.”

Weather and transportation conditions during a mid-winter thaw were highly variable, making travel conditions risky. Crawford’s entries in late February and early March 1816 emphasized the changeable nature of transportation surfaces.

February 24 – “bad going on the river”
February 26 – “the people from the other sid broke the road a crost the neck”
March 2 – “thawing”
March 3 – “fine going on the land and river”

In response to the danger posed by traveling on the ice, Crawford’s neighbours opened a land road through the snow. The thaw lasted for a week, interrupting transportation on the Wolastoq/St. John River and its tributaries. Settlers’ association between transportation and thaw is encapsulated in Lucy Everett Morrison’s use of the phrase “travelling is breaking up” in the spring. It was not the change in the ice and snow on their own, but her awareness of the implications of such changes, that was most significant and therefore worthy of note.

There were a number of years covered by the journals when the River opened during a January or February thaw, and although farmers sometimes recorded boat travel

29 See, for example, MacDonald Diary, February 20, 1859, and February 26, 1863.
31 Diary of Lucy Everett Morrison, March 28, 1879 and March 21, 1884.
at this time, they typically emphasized the inconvenience of ice break-up and snowmelt.

Dibblee described the adverse effects of heavy mid-February rain on travel conditions in 1807:

February 15 – “Rains amazing hard all Day, and every Hollow Place is filled with Water. The River is rising very fast. We never saw such a Thaw.”
February 19 – “This morning we find it Raining very hard with the Wind at South and very high. At 2 O’Clock the Ice began to Break and after Jaming at Putnam’s it ran off - It Raised the River on my Interval half way from the Fence to the brook - at Night the Ice Runs Thick.”
February 24 – “River now open from Captain Smith’s Island to John dow’s where the Ice is jammed to the Falls - and from the Falls it is open, but how far Down we have not yet Heard. Never was there such a Winter, nothing but Ice all over the Fields and Road and not a Foot of Snow in the Woods. Young Lawrence and Captn. Ketchum set out for their Homes having been detained in Woodstock by the Rain and Ice Breaking - Five Days.”
February 26 – “Very Pleasant Weather not in the least Cold. This Day the two young Ketchums and their Neice left here for their Homes. They had to take their Horses and Slay round by the Madusnacreek [Meduxnekeag] acrost to Bell’s and so Down to Woolverton’s. Deborah went acrost the River at Putnam’s in a Cannoe.”

Dibblee’s entry on the 24th indicated how word of changing conditions traveled up- and downriver, and how communication about conditions was common and anticipated; it was only a matter of time before the Dibblees learned how far downriver the ice had broken. As well, not only did the riven ice combine with weather conditions to detain the Ketchums at Woodstock, but when the last of the family left for their homes, the routes they followed and conveyances they used were circumscribed by the state of the River. Thomas Miles described several thaws that opened the Wolastoq/St. John, including an unusually dramatic melt of February 1853:

32 Canada’s Historic Places, “Island Park,” January 18, 2008, http://www.historicplaces.ca/en/rep-reg/place-lieu.aspx?id=8540; “Island Park was used as a summer camp and base for salmon fishing by the Maliseet peoples, before Jacob Smith, the original grantee of most of the land that is now Woodstock, settled in the area.”
February 7 – “Warm rainy day. The fields are all bare of snow except near the fences. The ice is very poor- is becoming full of holes & can hardly be called safe to drive on. My son George set off for Magagaudavic on Friday last in a waggon- the stages from St. John to Fredericton all run on wheels- such a winter I never saw before. The lumbermen about here have all quit the woods & gone home. There is little frost in the ground....”

February 24 – “Warm, dull morning- the fields bare of snow and much water, lying in ponds and ditches. Some ice on the roads, but poor travelling. ... Judge Street gets his horses in the ice on his way home from Court, near Charles Browns, stops there all night- begins to freeze.”

In 1853, the thaw prompted a return to wheels for some travelers as well as for the “public” transportation system, yet the condition of the roads rendered travel challenging.\textsuperscript{33} Without a good snowpack for hauling logs, lumbermen were forced to abandon the camps for a time. The River ice around Fredericton was unsafe for travel for much of the month with implications for doctors and other people who used the snow and ice roads to get to and from places of work, as well as for those who relied on seasonal roads for transporting goods to market, or procuring much needed supplies to see their families through until spring. Thaws sometimes caused the River’s edges to melt and its waters to rise, which created particular risks for transportation. On February 14, 1824, Crawford observed “the River has Rse [Rose] so that it is very Bad gitting off or on with a team several had been in danger of losing there horses,” and two days later he reported, “went to git on the Ice with the Horses but cold not and had a nuf to due to git back again that is here at the landing the river being so high.”

Communication about transportation conditions amongst intervale settlers and travelers supported settlers’ praxis of observation throughout the year. It was common for farmers to transcribe reports about conditions and their implications in their journals,

\textsuperscript{33} It is unclear how ice on the roads affected travel conditions; was the traveling poor because there was not enough ice and snow?
such as Miles’s note about Judge Street in February, 1853, and Crawford’s report of
risks to people and horses in 1824. It was also common for them to describe the routes
and conveyances taken up- or downriver by guests, family members, and neighbours, as
Dibblee had in February, 1807. These details of how people “lived weather” underscore
the centrality of weather conditions to daily life. Farmers also recorded personal
communication about conditions, such as when H. Nase encountered dangerous ice in
March of 1784. He left an account of the poor state of the ice at Price’s at Belleisle,
describing in his journal how he perilously traveled for “eight days on the river… fell in
several times up to my hips, and was in eminent danger of losing my life.”

The journals recorded drowning deaths each winter; the permeability of ice at cusp seasons
and during sporadic thaws posed risks of illness and fatality to humans and other
animals.

The fall was often a dry season, when low water levels could pose challenges to
travel. On September 28, 1813, A. Hoyt recorded a difficult trip by water to Saint John,
“5 days head wind; the water lower than any time this season.” Dibblee often observed
the effects of water levels on poling canoes (propelling a canoe using a long pole, either
from a seated or standing position). On October 5, 1820, he reported: “Never was
there so Dry a Season, and the River never lower, never lower, but we found it good
Poling … we are now in the Midst of our October, Very good for the Dry Season.” As
well, on November 8, 1821, Dibblee observed that a substantial rainfall had “raised the
river over my large bar – never better poling and boating.” The variability of water

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34 Henry Nase Diary, March 13, 1784.
35 For a visual depiction of poling, P.J. Bainbrigge, “Poling up the rapids, 1839,” LAC # C-024163, in
Andrea Bear Nicholas et al., 2012-2013 Maliseet Moon Calendar: Featuring Maliseet Birchbark Canoes
(Fredericton, NB: St. Thomas University, 2012).
levels at other times of year could also challenge poling and fishing, as Dibblee reported on June 4, 1807: “The River has Rose and Fell a Little for a Week past and is now too High for Good Poling or Fishing.” Poling was apparently optimal when there was sufficient flow over sandbars and other obstacles, however, too much water could raise the water levels enough that poling was not feasible. Hence, close observation was necessary before deciding how to travel and which route to take; making a record helped Dibblee to concretize and reflect his cumulative experiential knowledge with the opportunities presented by different water levels.

Farmers recorded uncommonly low water levels in the River in the fall in 16 years between 1804 and 1883. They also reported low water in winter and summer in 4 years, and low water levels in spring in 8 years. In several years, farmers observed low water in two separate seasons. A detailed reconstruction of the weather over the century, coupled with a geographic plotting of low water reports, could allow the historical climatologist to determine whether the timing of the winter observations, for example, relate to changes in weather patterns. That the summer reports were made in the Fredericton area within the last three decades of the century reflects in part the sedimentation as a result of human land-use that filled in the River’s channel. As more and more forested lands and hillsides were cleared for lumber and agriculture, the province’s thin topsoils eroded away into the Wolastoq/St. John River and its tributaries. Hence the effects of weather and climate on water levels were mediated by

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36 Although Dibblee continued to report catching fish for the next few days and caught three that day, on June 12 he reported that the River was too high for nets; it was also too high for poling on the 13th when he was traveling.

37 In part because her husband was a miller, Lucy Everett Morrison made numerous references to years of low water levels, hence I have been able to extend this record to 1883.
consequences arising from colonial values and industries. The sedimentation caused by farming and lumbering influenced how colonial engineers responded to the causes of low water.\textsuperscript{38}

Iced-in waterways and low water levels challenged milling operations, which required sufficient water behind mill dams to generate power prior to the advent of steam mills.\textsuperscript{39} For example, in 1770, Simonds and White reported in a letter to their colleagues: “The Mill could not go before the middle of April and the ice has been continually breaking the dam ever since” freshet.\textsuperscript{40} Periods of low water required that farmers who were waiting for mills to process wood, wool, and flax, adapt their activities or make other arrangements.\textsuperscript{41} When local waterways were too dry or frozen to run mills, settlers had to travel further afield with grain or other goods. For example, on March 1, 1814, Dibblee recorded “no grain yet; mills continue dry; William went to Buckagumock with 16 Bushels.”\textsuperscript{42} William traveled approximately 22.5 kilometres/14 miles to reach the mill on the Becaguimec; the large volume of grain he carried is a testament to the family’s lengthy wait prior to resorting to a distant grist mill.\textsuperscript{43} While the Dibblees appeared consistently able to provide for themselves, some families living

\textsuperscript{38} For a thorough discussion of these influences, proposals, and endeavours, see Hall, “River of Three Peoples,” chapter 7: “A Dynamic River and the limits of hydrological engineering, c. 1760 to 1850.” For a brief discussion of colonial dredging initiatives, see pages 255-56 below.

\textsuperscript{39} Wynn, \textit{Timber Colony}, 8, 22.


\textsuperscript{41} Hall, “River of Three Peoples,” 284, on the recognition of early 19th-century steam mill entrepreneurs, Hayward and Gibson that “‘water Mills in general cannot grind but a small part of the year for the want of sufficient water.’”

\textsuperscript{42} Dibblee was referring to the Becaguimec Stream, which begins around 21 kms/13 miles upriver from Woodstock.

\textsuperscript{43} The Dibblees generally took lower volumes to the mill. See Dibblee Diary, April 5, 1809.
closer to the margin of survival had to barter, creatively use the foodstuffs they did have, and find work off the farm to raise a little cash for flour and other necessities. In some years, demonstrating keen attention to the family’s necessary grain stores, Crawford accounted for grain as he did for hay. On June 2, 1819, he reported: “went to Mill for my last grist of old grane.” The following year, he “went to Mill with new grane for the first time this faul” on October 31.

Even as steam technology became more common in the River Valley and greatly expanded the number of potential mill sites, people such as MacDonald’s sons continued to use mills that were reliant on water levels as well as temperature. The MacDonald men had a small milling operation at the northeastern end of Washademoak Lake that generally ran from as soon as the family chopped ice out of the mill race and before freshet began (usually in March or April), until freeze-up in the late fall. In 1857, MacDonald recorded that after four days of chopping ice out of the mill race, the boys “Commenced sawing” on March 27. They worked through the weekdays, including on the 28th when they “[h]ad to stop a leak in the dam,” until April 2 when it was “too cold to saw.” The men resumed sawing on the 4th, and two days later, she reported: “Teams going all day on the ice from the cove to the mill.” MacDonald continued to record sawing, as well as several more needed repairs to the mill dog and the boom (which was

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44 See Darrel Kuhn Butler, “Flour and Canal: An Historical Background to Gristmilling in the Macaquac Headpond Area” (Prince William, NB: Kings Landing Historical Village, 1981): 30, re. backland farm challenges including the high cost of flour and the low price they received for their grain, which they had to transport by hand. This need for creativity, bartering, and off-farm labour also applied in years of poor harvests; Piper, “Backward Seasons,” 50. For families living in poverty in the cities, winter was indeed “the pinching season.” As one observer described, “every article of provision naturally advances in price and becomes by the poor almost unobtainable;” Fingard, “The Poor in Winter,” 66.

45 See also for example, Hoyt Diary, 13, August 13, 1814.

46 MacDonald Diary. Occasionally, they were able to saw in the mid-winter, including on January 27, 1862.
broken on May 10 under the pressure of a very hard southerly wind), until the planting season began on May 14.\(^47\) The men were back at the mill on May 30 and then they sawed, hauled, and sold logs, and fixed the mill dam, through December 4. In 1862, they began to saw on April 23, when she recorded “The ice moves some. The water is so high they are at the mill; commenced to saw this afternoon. The 1st steamboat went down the river today.” On the 29\(^{th}\) she observed: “The ice went out of the mill Cove last night…. The ice is here yet.” Since the MacDonald men had cleared the mill race of ice earlier in the month, the mill could run with some ice in its Cove, and before the ice went out of Washademoak Lake.\(^48\)

During winter freeze-up, the outdoor wheels of water-powered mills often froze in place, which required that workers cut them free from the ice, and eventually halted work until the next thaw. However, tub-wheel mills, or those employing a horizontal wheel on a vertical axle in the lower level of a mill, could work in wintertime if they had a sufficient amount of running water. It is possible this is the technology James Morris utilized in his grist mill at the “back settlement” of Lake George in Prince William Parish in 1826. In his petition to the government for a grant to support the project, Morris argued that a gristmill would allow settlers to circumvent the 5 to 9 mile trek “to the Main River,” as well as alleviate the strain of often having to carry the grain “on their backs the roads at the Seasons of the year being impossible with Teams…” However, on February 7, 1828, Morris related how the mill had burned a month earlier, after he had worked “all night till about 3 o’clock in the morning,” despite the fact that

\(^{47}\) Soucoup, *The New Brunswick Phrase Book*, 101. “Dogs were pointed iron grips that held a log in place on the sawmill carriage while the logs cut.”

\(^{48}\) MacDonald Diary, for example see April 10, 1862.
he had been particularly careful in securing the Fire in the Mill…” According to two mid-century accounts, the Wolastoq/St. John River had frozen up at Fredericton on December 3, 1827. It did not open again at Fredericton until April 20, 1828, which indicates that the mill was indeed operating while the River, around 8 km/5 miles away, was frozen. It is unclear what Morris used as a water source; he could have been diverting water from Lake George into his mill. Heritage specialist Darrel Butler surmised that if Morris was grinding grain in early January, he must have been using a tub-wheel mill, with the help of a fire and likely, a stove. The fire Morris had tended dampened some of the chill so he could work, and kept the mechanisms of the indoor wheel from freezing up. While his system was intentionally designed to provide winter milling, the cold temperatures and winds of the ‘dead of winter,’ in combination with occasional low water levels in the fall or other seasons, likely rendered the mill inoperable for some weeks of the year. As three of the journals referred to milling operations in January, it is possible that there were more tub-wheel mills in New Brunswick than previous scholars have assumed, or that it was common for mills to grind during mid-winter thaws or until average temperatures reached a certain low. As testament to the latter, Dibblee reported January 21, 1805: “there has not been one Thaw to Help the Mills; and they have all Stopt Grinding, but Mr. Allen’s. A very severe


50 See Fleetwood, “Freeze-up-Breakup_saint_john_river_2016-updated-file (master).” Yet Crawford noted that he went to Jones’ mill on January 2, 1828, recording rainy weather with winds out of the south that day and on the 5th. The latter day he pronounced the weather “pleasant and mild.” Hence, it is hard to say exactly what the ice conditions were as the year began. On the 15th, Azor Hoyt recorded “Very open weather; ground almost bare; very moderate;” Hoyt Diary, 42.

51 See Butler, “Flour and Canal,” 8-11.
Winter.\textsuperscript{52} Water-powered mills were also unable to run when “back water” levels were too high, which occurred some years during freshet.\textsuperscript{53}

The construction of mill dams often blocked rivers or tributaries and prevented transportation by vessels as well as passage by fish. Compounding these negative ecological impacts was mill refuse released into streams, rivers, and harbours, which often built up as sediments that lowered water levels and destroyed fish spawning and feeding habitat. While some mill dams were made permeable through the construction of fishways, this was only common in Charlotte County prior to 1826, and was generally not a priority for colonial mill owners.\textsuperscript{54} Indeed, while Moses Perley held mill pollution and dam construction, as well as out-of-season fishing, responsible for declining fish populations in his 1852 “Reports on the Sea and River Fisheries of New Brunswick,” lumbering interests continued to hold sway over local magistrates for over a generation after its publication. Even after the federal government’s decisive legislation of 1886 which banned the deposition of mill waste into navigable rivers or those leading to navigable waterways, New Brunswick lawmakers continued to exempt mill owners from constructing fishways and constraining mill pollution.\textsuperscript{55} The deforestation of watersheds

\textsuperscript{52} The depth and force of a waterway utilized for milling operations were also determinants of when it could run. Dibblee Diary, January 21, 1805, January 5, 1816, February 19, 1821; Crawford Diary, January 2, 1828; MacDonald Diary, January 27, 1862. Graeme Wynn’s, \textit{Timber Colony}, demonstrates that New Brunswick’s mills “[i]nvariably” generated power with vertical waterwheels; \textit{Timber Colony: A Historical Geography of Early Nineteenth Century New Brunswick} (Toronto; Buffalo; London: University of Toronto Press, 1981), 87-89.

\textsuperscript{53} For example, Lucy Everett Morrison diary, May 22, 25, and 26, 1876. Mill designs continued to be incapable of handling backwater into the early decades of the 20\textsuperscript{th} century. See, for example Bird, \textit{Through the Eyes of Mary}, 23, 153.

\textsuperscript{54} Wynn, \textit{Timber Colony}, 94.

also lowered water tables and eliminated the root systems that had held water in place in the soil. This caused the land to release snowmelt and water more rapidly throughout the year, in some years leading to higher freshet floods in part of the Wolastoq/St. John River Valley. Furthermore, water temperatures rose without the shade offered by riparian vegetation, which made a microclimatic difference to salmon, who need pools of cool water in which to survive the heat of summer.56

Mill dams also obstructed boat transportation on some rivers and streams, although there were adaptive technologies to potentially mitigate this problem. For example, Campbell’s cousin Allan McLean collaborated with Alexander McLaggan to construct a dam with a “roll” across the Nashwaak in 1828. The roll provided a channel at one end of the dam through which rafts and canoes could travel downriver; they also constructed a lift to bring canoes from the River into the millpond. While the authors of a local history of the Nashwaak claim that the dam did not obstruct salmon (despite the fears of upriver fishermen), they also note that the salmon were extirpated from the River by mid-century due to the build-up of sawdust waste.57 In 1852, Moses Perley observed that salmon rarely attempted to ascend the Nashwaak because of the large mill dam that stretched across the entire waterway several kilometers from its mouth, and an active


57 Nashwaak Bicentennial Association, And The River Rolled On, xv. The authors also claimed that this was “[t]he first successful attempt to harness the Nashwaak itself,” yet Hall, “River of Three Peoples,” discusses the conflict between Maliseet and British settlers over the construction of a dam (which was completed) on the Nashwaak in the 1760s. See pages 330-332.
fishery below the dam.\textsuperscript{58} Even before mid-century, this and other large mill dams were a serious hindrance to fisheries across the province.\textsuperscript{59}

Changes to water volume in the Wolastoq/St. John River and its tributaries on a seasonal, year-to-year, and longer-term basis, affected fish runs and human opportunities to catch fish. Each year, Crawford and MacDonald reported herring runs in the River and Washademoak Lake respectively, in April and May. The herring typically began spawning in early May; if ice and water levels cooperated, attentive farmers were prepared to catch them by late April.\textsuperscript{60} Herring could run before and after the freshet waters rose, so fishermen and fisherwomen had to observe ice and water carefully. In 1819, Crawford noted that the herring began running May 2 (before the freshet), and then again June 6 (after the waters had subsided). Conversely, on May 3, 1830, after the water volume had fallen, there was a large run of herring that enabled fishermen to “git from 8 to 9 hundred in a night in two nets,” and on the 5\textsuperscript{th} Crawford marveled at, “The greatest Run of herrings ever known one net will get 4 or 5 hundred in a night.” His journal demonstrated that herring were a valuable commodity, whether fresh or smoked.

\textsuperscript{58} Moses Perley, “Reports on the Sea and River Fisheries of New Brunswick” (Fredericton: J. Simpson, 1852), 135, https://books.google.ca/books?id=6pM9AAAYAAAJ&pg=PA211&lpg=PA211&dq=frostfish+New+Brunswick&source=bl&ots=TcG3uh3e48&sig=VayW8CoW8L9ntOk0mJSC-C0QRNg&hl=en&sa=X&ved=0ahUKEwiz58ix8pTRAhVs4oMKHaE-BSUQ6AEITDAL#v=snippet&q=conclusion&f=false.

\textsuperscript{59} Wynn, \textit{Timber Colony}, 93-94; Hall, “River of Three Peoples,” 331-38.

\textsuperscript{60} For example, Hoyt caught herring May 2, 1820 and April 24, 1822; Hoyt Diary, 29, 31. The MacDonalds caught herring in the lake in late April in 1858 and 1865. Patrick Campbell described the “Gasparoe” run in May and claimed they are a type of herring; Ganong’s footnote on page 28 argues that the Gaspereaux are actually related to the shad. Campbell’s description of the scale of the late 18\textsuperscript{th} century fisheries for salmon, “Shed”, Bass, and Gasparoe or Herrings at the River’s mouth at Saint John reflects the overexploitation of the fisheries that would lead to their decline by the early 19\textsuperscript{th} century. Patrick Campbell, \textit{Travels in the Interior Inhabited Parts of North America in the Years 1791 and 1792}, ed. H. H. Langton and W. F. Ganong, Publications of the Champlain Society 23 (Toronto: Champlain Society, 1937), 26-28; Perley, \textit{Reports on the Sea and River Fisheries of New Brunswick}, 63.
In January 1835, Crawford received four bushels of oats from a neighbour in exchange for 200 herring.61

Settlers caught other small fish, including gaspereaux, suckers (for example, Dibblee May 1823 and 1824), as well as trout and chub.62 Dibblee’s son Lewis caught 8 chub on May 23, 1820, the day after the family had responded to the formation of small eddies in the river by setting two nets, one in the place they usually fished for trout. It was possible to catch these fish before the freshet waters fell, or as they were falling. Dibblee also occasionally caught shad in the fluctuating waters of late May and early June.63 MacDonald was spinning rope for a shad net on April 8, 1859, and her sons drifted for shad two months later, but to no avail. Dibblee and Crawford also caught bass: Dibblee in June after the water level had fallen, and Crawford in October 1827 and prior to August 11, 1828.64 On the latter date Crawford noted: “got a great many bass this season.” By being prepared to catch diverse species of fish, fishermen and fisherwomen spread the risks of a late run or difficult fishing conditions during certain seasons. Multiple fisheries also diversified settlers’ diets, and species such as herring were well suited for pickling and offered a valuable source of durable protein over the winter.65

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61 Crawford Diary, January 17, 1835, and May 15, 1824. For more about colonial herring fisheries, see Campbell, *Travels in the Interior*, 46-7.
62 A variety of sampling and monitoring sources provided the data for a study of fish and other marine life in the lower reaches of the St. John River around the turn of the 21st century. DFO researchers identified the presence of “white sucker” as well as blueback herring and American shad. Canadian Science Advisory Secretariat, Maritimes Region and Fisheries and Oceans Canada, “Use of the Lower Saint John River, New Brunswick, as Fish Habitat During the Spring Freshet,” 2009, [http://www.dfo-mpo.gc.ca/Library/338079.pdf](http://www.dfo-mpo.gc.ca/Library/338079.pdf). Hence, farmers could have been catching these three species. See also Perley, *Reports on the Sea and River Fisheries of New Brunswick*, xiii.
63 For example, Dibblee caught 2 salmon and a shad June 10, 1818.
64 Dibblee Diary, June 4, 1804.
65 Reicker, *Those Days Are Gone Away*, 110. “By 1857… [e]ven in marginal farming areas there was no need for poverty because the country could always provide food, even though many families lived through
Edward Winslow made fewer notes on the fishery than most other farmers, yet his observations demonstrate that subsistence fishing was not purely reserved for members of the middle and lower classes. On May 4, 1799, Winslow set a long tubular-shaped fish net called a fyke just two days after the ice had moved off, and before the freshet waters had begun to rise. He caught a few fish on the 5th and noted “fish in abundance” come May 11th. Winslow made no reference to taking up the fyke when the freshet waters rose; his next and final reference to fish that year was a note to himself on July 13th that he had not caught any salmon since the 11th. The following year, the ice moved several weeks earlier on April 18, and Winslow evidently watched the water level to determine when to begin fishing. On May 7 he noted “[w]ater falls” for the second time, and set the fyke. A week later, he received a fyke as a gift from the Chief Justice, and the following day, attended “Mr Bell's memorable salmon party.” Winslow himself did not set his salmon net until May 27. In the late 18th century, even New Brunswick’s gentry valued and required the fishery enough to gift one another with nets, as well as twin their social calendar with the seasonal return of favoured fish species to the colony.

the winter on a diet of potatoes, turnips, salt pork and salt herring. How good the spring run of gaspereaux tasted!”

66 A fyke is a tube of netting fitted with hoops to hold it open and keep its tapering shape. Artifacts in the Galway Fishery Museum as well as the Irish National History Museum reflect use of the fyke design for thousands of years.

67 It is possible the Chief Justice procured this fyke after it had been set unlawfully and confiscated by an inspector of fisheries. See “An Act to prevent nuisances by Hedges, Wears, Seines, and other incumbrances obstructing the passage of Fish, in the Rivers, Coves and Creeks of this Province,” Acts of the General Assembly of His Majesty's Province of New-Brunswick passed in the year 1786 (Saint John, NB: J. Ryan, 1786), 26 George III, Ch. 31; “An Act for Regulating the Fishery in the different Rivers, Coves and Creeks of this Province, Which stipulates that the Overseers of the Fisheries may seize nets that are set unlawfully,” Acts of the General Assembly of His Majesty's Province of New-Brunswick passed in the year 1791 (Saint John, NB: Christopher Sower, 1791), 31 George III, Ch. 13.
Dibblee recorded the most detailed and frequent observations of water levels in relation to fishing, and provided the most thorough commentary on that activity. During ice break-up and freshet, he watched water levels carefully and speculated about when all of the ice above his farm would pass downriver. Only when two particular eddies had formed on the River, and only after there was little risk of floating ice damaging or detaching the nets he knit and dyed himself, would he place them into the Wolastoq/St. John’s swift spring current. On April 21, 1819, he wrote, “The Main Body of Ice Supposed to have run last Night, from the Great Quantity that is Jammed on the Banks and the Height of it.” Although a little ice ran in the days following, on the 27th, Dibblee reported: “no ice since Jam Ran, River falling, not high enough for good fishing.” It was quite common for Dibblee to set his nets and then take them down again several times in response to the vicissitudes of the freshet. As well, his predictions were not always accurate; on May 28, 1825, he was surprised both by the rapid rise of water, and the fact that he was still able to catch a salmon. Rising waters carried off one net in early June 1820, although he was able to recover it.

Fish runs also had their own erratic timing; even the ‘right’ water levels and good eddies did not assure successful fishing. On May 30, 1817, Dibblee recorded: “Caught a Noble Salmon in long Net – The Second this Year – The River Falls… and the Spring never so Backward.” On June 18, he noted both the continuing scarcity of salmon, and the importance of the fishery to his family’s subsistence during this season: “the River

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68 For example, Dibblee Diary, May 19, 1808. It is possible that a neighbour made his twine from flax that he supplied. On May 2, 1816, he noted: “Got back toDay my Twine.” He dyed it using bark, likely hemlock. For example, May 22, 1818. The dye was likely for purposes of weather-resistance, or to prevent potential prey from spying the net. 
69 Dibblee Diary, June 15, 1820.
has Fallen so as to make Good Eddies yet very Few Fish - never so few before, Which is much to our Disadvantage, as Provitions are so Scarce and Dear.”

The Dibblees food fishery was an important supplement to springtime foodstuffs, and an alternative to the often salty sources of protein that families relied on through the winter. On May 22, 1818, Dibblee combined observations of the River’s height with concerns about the implications for the fishery: “River falls Slowly it is yet on the Intervale. We Fear the Small Salmon will all go by.” In June 1816, having returned the canoe they had borrowed from a neighbour, the Diblees had to set their nets from a raft, which exacerbated the challenge of the task and magnified the significance of water heights and weather conditions while fishing. It was fortunate that the family set their net on June 4th, as steady rain over the next few days raised the River’s level and created difficult conditions for rafting. This rain was followed by a highly unusual snow on June 7 and a strong Northwest wind; Dibblee did not report catching any fish until June 11. Two days later, the family’s oxen damaged the longest net and Dibblee was not able to mend and set it again until the 21st. He completed another long net on May 7, 1825; at 43.5 fathoms (or 79.6 metres) in length, such a net would have needed water of a certain depth before it could be set. Dibblee relied on at least two salmon runs. On July 6, 1819, he noted: “we have had the Greatest Rain we ever Knew in Summer, which Raised the River almost to the Alders. It fell a little last Night, but no salmon for 8 days – the June salmon not yet.” While the majority of Atlantic salmon return to the ocean

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70 A. Hoyt’s only reference to catching salmon was on July 17, 1817, and demonstrates the amount of food a family could glean by just a single catch; the fish weighed in at 22 ½ lbs; Hoyt Diary, 20.
71 This net was also longer than regulations stipulated, although Dibblee was within legislated limits if he did not have more than 30 fathoms actually extended into the River. See “An Act to prevent nuisances by Hedges, Wears, Seines, and other incumbrances obstructing the passage of Fish, in the Rivers, Coves and Creeks of this Province,” Acts of the General Assembly.
after spawning in autumn on the Tobique or other gravelly rivers in New Brunswick, some fish remain in the province’s waterways throughout the winter. The early spring salmon, also sometimes referred to as black salmon – and perhaps by Dibblee as “small salmon” – were most likely members of the overwintering population that were making their way back to the ocean.\textsuperscript{72} The “June salmon” that Dibblee awaited were likely returning to the River to spawn in their home headwaters.\textsuperscript{73}

Crawford kept detailed records of his salmon fishery in most years of the journal. He typically set his net in mid- to late-June, and concluded his season by mid-August. Only in 1817 did Crawford refer to selling salmon, the second year in a row in which Dibblee reported that salmon were scarce. It is thus possible that the price offered at market was so high that it was more economical for the Crawfords to sell some of their catch rather than to retain all of the fish for themselves. Crawford also tallied his salmon catch that year at 108 – the highest for the journal. He may have fished more avidly in 1817 knowing that there was a market for salmon. He was likely unaware that he and many other fishing people on the lower River were taking fish whose absence could lead to scarcity upriver, and that colonial fisheries as a whole were causing long-term decline in the salmon population.

\textsuperscript{72} For a reference to “small salmon,” see Dibblee Diary, May 22, 1818.\textsuperscript{73} Wilson’s Sporting Camps, “‘Spring Salmon’ Use to Be Called ‘Black Salmon,’” From the Blog, April 22, 2007, \url{http://wilsonscamps.nb.ca/99/spring-salmon-use-to-be-called-black-salmon/}. In 1852, Perley referred to the illegal sale of salted black salmon in October, and identified them as “salmon wholly out of season….very thin and black, many of them so spent as scarcely to be fit for human food.” Perley, \textit{Reports on the Sea and River Fisheries}, 65; see also 127. For a first-hand account by a fisherman of the nine salmon runs that returned annually to the St. John River into the 20th century, see Hugh MacLennan, “The Lovely and Languid St. John,” \textit{New Brunswick.net}, accessed December 12, 2016, \url{http://new-brunswick.net/new-brunswick/rivers/sjriver1.html}. Note that most Atlantic salmon return to the ocean after spawning.
Depending on water levels in the Wolastoq/St. John River, Dibblee and Crawford recorded a fall fishery as well. The salmon could run between May and November, and could even be netted as late as December, although the farmers of focus did not often fish for them after August. Crawford took advantage of the fall fishery, catching salmon in autumn in 1818, 1825, 1826, and 1828, and a bass in his salmon net in early October 1827. Perhaps it was because he was unaccustomed to this fall run that on November 22, 1825, Crawford reported: “there has been a fine Run of salmon this fault - but I neglected to set my net.” He went ahead and set it a couple of days later, caught 2 salmon by December 5, and “took up the net” the following day. Yet in the early 1830s, the Crawfords ceased fishing salmon altogether, perhaps having noticed a decline in their own fishery, and preferring to expend energy more productively in other activities. In 1825, Peter Fisher had observed that the city of Saint John’s once vibrant salmon, shad, and herring fisheries had significantly diminished. The declines in the harbour fisheries were mirrored in the empty nets of salmon fishermen further up the Wolastoq/St. John River. Settlers sometimes supplemented their winter protein by purchasing or trading smoked herring, mackerel, or salmon from stores or other fishermen.

In 1789, the colonial assembly responded to the concerns of upriver residents that fisheries at the mouths of rivers were endangering their capacity to catch fish, and

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74 For May to November, see Hugh MacLennan, “The Lovely and Languid St. John.” Wolastoqey historically caught salmon in the autumn and then, witnessing the corresponding transformation of the leaves, headed inland or to the coast for the winter. Hall, “River of Three Peoples,” 62-63.


76 For example, see Crawford Diary, October 26, 1826, October 7, 1827, and January 19, 1828.
established the first fishing seasons for the Wolastoq/St. John, Miramichi, and Kennebecasis Rivers and their tributaries. Fishermen were only allowed to set their nets during the weekdays “between the first day of April and the first day of August in each and every year.” In 1791, the season was extended to include Saturdays, and penalties for successive infractions were increased. In 1810 a new act stipulated that it was illegal to fish salmon in the province between October 1 and April 1. Meanwhile, in 1807, land rights were tied to fishing rights as riparian land owners gained “the sole and exclusive right of taking Fish on or in front of the shores thereof.” In March of 1816, the assembly repealed the set season on salmon fishing, perhaps because by that June, New Brunswick’s farmers had already suffered through two “unfavorable” years for agriculture.

While fish populations on some rivers and streams had begun to decline by 1810, in 1838 provincial historian Peter Fisher claimed that most of the province’s rivers “teem with excellent Salmon, shad, bass.” Ten years later, in his New Brunswick With Notes For Emigrants, Abraham Gesner provided evidence of declining salmon

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77 Hall, “River of Three Peoples,” 2nd edition, 332-34.
78 “An Act for Regulating the Fishery in the different Rivers, Coves and Creeks of this Province,” Acts of the General Assembly of His Majesty's Province of New-Brunswick passed in the year 1791 (Saint John, NB: Christopher Sower, 1791), 31 George III – Ch. 13.
79 The 1793 law stipulated: “And that no net shall at any time be set or remain in the water, or any seine be drawn, or any Salmon speared, in any part of this province, between the time of Sun-set on Saturday night and Sun-rise on Monday morning; …” “An Act for regulating the Fisheries in the different Rivers, Coves and Creeks of this Province,” Acts of the General Assembly of His Majesty's Province of New-Brunswick passed in the year 1793. (Fredericton, NB: J. Ryan, 1793), 33 George III – Ch. 9. “An Act, for the further regulation of Fisheries, and for preventing their decay,” Acts of the General Assembly of His Majesty's Province of New-Brunswick passed in the year 1810 (Saint John, NB: Jacob Mott, 1810), 50 George III – Ch. 20.
80 “An Act to ascertain the Rights of Fishery,” Acts of the General Assembly of His Majesty's Province of New-Brunswick passed in the year 1807 (Saint John, NB: John Ryan, 1807), 47 George III – Ch.3.
81 Quoted in Piper, “Backward Seasons,” 51.
82 For fish declines on the lower St. John River by 1810, see Hall, “River of Three Peoples,” 332; Fisher, Notitia of New-Brunswick, 14.
populations in rivers where they were once abundant, including in the Salmon, Restigouche, Miramichi, and Richibucto Rivers. Gesner observed interconnections between fisheries, increasing mill operations, and the declining navigability of certain rivers in the province for fish, as well as for human transportation. Between 1816 and the 1851 act to protect and regulate sea and river fisheries, colonial administrators focused their approach to fisheries regulations on methods and penalties as opposed to fishing seasons. Perley’s 1852, *Reports on the Sea and River Fisheries*, argued that without stringent enforcement of the laws, neither regulatory approach would be successful.

Between 1800 and 1850, population growth in New Brunswick accelerated the harmful ecological effects of earlier settlement on the Wolastoq/St. John River and its tributaries, with implications for forests, fish, and water levels. Land clearing for settlements, roads to connect them, and lumbering increased erosion and the deposition of sediment into the River and its tributaries, and further lowered the water table, which lowered water levels generally and exacerbated dry seasons. Yet the intensification of colonial transportation networks increased the resilience of some households, as it facilitated alternative routes of travel when waterways were impassable or impractical, opened up new markets, and multiplied opportunities for labour in construction,

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84 Gesner, *New Brunswick With Notes For Emigrants*, 78, 262.

85 See, for example, Perley, *Reports on the Sea and River Fisheries of New Brunswick*, 69-71.

agriculture, milling, and other industries. The new roads sometimes offered shortcuts versus water-based routes, or provided alternatives to reliance on the River and its variability in being open. Commissioners laid out roads directly between mills and other settlements, increasing settlers’ access to their services, as well as the profits to be made in milling.

Journals provide copious evidence of the expansion and intensification of transportation networks, from H. Nase’s reference to the “new road” to Saint Andrews in October 1788, to annual references to road and bridge construction undertaken locally by farmers and their family members, to P. Nase’s entries regarding the “Western extension” and Intercolonial Railroads, as well as the Saint John street railroad, in the late-19th century. Settlers also constructed and repaired an increasing number of bridges to make it easier to cross many of the waterways that flowed through the province. They utilized an innovative design that used the icy grip of frozen waterways to their advantage, building bridges on land and securing them there with adequate moorings until the first inklings of ice in the waterway. These “winter bridges” were then swung across the water and attached on the other side, and the ice did the rest. However, weather conditions could loosen the freeze and dislodge winter bridges as well as their permanent counterparts. For example, in mid-March 1830, A. Hoyt reported

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87 For example, see Campbell Diary, 25-26.
88 See, for example, Reicker, Those Days Are Gone Away, 84-92. For an example from one of the journals, see Crawford Diary, June 12, 1812.
89 Henry Nase Diary, October 13-15, 1788; Philip Nase Diary, 66 and 68, October 1868; February 24, 1870. The “Western extension” was a part of the European and North American Railway; Conrad and Hiller, Atlantic Canada, 168.
90 Philip Nase Diary, 22 and 65, March 10-15, 1859, and April 6, 1868.
Mill Stream Bridge was carried away by “very heavy rain.”\textsuperscript{91} Rains during the spring freshet of 1865 caused extensive damages to infrastructure. As MacDonald recorded:

May 24 – “They can't saw, the mill backs water it is so high…. rained very heavy all night so the water is running over the bridges. The Big Brook Bridge is about gone…”
May 25 – “This morning they have gone to fix the bridge. Father went up yesterday for Mr. Vale to tell the man in his district to mend the bridge so it would be safe to cross on. They did so and was done before noon.”
May 27 – “The heavy rains has broke his dam. I think they have done a good deal of damage to the bridges and the lumber. The booms is broke, the river is full of timber and logs.”\textsuperscript{92}

Inland roads and eventually railways exposed a growing human population to the vulnerability of being literally snowed in at home (or within a short radius), and facing all the vicissitudes of the seasons as they were made manifest in roadways and bridges on land and ice.\textsuperscript{93} For example, in the open winter of 1862 to 1863, P. Nase reported a drowning fatality on the Nerepis after heavy rains on January 17\textsuperscript{th} and a five-acre ice-thaw in the Wolastoq/St. John on the 19\textsuperscript{th}. Three days later, he observed:

Almost impossible to travel through from St. John to F’ton [Fredericton] owing to the glades of ice through the woods, no ice or snow through cleared lands. Several stage waggons have been capsized along this road, ie, young woman, Miss Smith, was very badly hurt yesterday, near Dr. Bayard’s, Queens Co. where she remains, unable to be moved. She was thrown from Atherton, Brown and Haynes Coach. There is, I may say, no country traveling. I think there has been less traveling on the Nerepis road during the last three weeks, then during the same time in 20 years past.\textsuperscript{94}

\textsuperscript{91} For a description of winter bridges, see Reicker, \textit{Those Days Are Gone Away}, 83. For the Mill Stream bridge quote, see Hoyt Diary, 48, March 17, 1830.
\textsuperscript{92} MacDonald Diary, May 24, 25, 27, 1865. The dam she referred to was the one at Clark’s grist mill at Lewis Cove.
\textsuperscript{93} For another example of bridges either in ill repair, or water levels preventing their use, see Campbell Diary, 66, December 7, 1827.
\textsuperscript{94} Philip Nase Diary, 31, January 22, 1863.
P. Nase’s entries are a reminder that even after decades of road construction, weather dynamics profoundly shaped the opportunities for transportation on both waterways and inland roads.

The expansion of transportation networks included canal and dredging projects on the River and its tributaries. As historian Jason Hall argues in his extensive study of the history of the Wolastoq/St. John River and its peoples, the first generations of settlers from Britain and the Thirteen Colonies learned to contend with the waterways as they were. Yet the combination of a rising human population and increased production and trade, with the ecological changes to the River and its tributaries, led to a demand for engineering projects that facilitated people’s desired uses of the waterways. One early motivation for streambed manipulation arose within the lumber industry, which received valuable impetus from the trade opportunity with Britain in 1808 due to Napoleon’s exclusion of British shipping from ports in Europe. As lumber crews exhausted the forests close to the banks of the Wolastoq/St. John, they retreated further into the woods and used brooks and streams to float logs down to the main River. It was sometimes necessary to clear out and deepen these streambeds for the purposes of log driving. Lumber crews also built dams with sluice gates that raised water levels within a section of the waterway, allowing the movement of logs just as ships are able to traverse lengthy canals due to consecutive locks. Later “improvements” to the Wolastoq/St. John.

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95 Reicker, *Those Days Are Gone Away*, 99-100.
96 Hall, “River of Three Peoples,” 357-62, 22. This is not to say that British administrators did not strategize significant ways to engineer the waterway for their own purposes as early as 1758, namely with discussions about destroying Split Rock at the River’s mouth. This engineering scheme was also proposed in 1692 by Sieur de Cadillac.
97 Wynn, *Timber Colony*, 4. Previously, Britain had largely met its timber needs with northern European resources.
98 Wynn, *Timber Colony*, 63-64.
John included dredging in Grand and Washademoak Lakes to facilitate ease of navigation. For example, from 1855 to 1858, a channel in Grand Lake “was widened 60 feet and lengthened 1800 yards into the Lake,” allowing vessels of heavy draft to travel “without interruption or discharging part of their cargo, as had previously been the case.” In the 1860s, a canal was built across Grimross Neck so that Gagetown Creek emptied into the Wolastoq/St. John River. Prior to construction of the canal, vessels of all types had to travel 4 miles around the Neck. As well, during some freshets “the force of the current would carry rafts into the Dug Way.”

Canals and dredging changed the contours of the River, creeks, and streambeds, and may have changed flood dynamics in relatively closed areas like the Washademoak.

Railway transportation initiatives from within the province have also historically—and contemporarily—been linked to ‘timber’ accessibility for the forestry industry. In 1870, lumber baron Alexander Gibson initiated the New Brunswick Land and Railway Company, which drew other local businessmen into the construction of a railway between his South Devon mills and tracts of Crown forest lands he leased in the Edmundston area, with stops along the way. While the construction of railways greatly expanded most settlers’ opportunities for visiting and commerce, this medium had its own seasonal challenges. Railways became blocked with snow, and it could take days to shovel the rails clear and set the trains running again. Engineers

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101 Philip Nase Diary, for examples of train and visiting, see April 4, 1882, and assume March 13 – 21, 1877, was by train, see pages 86 and 93.
102 See for example, Bird, *Through the Eyes of Mary*, 20, 22, 23.
struggled with visibility during storms, and trains sometimes careened off their rails. In addition to derailments, freshets could also undermine railway tracks. On February 24, 1862, when MacDonald recorded snow, hail, and rain including a hard rain at night, a young boy and a woman died in a train accident. She read about it in the paper and reported it in her journal a week and a half later. Finally, sparks spit from railways posed a danger that was exacerbated in dry seasons, and trains started “forest fires almost everywhere they went.” Hence, while rail transport was a symbol of order and progress, trains were also agents of chaos.

The very initiation of train schedules, which was followed by the province’s adoption of standardized time in 1883, contributed to the cultural shift lending authority to orderly clock time, while lessening the centrality of local ‘solar’ time. In fact, the people who designed the time standard for Northern North America intentionally coordinated this shift. W.F. Allen, who was involved in the debates about how best to implement standard time in the United States and Canada, observed before the American Metrological Society in 1884: “Exact time is used so much more in connection with transportation business than for any other purpose that sooner or later, within certain limits, whatever time the railroads use will be adopted by the people generally.” Allen understood rail was becoming increasingly important to daily life in North America, and was setting the time standard for industry as well as households. Prior to the widespread adoption of clocks, people in rural areas especially gauged time by the

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103 For example, in April-May 1847, near Bristol, New Brunswick; Kindervater, *Flooding Events in New Brunswick*, 15.
104 MacDonald Diary, February 24 and March 6, 1862.
106 Allen, “History of the Movement by Which the Adoption of Standard Time was Consummated.”
107 See, for example, Diary of Lucy Everett Morrison, June 27, 1892: “Trains changed time table.”
position of the sun, and thus weather and time could often be observed simultaneously by autonomous individuals. This culture of self-reliance for key factors in daily life – what does the weather permit, and how many hours of daylight are left – was manifest in multiple ways within rural communities. 108 Although young settlements readily required synchronized time reckoning for the coordination of church services and school classes, it is likely they used local solar time. In some cases, commercial and social requirements for transport required that settlers have a way to relate local time to travel schedules, as well as to the occurrence of the tides passing through the Reversing Falls. Tide times at Saint John were printed in almanacs published in the city, and there may have been some tidal clocks, or clocks set to Saint John time, in operation within the watershed. “Ship’s time,” which may have been used throughout the port city of Saint John as well as for the schedules of steamers plying upriver from Indian Town, was reckoned by jewelers and others through the use of meteorological observations. 109 Hence, although the institutionalization of time was yet another way in which local awareness and natural rhythms were subsumed within a larger systematized knowledge framework, settlers along the River and its major tributaries were already practiced at orienting between time systems. 110 The institution of a single, standardized time also contributed to the value some settlers placed on “efficiency,” a concept which grew in

109 Randall C. Brooks, “Time, Longitude Determination and Public Reliance Upon Early Observatories,” in Profiles of Science and Society in the Maritimes, 164, 181; from 1870 onward, a dedicated Observatory and a Time Ball that was visible from the harbour were used to communicate “ship’s time.” For the phrase, “ship’s time,” see Dan Soucoup, Looking Back: From The Pages of the Times and Transcript (Halifax, NS: Maritime Lines, 2002), 280-283. With thanks to Elizabeth Mancke and Jason Hall for conversations on time reckoning in colonial New Brunswick.
110 Urban electrification contributed to this shift away from Nature’s rhythms, as it freed people from reliance on natural light. Philip Nase Diary, including 101, December 1884 and January 3, 1885. P. Nase also reported other modernizing improvements to civic infrastructure, including the laying of a public sewer system during the spread of typhoid fever in Western Portland; see page 97, September 19, 1883.
popularity among industrialists in the late-19th century, yet was intertwined with the much earlier project of agricultural improvers who sought to expand the productivity of finite landscapes.111

The pace of life on the River increased noticeably across the span of the journals, yet farmers’ praxis of observation continued to be central to their responses to changing water levels in the watershed of the Wolastoq/St. John. Farmers necessarily paid close attention to the River’s height and medium, and engaged in transportation, milling, and fishing, accordingly. Changing water and ice conditions at cusp seasons and during the January or February thaw required that settlers anticipate potential vulnerabilities and risks, and choose conveyances and routes most likely to fit current or expected weather conditions. The medium and levels of waterways, and time of year, were generally interdependent with the operation of mills prior to the widespread implementation of steam technology. While the farmers of focus in this study appeared able to adapt to low water and the consequent cessation of milling operations, other settlers were not so fortunate, experiencing privation directly in relation to water levels, as well as distance from mills and high prices at market. Mills changed the morphology of the River and connected waterways, as well as polluted them, with consequences for transportation and fisheries. While water levels were important for transportation in all seasons of open water, their importance in spring and summer was also related to inland fisheries for herring, salmon, and other species. Fresh as well as smoked fish provided important protein when other foodstuffs had run out, or were in high demand. As the province’s

111 Wynn traces population growth and the ascendancy of mechanization and urbanization between the 1870s and 1930s; Canada and Arctic North America, 177-184. For an example of improver logic about maximizing the productivity of a single acre, see White, “Speed the Plough,” 3.
population grew over the 19th century, the consequences of overfishing and deforestation became more apparent to some observers. Yet most farmers were focused on the ecological changes they witnessed in their own fields, pastures, and gardens.
Chapter 7
Every Year a New Experiment: Vulnerability and Adaptation in Colonial Crop Farming

The timing of the natural phenomena that affected farmers’ crops, animals, and agricultural activities in the late-18th and 19th centuries could be unpredictable and even erratic. In a region with a short growing season in any year, a late frost in the spring or an early frost in the fall could magnify the risks and vulnerabilities of crop farming. Farmers responded through the use of a dynamic praxis of observation including experiential learning, experimentation, and record-keeping. Farmers also utilized variety in field location, microclimates, crops, and food preservation methods. In addition, settlers collaborated amongst themselves, sharing information, labour, prayers, seeds, and other agricultural resources. When crop failure was particularly dramatic, community members petitioned the government for relief.

Learning local weather involved developing a personal understanding of the scale of variability and tolerance in seasons of planting, growing, and harvesting. The overall variability in the onset and duration of agricultural seasons can be described as climate-related vulnerability, as the growing seasons throughout New Brunswick are “short” according to modern agricultural zoning schemas, as well as in comparison to growing seasons in much of the Thirteen Colonies and the British Isles.¹ Weather-related vulnerabilities such as hailstorms or too little rain overlapped with the relatively short growing season to challenge or support farmers’ success. Farmers also made choices in

¹ Dzikowski et al., The Climate for Agriculture in Atlantic Canada, 16, 19, Map 16, Map 17.
their responses to the specificities of local weather dynamics as they unfolded on the land and waters of farmsteads.

**Cultivating Local Weather Knowledge**

Successful crop farming in the Wolastoq/St. John River Valley depended on a deep ecological knowledge and that depended on the ages of communities where people settled. The length of time they had lived as farmers could, in turn, influence access to knowledge specific to location, including an understanding of the beneficial microclimates and the most productive soils of their farms. These factors also informed the scope of their understanding of cyclical changes, including the reliability and variation in the presence of particular resources, and the scope of weather patterns possible during a given season. In established communities, social knowledge, which could encapsulate awareness of cyclical access to resources, potential variability in weather patterns, as well as locational knowledge, was shared in the church or school yard, and the fields, kitchens, and barns of neighbours. Yet farming itself required that settlers experiment with local knowledge about when it was generally safe to plant, for example, and practice careful observation on their own farms over time.

For farmers like Jacobina Campbell who grew up spending time in Fredericton and on a farm on the Nashwaak, learning local weather dynamics and variability began in childhood, and thus was less evident in the journal she kept as an adult. For emigrant

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farmers, however, the learning curve was steeper, particularly for those who did not come from farming backgrounds, or recognize the need to challenge their own prejudices about British agricultural knowledge surpassing local knowledge suited to ecological dynamics in the River Valley. Rev. Frederick Dibblee’s neighbour, Major Griffith of New York, was granted land near Woodstock, and approached farming as an exercise in book learning from British experts. Charles Turner, an American traveling upriver in 1802, reported that

The Major has an excellent tract of land, and has made considerable progress in clearing up a farm, but has done it at a dear rate. Instead of profiting from the good old pedagogue, Experience, he has furnished himself with the British writers on agriculture, gardening, &c.; and, apparently disregarding the trifling circumstances of differences of climate, soil, degree of improvement, and all the minutiae of the muckworm, he nobly soars above the whole, and places his labor and seed where, when, and as his books direct.3

Turner’s recognition of the multiple local factors requiring a farmer’s attention calls to mind the detail and specificity of observations in many farmers’ journals of phenomena on and around their farms. British authors of agricultural and gardening literature educated other elite farmers including Henry and Philip Nase, Edward Winslow, and Thomas Miles. These writers and their colonial contemporaries directly influenced settlers who were involved with county-level agricultural societies from the 1820s onward, and were featured in newspapers and other circulars of the day. Yet in order to

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give crops the best chance to grow, and to bring in a timely harvest, farmers needed to be fully aware of local conditions and learn to work within them.

Farmers were immersed in cultures of weather knowledge, as well as in local weather systems. The farmers of focus typically only recorded local knowledge of weather signs and lore when they were in the initial stages of settlement. During the first five years after emigrating from the Thirteen Colonies, Henry Nase and Benjamin Crawford each recorded local rules of thumb for planting. Following his entry for May 26, 1789, H. Nase recorded: “Note, it is presumed that corn, Beans, cucumbers, Pumpkins’ etc. aught not to be planted till the 20th May.” Yet his observations that spring led him to ignore the local convention and plant a number of his crops two weeks ‘early.’ While his experience proved that experimentation was a necessary response to variable spring weather patterns, his journal indicates that only in two other years did he plant any of these crops before May 20. It appears that he considered the local planting guidance to be quite prudent, and sought to avoid the danger of killing frosts. Crawford recorded the same rule of thumb, applied to all crops, on his first year of farming in North Oxford, Upper Canada. In mid-May of 1801, he noted: “[T]hey commonly begin to plant about the 20 of May and continue till the 8 of June.” That year, he cleared land until May 27, and began planting on the following day. Once he moved to Long Reach, New Brunswick, Crawford always started planting some crops before May 20, planting in late April in 10 out of 21 years. Yet he only planted the crops H. Nase listed before May 20 in seven years. Members of his family had farmed in Sunbury County before

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4 For a discussion of the LTK of farmers, see Chapter 2 above, pages 56-64 and 72-76.
6 Henry Nase Diary; June 15, 1794, was his only entry about a killing frost in June.
7 Crawford Diary, May 20, 1801.
relocating to the Long Reach area in King’s County, and likely shared local planting guidance with him. Yet, the fact that settlers in such disparate locations in British North America were observing the same date for cautious planting suggests that these may have come from an emigrant guide written by an outsider, or some other non-local source. Multiple entries in Crawford’s journal suggest that farmers took diverse approaches to risk. On May 10, 1827, he observed that “the peas and wheat is up – there is not many that has soed any yet,” indicating he had sown the seeds at least a week before, while others were still waiting. While Crawford was aware of the cold tolerance of peas and wheat, the fact that only a few of his neighbours had sown these crops by May 10 does not necessarily mean they were ignorant of it. They may simply have been engaged in plowing or other early-season activities, including labour for other farmers, which could disadvantage the farmer-labourer and his family by shortening their growing season.

Farmers’ journals often confirmed farmer Silas Brown’s impression, reprinted in Fredericton’s *Colonial Farmer* in 1863, “that experimental knowledge is the most valuable for the farmer.” H. Nase and Crawford’s records indicate that farmers commonly experimented with the timing of planting. On June 27, 1787, H. Nase “planted potatoes for an experiment;” he had already planted potatoes in early to mid-May, as he did most years. That year, he finished digging potatoes October 24, one of the latest dates for him to complete the harvest, which suggests that his ‘experimental’ potatoes had time to reach maturity. Crawford recorded four separate potato

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experiments, in May 1819, June 1829, July 1832, and spring of 1834. By comparing differences in the time of planting, size, and variety, he learned that seed potato cut into pieces yielded more potatoes than when planted whole. The Cristys he cut in pieces produced about double, while the white potatoes planted whole “did not produce so much by one third” as the ones cut into pieces.9 Finally, early planting produced larger potatoes.

Crawford likely shared his results with his neighbours, and may even have reported on his experiments to the other members of the Agricultural Society he joined after it began in 1825. These were the kinds of experiments that gentlemen natural scientists with test gardens recorded in the contemporary colonial literature.10 Significantly, Crawford continued these experiments, and so it is perplexing that despite his previous results, he chose to plant whole potatoes when he planted late in 1832. Perhaps he acted on a whim without too much consideration, or a neighbour had recommended planting a particular variety of potatoes whole. It may also have been a case in which contingencies foiled rational decision-making. Perhaps Crawford was in a hurry or did not have a cutting tool readily available.

The high degree of variability in the timing of ice break-up, freshet, and planting season, meant that farmers watched for multiple earthly signs of spring’s arrival and progression. These observations were adaptive in that they enabled farmers to take advantage of the longest growing season possible within the conditions of any single year. Spring provided a narrow window within which to plow, roll soil, spread manure,

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9 Crawford Diary, May 4, 1819, June 3 and July 2-3, 1829, July 30, 1832, October 20, 1834.
burn, remove stumps from newly cleared land, chop trees to clear new fields, and sow seed. Some farmers of focus made multiple entries quantifying snow depth and detailing the temperature and moisture level of the soil, noting when fields were still frozen, too wet to work, or ready for the plow. On April 9, 1804, Dibblee lamented that spring had so far been “very Backward, and there is more Snow on the Improvements and in the Woods than we have known for a Number of years.”

During backward or late springs, ploughing and planting, and the growth of grasses and other wild and domestic plants were often delayed.

The “backwardness” of either a season or a crop did not necessarily portend a poor harvest. Snow lingering too deep or too long in the woods could signal a late spring, as it kept the microclimate of adjacent fields cooler, and reflected the interactions of broader atmospheric conditions – the sun’s strength, the degree of cloud cover, recent precipitation, wind direction and speed. In his entry on May 10, 1822, Dibblee offered rich insight into the complex of factors that he took into account when planning his spring chores. On that day “Henry and John,” his sons, “began to Cross Plough [the] Back Field.” Concerned with the quality of the soil he listed its condition in various parts of his farm. The back field was “Amazing Wet and Cold,” and even the orchard, “which has been Exposed to the Sun the Whole Spring,” still retained some snow. There remained “A large Quantity of Snow in the Woods,” and it was impossible to plough the garden, “There is so much frost under the Dung.” Conditions permitted the plowing of the back field, yet the dense dung had not yet been heated enough to warm the garden

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11 Dibblee Diary, April 9, 1804.
12 MacDonald Diary, May 15, 1863.
13 For example see Dibblee Diary, August 20 and September 20, 1809.
soil and allow it to be worked, let alone promote seed germination.\textsuperscript{14} Nothing grew, not even the grass. Overall, Dibblee pronounced it “the worse Spring.”

Farmers often benefitted from the frost’s pulverizing power in the soil, as well as the weedkilling of deep freezes. The rapid succession of weather systems traveling through the Maritimes in the winter often creates multiple cycles of colder freezing conditions followed by warmer temperatures that can lead the ground, snow, and ice to thaw. These freeze-thaw cycles cause soil weathering over the long term, as thaws open the soil and expose roots to freezing. Historically, many a meadow suffered damage from such freezes and thaws.\textsuperscript{15} Colonists had various terms for snow in spring, including “poor man’s fertilizer” and “the white poultice,” because it delivered moisture, a dose of nitrogen, and microscopic organisms to the soil during spring melt.\textsuperscript{16} Some farmers exploited these combined benefits and got a head start on planting by frost-seeding crops. On April 30, 1799, Winslow “Sow[ed] clover seed on the snow in the rye field. . . .New snow now melted.”\textsuperscript{17} Frost-seeding only works for certain crops; implicit within the timing of planting is knowledge about the climatic conditions that each crop requires and can withstand. The farmers of focus typically had a variety of garden plots and field locations in which they planted, so monitoring the ground in various places was a way to gauge when particular soil microclimates were hospitable to certain seeds.

Farmers often gauged the timeliness of the springtime through reference to phenological indicators. Phenology is the study of the synchronization of the lifecycle

\textsuperscript{14} Winslow used the insulating power of dung to his advantage; Winslow Diary, May 1, 1799.
\textsuperscript{15} Johnston, \textit{A Report on the Agricultural Capabilities}, 44-45.
\textsuperscript{17} Winslow Diary, April 30, 1799. Rusty Bittermann, personal communication, October 3, 2015.
of plants and animals with the seasons. According to colonial tradition, the first Indigenous phenological knowledge imparted to Europeans in the Northeast was shared at Nauset Harbor, just south of Cape Cod, in 1605. Natives told a party of French men that maize (“corn” among colonists) was to be sown when the leaves of the white oak were the size of the red squirrel’s footprint. A local history of Southhampton, New Brunswick, attributed an almost identical saying to Wolastoqiyik. British and American colonists often adopted Indigenous phenological lore for corn, and perhaps adapted that wisdom to other crops as well. In the late 20th century, New Brunswick historian D. Murray Young recorded that the older people on the Nashwaak planted corn when the maple leaves were the size of a mouse’s ear. New Brunswick writer Wayne Curtis has noted that when the leaves of the alder were the size of a mouse’s ear, it was time to start fishing for gaspereau and sea trout; the shad and Rocky Brook Salmon were not far behind. Crawford, in particular, often detailed the size of newly emerging leaves on trees and shrubs, yet it is unclear whether he associated these with planting

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18 Climate Research Lab, *Climate Diary* (Charlottetown: University of Prince Edward Island, 2015), front matter.
20 Grant, *Now and Then*, 5. “When the Maple leaf is as big as a squirrel’s foot, it is time to plant the corn.”
21 Merchant, *Ecological Revolutions*, 117. When the elm leaves “reached the size of a mouse’s ear, barley was sown, and when they were as big as a shilling, kidney beans were planted.” In the late 20th century, farmers in Carleton and Victoria Counties knew it was time to plant potatoes when the leaves of the popple or balsam poplar reached the size of a mouse’s ear. Mark McLaughlin and Jason Hall, personal communication, 2014. For a settler’s comparison between Indigenous weather lore related to the number of cones produced by spruce trees, and farmers in England forecasting the season to come based on the number of haw berries and other fruit that grew in the hedges, see Campbell Hardy, *Forest Life in Acadie: Sketches of Sport and Natural History in the Lower Provinces of the Canadian Dominion* (London: Chapman & Hall 1869), 37-38. https://archive.org/details/forestlifeinaca00hard.
22 Campbell Diary, 60.
23 Curtis, *River Stories*, 16-18, quote on 18; that also “meant it was time to whittle fish needles from a cedar shingle and make a picket maul from a block of maple.”
times for certain crops. On May 29, 1813, he observed: “trees getting green their leves as big as a copper and some is three times as big.” Crawford was developing his own phenological awareness, if unconsciously, as various entries coupled leaf references with a farm or wild berry reference. He also recorded a great run of shad June 6, 1832, and the following day reported that “shadblow’s” were in blossom. These flowers got their name directly from the association between their bloom time and the shad run in parts of the United States. Nonetheless, individual plant indicators only had meaning within the context of seasons as a whole.

Farmers also commonly observed key species whose vocalizations served as indicators of spring. They noted the return of wild geese, those they saw and those rumoured to be returned, sometimes just on sounds. On April 1, 1865, Janet MacDonald reflected that she had “not seen nor heard a wild goose yet, some say they heard geese the 17th of March,” testimony to how assiduously people monitored their environment and shared their observations. Farmers observed other birds, including robins and martins. When MacDonald arose on April 18, 1861, “the first thing I heard was the robins singing so sweetly it seemed like spring in earnest. It is a lovely day.” Such entries are a reminder of the dynamic experiential qualities of seasonal change.

Farmers’ observations of returning flora and fauna reflect their intimate relationships

24 See also Crawford Diary, May 30, 1833.
26 Dibblee made almost identical observations about grass growing well and trees beginning to show their leaves, on May 12, 1804 and May 17, 1806. Yet the first spring was “Good,” while following the 1806 entry he declared, “We never had So Bad a Spring.” It appears that the weather conditions in general, as well as the ease of ploughing that was facilitated the first year and thwarted at times during the second, were major distinguishing factors. See Dibblee Diary.
27 See also MacDonald Diary, March 21, 1862.
with their home places. They relied on nature psychologically and emotionally as well as materially. Farmers also often noted the initial chorus of spring peepers, which typically begins 15 days after the snow melts. The collective “peep peep peep” of an army of these tiny tree frogs forcefully vibrates one’s eardrums if one is close enough to a large group of them. Since their lifecycle is tied to temperature changes, the song of spring peepers can serve as a proxy for seasonal change, and hence of patterns in the emergence of spring over time. Crawford’s peeper records indicate that spring, as measured by frog song, arrived latest (between May 7 and May 20) in 1816, followed by 1817 and 1812. Spring seasons began earlier after 1817 (between April 27 and May 4) than they had during most of the preceding years of his journal.

Farmers continued to track the growth of plants, particularly crops, once their gardens and fields began sprouting. Throughout the growing season, they were concerned with the effects of weather conditions on crop growth and maturity. Crawford’s enthusiasm for the great stride he not just witnessed but measured in his corn patch at North Oxford on June 19, 1801, is an extreme example of this kind of attention.

Measured a corn stalk that was planted the 30 of May and the 19 of June it was 2 feete high, and strarten [starten?] the Leap up and that very day I Measured it in the Morning and then in the evening and it had grone 9 ½ inches in so short a time,

28 According to Frances Beavan, when the snow started melting on roads, and the saw whet appeared, it “tells us, as the natives say, that ‘the heart of the winter is broken;’” Life in the Backwoods of New Brunswick, 13. In their “General Introduction” to the first edition of A Few Acres of Snow: Documents in Pre-Confederation Canadian History, Thomas Thorner and Thor Frohn-Nielsen quote Anne Browne Jameson, “that human character and behaviour ‘depend more on the influence of climate than the pride of civilized humanity would be willing to allow’” and cite her concern for “the poor immigrants who were as yet unprepared against the rigour of the season.”(xiii)


it is easy to perceive the growth of corn in 12 hours for a thrifty hill of corn will grow 5 inches in length.31 Crawford’s description, which reflects his avid learning process of what was possible for a valuable crop in the context of local soil and climate, is replete with concrete physical and temporal measurements. The certainty provided by these numbers, which in this case also highlights the miraculousness of the ‘leaping’ corn stalk, stands in stark contrast to the uncertainty of weather conditions over the rest of the growing season.32 While farmers never forgot farming was risky, these types of observations gave them reason for hope and sense of control. When the spring came earlier than expected, or a crop grew particularly fast, farmers termed these seasons or crops “forward.” ‘Forwardness’ served as hopeful respite from the years that required fretful waiting before planting could begin, or before conditions allowed one to gauge the potential for a particular crop that season.33 Some seasons’ conditions just seemed to line up; on July 27, 1819, Dibblee’s journal entry nearly glowed with reports of the warm nighttime and daytime temperatures that meant that his “Crops never looked better - Corn is now in General in the Silk - 14 Days Sooner than when we had Good Crops of Corn. Grass very Good - … Never was a more growing Summer - Wet enough and Warm enough - Thanks be to God - The Author of all Blessings.” Conditions propitious for corn continued through to harvest and on September 25, Dibblee observed: “The Crops of Corn never Better; We have just finished our Corn - Perfectly Hard, and as much from an acre and ¾ as we ever experienced … Best Season for Corn.”

33 For example, Hoyt Diary, 38, May 6, 1826.
Farmers learned local weather by living it, by observing changing weather conditions and reflecting on their implications for water, soil, vegetation, animals, and birds. They utilized the accumulated knowledge of previous generations of farmers about weather signs in the clouds and wind, nature’s ‘animate’ indicators of changing weather. Settlers anticipated a certain timing or order in the unfolding of spring; while the season’s beginning varied temporally year to year, the relationship between the fluorescence of wild plants and trees and the trilling of frogs and bird songs meant that settlers could begin to plant and a new season of life had begun. Most settlers realized that regardless of the traditional knowledge and previous experience that informed their way of being-knowing, survival required awareness of the specificities of changes in their home places. Labourers sometimes lagged behind the farmers who hired them in terms of plowing and seeding. In some cases, this lag also applied to the development of intimate awareness of their own farmland, if they had access or title. In some of the journals, farmers expressed anxiety about the growth and health of their crops by recording their frequent observations throughout the season. Local weather in spring, as well as during the entire growing season, affected the fate of farm households as a whole, with potential ramifications for entire communities.

Factors Related to Crop Vulnerabilities at Cusp Planting and Harvest Seasons

New Brunswick farmers were challenged by variability in planting and harvest times, and erratic seasonal changes that prevented easy identification of when the risk of frost had passed in spring, or when plants would become vulnerable in the fall. According to Baron and Gordon, the dates of first and last frost were more erratic prior to 1860. They drew on farmers’ diaries among other sources; “A Reconstruction of New England Climate Using Historical Materials,” 242.
managed as best they could, observing signs of spring and of frost, and acting to protect plants when they apprehended risk, including by timing planting according to the frost-hardiness of various crops. The farmers in this study benefitted from having fields close to water bodies, which moderated temperatures, slightly elevating them after break-up in the spring, and keeping them cooler in the summer, and retaining heat longer into the fall.\footnote{Water has a lower albedo (ability to reflect light) as compared to snow or grass and shrubs. Hence, open water absorbs more heat than the surrounding landscape, thus warming the air above it.} Local weather, as well as latitude and altitude, also affected the length of growing seasons in different locations in a given year.

The farmers of focus generally began planting anywhere from late April to early May, and were likely to plant earlier the further south they lived within the River Valley. At Long Reach, on the lower Wolastoq/St. John River, Crawford’s earliest plantings were on April 22 (1830) and 24 (1827), and his latest initial plantings were May 9 (1810, 1812) and May 8 (1817).\footnote{An analysis of the dates on which farmers planted particular crops or garden plants would provide a more nuanced sense of the variability they encountered during “seed-time.” Factors including planting location and other farm chores or family and community responsibilities also affected planting times.} Further upriver, in Woodstock, Dibblee’s earliest plantings were on April 27 (1811 and 1824), and April 28 (1804, 1820, 1821). Like Crawford, one of Dibblee’s latest initial plantings was in 1810, when he planted May 10, and in 1825, when he planted May 9. Closer to mid-century at Maugerville, between Woodstock and Long Reach, Miles’s earliest planting was April 24 (1846), just two days later than Crawford’s very earliest, and was tied with his second earliest planting. The latest date Miles began planting was May 7 (1854). Recent maps compiling historic frost data corroborate the pattern here, showing that Long Reach typically has last frost
up to 10 days before last frost at Maugerville, and Woodstock could have a frost up to
10 days after the danger had generally passed on farms in Maugerville.\textsuperscript{37}

Farmers often contended with frost during the planting and early growing season,
and in the most extreme cases, a late spring jeopardized entire crops and challenged
communities across the province. Frost killed or injured some plants during spring in
five out of 15 years of Dibblee’s diary records. Three of these years fell between 1816,
“the year without a summer” or colloquially, “eighteen-hundred-and-froze-to-death,”
and 1819.\textsuperscript{38} Volcanic dust veils and lower than average levels of solar radiation
characterized the Earth’s climatic system between 1790 and 1830 (the Dalton Solar
Minimum), and were the likely culprits for frost damage, rather than the timing of
Dibblee’s planting activities.\textsuperscript{39} Not all spring frosts killed or ‘bit’ plants, although they
could stunt plant growth.\textsuperscript{40} While there was often spring frost at Long Reach, the only
damages to crops recorded in Crawford’s journal were to the grass, or hay crop,
including in 1812 and 1816. He also recorded frost that damaged or killed crops beyond
his farm on July 2, 1818, and June 15, 1826. Similarly, MacDonald recorded two spring
killing frosts that caused damage further afield, while her crops were protected – to a
degree – by the lake effect of the Washademoak. Fog forming overnight through
condensation on lakes or the Wolastoq/St. John River, or creeping inland from the coast,

\textsuperscript{37} “Interactive New Brunswick Canada Last Frost Map,” PlantMaps.
\textsuperscript{38} William Baron, “1816 in Perspective: The View from the Northeastern United States,” in The Year
Without a Summer? World Climate in 1816, ed. C. R. Harington (Ottawa: Canadian Museum of Nature,
1992), 124–44.124. See pages 307-08 herein for an elaboration of the implications of this cooling for
farmers and the response of colonial administrators in British North America.
\textsuperscript{39} Dibblee continued to plant around the same time every year, following his observations about local
weather patterns and seasonal changes. Sheer conjecture likely played a role as well. For a reference to
the possible influence of the North Atlantic Oscillation (a system of heat circulation between the ocean
and the atmosphere) on weather patterns at this time, see Piper, “Backward Seasons and Remarkable
Cold,” 46-47.
\textsuperscript{40} Crawford Diary, September 14, 1834.
could protect crops from frost formation by raising air temperature to the dew point. MacDonald implied the significance of the planting and germination dates of crops when she noted on May 27, 1861, “Still and beautiful this morning but quite a heavy frost. There is nothing out of the ground yet the Frost will hurt. They are planting by the sand beach.” The following spring was uncommonly cold, and on April 24 she recorded: “snow squall’s quite cold… Froze some; it is not very springlike weather, it does not look like an early seed time.” Despite fog at her farm on June 19, 1863, MacDonald observed: “Wind blowing quite hard and very cold. I think there must been Frost in some places. … Nothing can grow it is so cold.”

Farmers’ vulnerability to spring and fall killing frosts depended on locational factors such as latitude and distance from bodies of water. The farmers of focus in this study were fortunate to have received land grants early, or to have purchased land along the Wolastoq/St. John River or one of its tributaries. Their more southerly latitude assured them longer growing seasons than their counterparts further north within the River Valley, including the twice-expulsed Acadians upriver in Madawaska. Most of the farmers of focus in this study had intervale and island lands that further extended their growing season, as proximity to water moderated air temperatures over these fields. Conversely, their “backland” neighbours, who lived further from large waterways, often faced frost later in the spring and earlier in the fall; Crawford observed the latter in three different years. The challenges of this overall shorter growing season exacerbated the other difficulties “backlanders” faced. They often had fewer economic resources,
contended with rockier soils, traveled greater distances to markets, and could not access marsh hay.  

Farmers with access to intervale soils took advantage of water’s moderating influence on climate to use this space for crops, but had to wait for the freshet to subside in the spring before they could plough and plant in rejuvenated riparian soils. Each day of the growing season could influence crop yield, so farmers were eager to begin planting. On May 31, 1788, H. Nase planted corn on the intervale, having recorded that “the Freshet was at a Stand or at the heighth” two days previous. Settlers with river frontage watched changes in the type and texture of ice and in water levels, as well as talked with their neighbours, so they could predict the freshets’ final fall. They then had to clear whatever debris had been deposited in the wake of the spring torrent. In 1809, Winslow recorded that men removed “drift stuff” from his intervale on five separate days.  

Dibblee observed the benefits of farming the intervale when, on October 29, 1809, he reported: “one of best Seasons that we ever Experienced - We had the last of September two Smart Frosts but from the Fog the Corn on the Intervals escaped.” H. Nase and other farmers who planted or gathered marsh hay from islands in the Wolastoq/St. John, similarly took advantage of the River’s moderating effect on climate.

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41 For evidence of a shorter growing season in backland areas, see entries in Crawford Diary for August 17, 1825, September 2, 1826, and September 11, 1829. For evidence of the poorer quality and lower desirability of these lands, see Johnston, Report on the Agricultural Capabilities, 86. For a discussion of the challenges faced by “backlanders” in Middle River, Cape Breton, in the 19th century, see Rusty Bittermann, “The Hierarchy of the Soil: Land and Labour in a Nineteenth Century Cape Breton Community,” Acadiensis 18, no. 1 (Autumn 1988): 33-55. For an expansion of this discussion to the colonies of Eastern British North America in the 19th century, see Devor, “A Climatic History of the Gulf of St. Lawrence Region,” 116-119. For reference to the backlands in the context of British North America, see Wynn, Canada and Arctic North America, 123-124.

42 Winslow Diary, May 15, 17, 24, and 25, 1809.
Backward springs were often punctuated by late frosts. On June 15, 1794, H. Nase described a frost that had wreaked havoc on his farm “Killed corn, beans, pumpkins, potatoes, etc.” When they anticipated frosts, farmers could take preemptive measures. On May 26, 1852, there “ice in tubs” at Miles’ door, “1/8 of an inch thick.” To protect the crops he and his workers “covered a great part of our potatoes in garden with blankets & the wind blows hard again.” His son “Odber sowed some wheat for himself on the front- early but had to quit on account of the wind.” Just to remind himself how cold it was, he recorded “Mittons is necessary this morning.” Yet farmers could only respond to weather signs they could apprehend. May 21, 1811, in Woodstock it was: “Clear and Cool morning after a Smart Frost.” Dibblee observed that it was unusual because the previous day had been “warm Indeed” with a south wind. Frosts posed risks to crops throughout the growing season, and were worthy of careful note, even if they did not have immediate consequences for settlers’ own crops. Farmers were also on alert for frosts in the harvest season, and took precautions to protect or preserve crops. On cold days at the end of September in 1858, MacDonald was “very busy fixing things against the Frost,” including “picking onions and gathering seeds, fixing for cold weather.” September’s weather often included wet spells, which created another set of vulnerabilities. In 1807, Winslow reaped oats and peas on September 8 to 12. On the 13th, it began to rain and continued almost straight through to the 22nd, at which point he

43 For example, see Dibblee Diary, June 8, 1808: “I found some Frost on the edge of the Board Fence and on some Boards that were in the Garden, but there is not anything that appears to be injured.” Dibblee arrived home from Fredericton on the 20th and reported “we had on the 18th of Jun … a Very Cold Night with some frost, which has injured the Beans, Cucumbers, and in some places the Corn, but not to Injure the crop.” Despite the crops having escaped serious injury, and Dibblee’s own absence from the farm on the 18th, a frost was a significant event, not least because God had spared the crop. Earlier in his entry on the 20th, Dibblee had observed: “[e]verything has grown very well, and there is a good prospect of Excellent Crops which God Grant us.”

44 MacDonald Diary, September 25 and 27, 1858.
reported: “my fine crop of oats much hurt.” Perhaps fearing frost, Winslow gathered in all of the oats between the 24th and 26th. Crawford noted on September 16, 1818, “dryed some .. I have wheete and oats out and both is groing with the wet weather.” While the Fredericton Athenaeum’s almanac would advise at mid-century that farmers should harvest grain before fully ripened, unless intended for seed, cut grain that began to sprout was potentially vulnerable to mildew.45 Autumnal frosts were more likely to damage vegetables or buckwheat, which was the last grain harvested in the fall. In some years it was impossible to stay ahead of the frost. In late October 1821, Dibblee reported that a “great many” of his potatoes had been ruined by the frost that autumn.46 Planting a high volume of seed was one method to hedge against frost losses in spring as well as fall. Fall frost could sometimes be of assistance to farmers. In October 1791, H. Nase “began to dig potatoes [after] the vines were killed by the frost.” He seems to have waited for the vines to be frost-killed, so that it was easier to access the mature tubers in the ground below.47

Dibblee often recapped the growing season’s weather at the end of harvest, noting how conditions had affected different crops throughout the season. He came to farming as a second or third vocation, hence these entries reveal his process of experiential learning, observing the interactions of crops with local weather over the course of a given year. On November 1, 1810, he recalled that: “We have had some most Excellent Weather this Fall, and some as bad.” A wetter summer than the family had ever

45 Fredericton Athenaeum, The New Brunswick Almanac and Register, 22.
46 Dibblee Diary, October 29, 1821.
47 Henry Nase Diary, October 5, 1791. Crawford gave evidence of the same on October 2, 1811. Today, New Brunswick’s potato farmers save money if the tops are killed, as it precludes the necessity of applying herbicide. The machinery of the potato harvester requires that the plants themselves are destroyed, and the potatoes easily churned up.
experienced challenged the growth of wheat and corn. Dibblee was surprised at the extent to which the dry warmth of the last three weeks of September led to a growth spurt in the corn, permitting “a very Good Crop in respect of Several Years Past.” Overall, the conditions of the season had produced good crops of oats and peas, and a middling crop of buckwheat. The wheat looked “very poor and Some Crops that were late intirely Cut off by the Rust,” which may have been related to the high moisture levels during the summer.48 “Hay our great Staple – Indifferent;” the grass was stunted because the intervale had been torn up and possibly frozen into the spring, while wet harvest weather prevented much of the crop from curing properly. While potatoes fared much better with the conditions during growing and harvest seasons, frost came too soon for the Dibblees to save all of the tubers.

Farmers with long years of experience in their home places knew the general timing of frosts and heat that they might expect over the growing season. They also drew from a broad repertoire of signs of seasonal change in local nature, and likely had a deep understanding of the signs that portended cool or warm air fronts approaching in the skies surrounding their communities. Yet regardless of historic patterns and natural signs, the high variability in seasonal temperatures and precipitation in the River Valley meant that farmers rarely rested easy. Their dependence on a good harvest required they remain alert, work long hours when conditions permitted, and husband all resources at their disposal, including diverse microclimates.

48 Devor, “A Climate History of the Gulf of St. Lawrence Region,” 118, regarding the climatic (warmth and humidity) and non-climatic factors (the plant’s rapid growth cycle and nitrogen-rich fertilizer) that facilitate the growth of wheat rust.
Creating and Working With Microclimates to Extend the Growing Season

Microclimates are the unsung heroes of agricultural history. Humans around the world developed early agriculture in partnership with microclimates providing optimal growing conditions for their locale, often in the valleys of major rivers including the Tigris and Euphrates, Yellow, Indus, and Nile. Water-based microclimates were also significant in the transplantation of farming to new areas (Ireland, for example), and the domestication of new species (as in Northeastern North America). Furthermore, researchers have identified microclimate-related cultural patterns in landscapes, including the proclivity to “face the equator” and take advantage of passive solar energy, not only for crops but for other needs, such as heat and light. Thus, when farmers in the Wolastoq/St. John River Valley used natural microclimates and created others, effectively lengthening their growing season, they were following a venerable tradition and honouring the literal and figurative roots of their craft.

Each spring, farmers worked with a patchwork of different microclimatic conditions on their farms that were affected by the previous winter’s snowpack and the nature of the spring melt. British-descended farmers often rotated crops through their fields on a four-crop schedule so as to replenish soil nutrition, a precaution adopted in

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the 18th century from elements of the agricultural revolution in Flanders and Belgium. The farmers of focus appear to have exercised flexibility in this system, balancing the needs of crops (for nutrition and germination temperature) with changes in the temperatures and moisture content of soils. They constructed hot beds – enclosed garden plots heated by manure that protected delicate seeds from direct winds and cold soil, spaces that were often the first planting sites on the farm. Winslow grew his garden in soil beside the barnyard, as did H. Nase in 1786 and 1790, while Crawford often planted in his old cow yard. Dibblee sowed in his old barnyard in 1819. In the early years of planting, these richly fertilized plots would likely have included open soil as well as short grass heated and disturbed by animal excrement and hooves. Animal yards were one of the first microenvironments on farmsteads to lose snow cover and begin to absorb sunlight, creating low-level radiance that transferred through the topsoil and ground-level air to warm adjacent gardens or fields. Farmers also planted close to buildings, often on the leeward side protected from the wind, which provided radiant heat for crops. Another strategy farmers used was to plant all suitable spaces on their farms, including orchards, that were fertilized by nitrogen and other nutrients from decaying fruit, and on hillsides. Depending upon slope, aspect (the direction that the land was facing), proximity to water, and other factors, hillsides could offer


53 See pages 289-90 below for a more elaborate description of hot beds.

54 See for example, Henry Nase Diary, April 22, 1786.


56 Winslow planted at the rear of the barn, behind the house, and in front of the Hut. Many of the farmers planted close to one or more barns. See Winslow Diary.
microclimatic benefits. Not only were they moderately well-drained, heated air rises out of valleys during the day, and cool air sinks into frost hollows at the base of hills at night. Winslow also planted in the ditch, the swamp, outside the gate, “in the front,” in the animal pasture, the orchard, and in newly cleared fields. That he planted in the ditch and on the land outside the gate demonstrates that, even for elite farmers with access to diverse microclimates and rich intervale soils, there was no place too marginal for agriculture.\(^{57}\) Crawford and Miles also continued clearing land and draining swamps to create new fields and expand planting potentials.

In addition to taking advantage of diverse microclimates around their farms, settlers also used various techniques to create climatic niches beneficial to crops. Using the records from 18\(^{th}\)-century Louisbourg, Ken Donovan has demonstrated that French colonial gardeners lengthened the growing season on the windswept coast of Cape Breton by strategic planting near buildings, and the construction of walls to serve as windbreaks.\(^{58}\) These may often have taken the form of traditional woven ‘hurdles,’ made of willow, hazel, or similarly pliable saplings. Because hurdles form permeable barriers, the wind is slowed as it passes through them, and does not create wind eddies that could batter plants on the downwind side of the wall. While woody plants, such as blueberries, grow stronger under the influence of the wind’s friction, the wind can also


scorch or otherwise damage crops.59 Another popular method for creating permeable barriers that mitigated the negative effects of wind and rain on plants as well as soils was the hedgerow, line fence, shelterbelt, or windbreak. In rural New Brunswick, line fences are often comprised of beneficial trees and shrubs including apples and highbush cranberries. On rocky soils, line fences include rock piles made when farmers cleared the land initially, and each spring thereafter. Windbreaks can be used to protect crops from prevailing winds, to create terraces or separate fields on the upper and lower part of a slope, and to denote property boundaries.

Farmers created beneficial microclimates in spring fields that were often wet and cold by planting crops in mounded hills, hoeing, and ridging. Planting in a hill or on a ridge of soil creates a microclimate with more slopes to catch the sun, warming the soil and tender root systems. It can also hold moisture in soil where root systems can easily access it, while elevating young plants above puddles or other wet areas. Finally, cooler air travels down to rest in the frost hollows surrounding ridges or mounds. Hoeing up soil into hills around young plants creates some of the same effects, while also providing stability for root systems and stalks.60 Farmers hoed corn, potatoes, and cabbages. As well, in the later years of his diary, Dibblee noted planting beans in hills, suggesting a shift in practice based on experience. Mulching or top-dressing with compost made of organic matter created a microclimatic system that maintained soil moisture while adding heat and providing nutrients. Mulch helped to moderate weather extremes, protecting new shoots in the spring, preventing damaging sun scorch to roots in the

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summer, and decreasing the amount of heat loss through ground-level radiation in the fall. Farmers used diverse materials for compost, including swamp mud, manure, ashes, “hen dung and night soil.” Dibblee only referred to top-dressing near the end of his journal, which suggests he may have adopted the practice from neighbours or agricultural literature. A 21st-century source on gardening notes that carbon-rich mulch is decomposed by bacteria that also absorb soil nitrogen. To compensate, farmers using mulch such as grass or straw should add nitrogen fertilizer to the soil. Improving farmers were right to be concerned about soil chemistry, yet their understanding had its own limits.

Farm-level water management was a way to mitigate various agricultural risks, including water damage to crops and buildings, soil erosion, and food spoilage, and thus to interact productively with lands, waters, and weather. Through adjusting soil-level microclimates, improving farmers hoped to ameliorate the climate of entire fields. The River Valley’s glacial foundations and high precipitation have resulted in mineral and acidic soils which generally do not hold water or nutrients very well. In springtime, farmers faced variability in the freshet as well as in local field drainage. Most farmers of focus used ditching or other water diversions, and still had to wait while fields dried out enough for spring planting. On May 22, 1818, Dibblee “Fixed the Water on the New Ground into one Branch,” a few days after noting his “Boys have had 4 Days very good for burning the New Ground below the House.” Such newly cleared land may have

61 Miles Diary, November 27, 1847.
63 White, “Speed the Plough,” 169.
64 Dibblee Diary, May 19 and 22, 1818.
had natural ditches and swales that had provided niches for wild plants, but which presented hindrances to farm equipment or crop growth.

Water management facilitated runoff in the spring and could help to prevent washouts during heavy rains in any season. It also facilitated field drainage to prevent waterlogging of ill-drained soils, which are interspersed in pockets amidst well drained soils in lowlands, including the freshet-flushed Grand Lake area and parts of the lower St. John River Valley. Waterlogging can reduce oxygen in the soil, which is necessary for roots to survive, thereby damaging, if not killing, plants. In soil underlain with sandy loam, a high volume of water can literally wash out nutrients. Water management became increasingly important as ploughing technology and practices led to increased erosion and loss of topsoil, which is the only layer holding organic matter that contributes to water and nutrient retention.

Farmers converting swamps to fields used ditching for initial drainage, as well as for long-term maintenance. Maugerville’s combination of sunken meadows with intervale sandy loam made water management particularly challenging for farmers. In spring and fall freshets, water filled these meadows and ponds formed. Miles and the men who worked for him dug and cleaned ditches in spring and fall in two swamps on

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67 For example, Miles Diary, May 26, 1849; November 14, 1853. Loam soils are comprised of sand, silt, and clay, and thus hold water and nutrients more readily than sandy soils, while draining more readily than heavy clay soil.
his Maugerville property. Farmers historically sought to facilitate expedient drying of fields for planting to lengthen their growing season. Water ran faster over frozen cleared ground than it had when the land was forested, as the roots and vegetation that once held runoff in check could no longer moderate and extend the duration of its release into waterways.68 Agricultural improvers sang the praises of drainage. The New Brunswick Society for the Encouragement of Agriculture promoted its microclimatic effects:

If our seasons be short there is so much the more reason for our taking advantage of all the aids which art can give. We cannot affect the climate of the whole region in which we live, but, practically, we can improve the climate at the roots of our growing crops by the removal of superfluous water, and this serves our purpose sufficiently. A day in Summer saved is a day in Summer gained.69

James Robb, the head of the New Brunswick Society for the Encouragement of Agriculture, Home Manufactures, and Commerce, argued that the microclimatic transformation wrought through “better drainage, deeper tillage, and extraneous manure’s [sic],” could “improve the local soil and climate,” and in some cases, allow farmers to replace oat crops with spring wheat.70 Indeed, many staple crops including spring and winter cereals, potatoes, and forages, grow well on very rapidly drained to moderately well-drained soils.71 The extensive drainage works promoted by some improvers likely also expedited nutrient loss by enhancing run-off.72 It is ironic that

70 Robb, Agricultural Progress, 62.
72 Land clearing and ploughing resulting in increased water and wind erosion and topsoil loss certainly exacerbated the need for farmers to use fertilizers. See footnotes 66 and 152.
these paragons of soil chemistry did not recognize that they were potentially exacerbating the need for farmers to use fertilizers.

Polycropping was another method settlers used to create soil level microclimates as well as potentially increase the yield of crops. The planting complex of corn, squash, and beans may have been grown by Indigenous farmers in North America for thousands of years, and was grown extensively throughout the parts of the Northeast between 1500 and 1700. There are multiple benefits to this combination, including the creation of complementary microclimates for each plant, nutrient replenishment, and control of spacing. The bean plants twine around the corn to reach the sun as they develop, while bacteria on their roots fix atmospheric nitrogen that corn needs to thrive. The shade created by the leaves of all three plants cools the soil and helps to discourage sun-loving insects. Soil scientists have calculated increased weight and nodule number of beans polycropped in this combination. Yet it is unclear which if any farmers of focus planted this way, despite often planting this suite of vegetables. Amidst “good weather” on May 31, 1824, Crawford “began to plant the cowyard under the hill with corn and beans and potatoes.” Miles planted “some squash among the corn” on May 20, 1848. While William Cronon has argued that colonists in 17th-century New England did not

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75 Miles Diary regarding the planting of “corn and beans” on May 25, 1847.
practice this polycropping strategy, their ancestors may have learned that monocropping maize or corn exhausted the soil. A New Brunswick emigrant guide penned in 1832 observed that “Beans may be raised in vast abundance, they are often sown with Indian corn, and we often see pumpkins and cucumbers intermixed with them.”

Building hot beds in spring was another adaptive response to short growing seasons that tapped into solar energy flows to nurture seedlings of plants requiring a longer season, and perhaps additional heat to germinate. This strategy, which had European precedents, involved the construction of a frame, inset with oiled paper, and underlain with a base of animal manure to provide an organic “furnace.” Seeds planted in small pots could be set outdoors in the hotbed earlier in spring than in the still chilly ground. Farmers repurposed materials to build hot beds; in 1820, Dibblee used horse dung and two old canoes. Hotbeds allowed farmers to extend the growing season and expand the variety of crops they grew. Winslow, Dibblee, and Miles grew melons (many of which originated in parts of Africa) – watermelons, musk melons, white melons, flesh melons, and Citron melon – in hot beds. Dibblee’s use of hot beds in 1818 suggests a possible adaptation of Indigenous planting strategies, or at least, technology. On May 16, 1818, he “sow[ed] onion seed [in] the small bed, plant oyster plant, some Early Yorkshire cabbage seed, some cucumbers in birch bark - Placed them

78 Dibblee Diary, May 31, 1820. See also Winslow Diary, April 8, 1799.
on the Hors Dung.” His use of birchbark containers suggests that he had learned to craft them from Wolastoqiyik with whom he worked while teaching at the “Indian school” in Woodstock parish. None of the other journals included references to birch bark containers in hot beds.

Hot beds were only effective if used in sync with weather conditions and vented to prevent overheating. Winslow reported in late April 1799 that his hot bed had gotten too “intense” and had “destroy[ed] some of the plants.” Conversely, Miles left his hotbed uncovered one night in early May 1853 and lost some “squash, cucumber, and tomato” seedlings to frost.80 Winslow also appears to have used his hotbed as a windbreak, and certainly as a radiator. MacDonald’s journal included only a single reference to “the frame,” although she made numerous references to setting plants out in the garden that had germinated in another location.

Farmers actively created microclimates in the early spring and throughout the growing season. As historian Jason Hall has demonstrated, farmers did not necessarily subscribe to the “climatic limits” of crops, instead choosing to husband heat and light carefully for the benefits of diverse crop species, which in turn fed their families through the long ‘unproductive’ months before next harvest. Farmers used strategies and technologies, including windbreaks, hoeing or mounding, polycropping, and hot beds, to create microclimates that allowed them to extend their growing season. Farmers also worked with microclimates by selecting crops with various properties of hardiness,

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80 Winslow Diary, April 29, 1799, and May 17, 1804; Miles Diary, May 8, 1853.
including the local Indigenous triad of corn, beans, and squash, and Nordic grain varieties.

Mitigating Vulnerabilities: Plant Selection, Planting, and Preservation

While farmers created microclimates to lengthen growing seasons and foster crop growth, they also experimented with hardy varieties and diverse methods of planting, harvesting, preparing, and preserving food. They drew from their own agricultural package, which included root vegetables, grain adapted for cold climates, and fruit including apples and plums, as well as from Indigenous plant technology and knowledge. In selecting crops farmers had basic priorities: hardiness to local weather, and suitability for long-term storage or preservation. Debra Friedman, a researcher into colonial foodways at Old Sturbridge Village in Massachusetts, argues that the winter could actually be a time of diverse and abundant nutrition, in contrast to the spring and early summer, when few edible plants could be gathered and cellars were almost empty.81 Many farmers in the early stages of settlement, and less prosperous farmers, eked out a meagre subsistence on oatmeal, potatoes, and salt fish or salt pork. Sacrifices made during Lent were often necessitated by availability of food as much as religious choice.

Root vegetables were a staple of the colonial diet, and when possible, farmers selected early-yielding and hardy varieties, as well as planting various roots in the garden in the spring to yield greens or seeds. H. Nase grew “early Bluenose potatoes,”

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and in 1805, Dibblee planted “3 Pecks of Early Potatoes and 2 1/2 pecks of hasty Potatoes.”82 The ubiquitous potato, which was originally domesticated in the Andes, was often one of the earliest crops colonists planted in the spring, and one of the last harvested in the fall. The Bluenose variety was most common, while farmers also planted Rose (another early variety), Archies, Christys, and Soccoes.83 Parsnips were another reliable root vegetable that could be left to overwinter in the soil, and could be set out for seed in the spring. Farmers grew turnips, including the Nordic Swede or Lapland variety, as well as English turnips. Carl Linnaeus had collected the former variety from Sami herders in the mid-18th century. New Brunswick farmers’ mention of both “Swedes” and “Laplanders,” indicates vernacular understandings of the crop’s heritage.84 Although they were often grown for animal fodder in Europe, Miles was the only farmer of focus to refer outright to feeding them to livestock.85 While various turnip varieties grew reliably in the River Valley, Peter Fisher reported that Swedes were the most successful in overwintering.86 In addition to Swedes, Dibblee planted “small yallow turnips,” and he and Miles grew mangel wurtzel, a hardy root vegetable with

82 Henry Nase Diary, April 24, 1797; Dibblee Diary, May 18, 1805. The term, “hasty potatoes,” may have been a colloquialism Dibblee replaced with a variety in later years. For an example of early cabbages see Dibblee Diary, May 1, 1824.
83 The name “Blue Nose” was ascribed to Nova Scotians, and later to the famous vessel, because of their reliance on this potato. The Bluenose and its related clones have “the ability to set seed balls prolifically and apparently undiminished vigor, possibly stemming from field resistance to diseases.” Garrett Pittenger, “Notes on heritage varieties added to the gene resources collection in 2001,” Potato Gene Resources Newsletter, no. 8 (December 2001): 2.
86 Fisher, The First History of New Brunswick, 32.
edible leaves for “cool-temperate climates” that also doubled as livestock fodder and human foodstuff. Root vegetables, including carrots and beets, generally stored well, and provided a crucial food source during the long winter and spring seasons. In the spring, farmers planted the roots or entirety of root vegetables including Swedish turnips and beets, and cabbages, for the early greens they produced. Settlers who maintained this practice over time likely created their own cultivars of root vegetables and cabbages. In addition to early greens from the previous year’s vegetables, farmers planted rapidly producing salad greens that provided welcome respite from the winters’ diet of salted meats and root vegetables. Dibblee alone grew Imperial lettuce, pepper grass, lime mustard, “spinage,” parsley, endive, sage, and oyster plant or salsify, the roots of which the family could have harvested the following spring when foodstuffs were scarce. Winslow and Dibblee harvested asparagus, a frost-hardy spring perennial, in May of 1799 and 1824 respectively. Asparagus also requires planning, as it must be planted two years in advance of the first good harvest. Dibblee adopted other frost-hardy crops over time, including Scotch kale and “sea kail,” and “bountiful”

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87 Cobbett, *The American Gardener*, 160. He noted that it is a coarse beet that is also referred to as “Cattle-beet.” See for example, Miles Diary, January 15, 1853; Dibblee Diary, May 14 and 19, 1817. See also “Mangelwurzel,” Wikipedia, last updated January 15, 2018, [https://en.wikipedia.org/wiki/Mangelwurzel](https://en.wikipedia.org/wiki/Mangelwurzel).

88 Winslow Diary, May 7-9, 1804. Farmers who planted a portion or the entirety of root vegetables or cabbages harvested them the previous fall and protected them in a cool damp place over the winter. Catherine Parr Traill advised settlers to plant out the root and stem of cabbage and thus access early fresh greens in spring. She suggested they store cabbage for these purposes in pits or hang in “root house or cellar.” Parr Traill, *The Canadian Settler’s Guide*, 48. For instructions on saving root vegetables and cabbages for greens or seed, see Nancy Bubel, *The Seed-Starter’s Handbook* (Emmaus, PA: Rodale Press, 1978), 273-78.

89 It is possible that farmers selected roots and tops from the largest or hardiest specimens they were able to grow, and planted these out for seed the following spring. Cobbett, *The American Gardener*, 176, discussed preference for larger fruit and vegetables, because “better, weight for weight.”


brussel sprouts. He also experimented with growing more exotic crops, including
capers, millet, and “Brockalow” (broccoli).  

Farmers planted grain varieties that were most suited to northern climates, and	only sowed one or more winter crops in addition to their summer grains. Settlers
grew oats, including white, black, Duffy, Scotch, and Polish varieties. Oats are the most
frost-tolerant cereal grain, followed by rye and barley. Peter Fisher, aware of this
strength when it came to barley, noted in 1825 that it was “not much cultivated, although
it would do well as a substitute in frosty seasons.” Many farmers grew buckwheat,
which they sowed later in the season in hopes the grain would begin to mature at the
right time climatically: after the strongest heat of summer and before the potential of
frost. Wheat was a beloved staple for most settlers and they went to great lengths to
procure seed. Farmers sowed numerous wheat varieties including banded, bearded,
bald, tea wheat, and Black Sea. In his mid-century Report on the Agricultural
Capabilities of New Brunswick, J. F. W. Johnston reported that the latter variety
appeared resistant to the plague of wheat midge in parts of the province, and was even
more likely to remain free of wheat rust. Many farmers of focus grew winter crops of
wheat or rye. H. Nase recorded planting winter wheat on October 10, 1784, and
harvested winter rye and wheat in mid-to-late August 1788.

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92 Dibblee Diary, June 8, 1822, May 1, 1823, May 10 and 14, 1825.
93 Folke cites Hannay that winter wheat was commonly grown in New Brunswick at the turn-of-the-
century, although imports were still necessary. Vernon C. Fowke, Canadian Agricultural Policy: The
94 “Frost and Cropping,” Agriculture Washington, last updated January 30, 2018,
https://www.agric.wa.gov.au/frost/frost-and-cropping. Oats are about 4 degrees Celsius more frost
tolerant than wheat, while barley is ca. 2 degrees Celsius more frost tolerant than wheat.
95 Strategic buckwheat planting did not always protect the late-harvest buckwheat crop. See discussion
96 Johnston, A Report on the Agricultural Capabilities, 60.
97 Henry Nase Diary, August 14 and 22, 1788.
risk across growing seasons, as winter grains could take advantage of growing conditions earlier in the summer. Moreover, two wheat harvests mitigated against the risk of wet conditions during a single harvest, and reduced the chance that pest infestations would destroy the entire crop. Finally, winter grains served to stabilize soil and prevent erosion, as well as reduced the presence of weeds in fields.98 During dearth years, such as 1817, growing winter grain was an adaptive strategy that the Dibblees and their neighbours employed to spread risk and ensure adequate foodstuffs the following year. In 1817, the Dibblees had also responded to two years of shorter than normal growing seasons by planting fewer crops of corn.99

Despite farmers’ cultivation of a variety of grain crops, New Brunswick was not self-sufficient in grain. To encourage the growth of “bread grains,” the colonial government provided various incentives to farmers over the first half of the 19th century, fostering the expansion of farming beyond the required clearing and cropping quotas of most grants. Administrators were concerned that New Brunswick continued to import basic foodstuffs, although according to Béatrice Craig, the Wolastoq/St. John River Valley was the breadbasket of the province by 1830.100 The Valley’s higher yields were facilitated in part by the government’s bounty on bread grains grown on land cleared within the past two years, which was offered from 1818 to 1833. As well, from 1820 to at least 1825, the government paid a bounty on bread grains raised on land cleared at any

99 Dibblee Diary, September 6, 1817, August 3, 1818.
100 Craig, *Backwoods Consumers and Homespun Capitalists*, 161; Fowke, *Canadian Agricultural Policy*, 63.
As a justice of the peace for King’s County, Crawford distributed the bounty to his neighbours. His records demonstrated that in most years between 1818 and 1831, farmers in the Long Reach area took advantage of the government’s offer. Colonial concerns over grain imports continued, and in 1842 Agricultural Society members recommended to the legislative assembly that farmers introduce winter wheat and rye. Apparently, growing winter grains had become less common from the turn of the century, at least in certain parts of the province. Yet it continued to be a climatically adaptive subsistence and market strategy.

Farmers grew climatically adapted Indigenous crops, particularly corn, beans, and gourds, which families had adopted if they lived in New England prior to resettlement in New Brunswick. Over thousands of years of genetic engineering, the Indigenous people of the Americas had developed land races, or cultivars, of maize uniquely suited to northern climates. In some cases, First Nations introduced maize varieties to settlers while, in other cases, colonists took seed through violence. Access to diverse sources made it possible for settlers to adopt varieties suited to local weather dynamics, although conflicts inherent within settler colonialism also influenced the varieties grown. When Charles Morris, surveyor general of Nova Scotia, visited Maugerville in 1767, he

101 “An Act to encourage the raising of Bread Corn on new Land,” Acts of the General Assembly of His Majesty’s Province of New-Brunswick passed in the year 1817 (Fredericton, NB: George K. Lugrin, 1817), 57 George III – Ch. 5; see also “An Act for granting Bounties on Grain raised in this Province,” Acts of the General Assembly of His Majesty’s Province of New-Brunswick passed in the year 1820 (Fredericton, NB: George K. Lugrin, 1820), 60 George III – Ch. 12.

102 Legislative Assembly: Sessional Records (RS24), 1842, clxxiv (2018), http://archives.gnb.ca/Search/RS24/Default.aspx?culture=en-CA; Fowke, Canadian Agricultural Policy, 46. Winter wheat was commonly grown at the turn-of-the-century, although imports were still necessary.

103 Varieties known by colonists to have been cultivated by indigenous peoples of Northern North America include Northern Flint corn, Eighteen-Rowed Yellow, Early White Flint corn, and Early Sweet corn. For details on varieties, and Europeans gaining access to maize through war as well as peace, see C. N. Bement, “History of Indian Corn: Its Origin, Its Culture, and Its Uses,” Documents of the Assembly of the State of New York, vol. 6 (1854): 333-37, with thanks to Jason Hall for bringing this source to my attention.
observed “that the corn raised on this river is not the same kind as the corn in New England; neither the climate or soil would be suitable to it; they get their seed from Canada and they sow it in rows about 3 feet distance as we do peas in our gardens.”

Local farmers had selected varieties most likely to mature in the ecological conditions at Maugerville, and planted in rows as opposed to adopting the Indigenous strategy of polycropping in mounds. Morris’s description of ears that “grow close to the ground as thick as they can stick one by another, pointing outwards like a Cheveaux de Frise upon each side of the rows,” suggests that farmers were growing an early maturing variety, which often have shorter stalks. 104  Settlers’ choice to grow corn from Canada, as opposed to varieties that Wolastoqiyik grew in the River Valley itself, reflects the conflict-ridden context of British colonialism. While Wolastoqiyik may have continued to cultivate maize upriver, settlers who did not conceptualize Indigenous people as potential allies, let alone farmers, remained ignorant of the skills and seed stock of their neighbours, while participating actively in their displacement. 105  During this period, enmity and outright violence characterized many relations between settlers and Wolastoqiyik. 106

Colonial correspondence in 1787 indicates that climatic fluctuations also challenged settlers’ corn cultivation. Several observers described the arrival of an early

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105 See Hall, “Maliseet Cultivation and Climatic Resilience,” for William Pote quote about Wolastoqiyik growing corn in 1745, see page 9, fn 12.

frost the summer before, which was followed by a difficult winter. Settlers required relief by early spring. Dibblee provided further evidence for weather-related challenges to corn crops, observing on October 6, 1821, “the Corn only a Midling crop – and if the Frost had been as early as last fall, there would have been not any.” River Valley maps showing “corn heat units” depict the varying distribution of the crucial climatic requirement for corn cultivation, which are highest in the area around Grand Lake; corn also needs rich soils to flourish. Dibblee’s journal demonstrates how people understand that warmth brought corn crops to a harvestable state, whether it came in the summer or as late as the end of September. The Diblees responded to successive short growing seasons in 1816 and 1817 by planting less corn, and there is a good chance that their neighbours did the same. Dibblee grew brown corn, early corn, and sweet corn at Woodstock, including on the intervale, where the River moderated the climate, generating fog that protected corn from the frost in September 1809. He also harvested and boiled “green corn,” as did most farmers of focus, indicating the Indigenous strategy of harvesting soft kernel or ‘unripened’ corn may have been transmitted to settlers along with seeds. Wolastoqey harvested green corn when it was soft enough to be eaten off of the cobs; hard kernels were dried and ground


108 Dzikowski et al., The Climate for Agriculture in Atlantic Canada, Map 16.

109 Dibblee Diary, November 1, 1810, August 20, 1821.

110 Dibblee Diary, September 6, 1817, August 3, 1818.
As Hall has argued, this practice was part of a repertoire of strategies, including site location and hoeing soil into hills, which allowed Wolastoqwiik to cultivate corn during the peak of the Little Ice Age in the Northeast. Like their Indigenous counterparts, farmers also harvested corn in the fall, husking and drying it so that it could be ground into “Indian meal.” By mid-century, colonials were importing seed corn from the United States because the climate was deemed “better adapted” for its cultivation, or raising it locally.

Hardy Indigenous as well as European legumes provided a durable source of protein, minerals, and vitamins. Pole beans could be dried for use in soups and stews throughout the seven or eight months before fresh food would be available for harvest again. H. Nase planted beans every year, including white beans and butter beans in 1785, and yellow beans in 1789. Another commonly grown legume was the pea, which originated in the Near East, and was part of the dietary and biological package European settlers brought to North America. Peas were eaten fresh as well as dried for the winter and spring.

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111 See Dibblee Diary, August 20, 1821, and September 22, 1821. It appears that farmers also roasted green corn, for example Crawford Diary August 25, 1825; Thomas Miles Typescript, September 1, 1843.
112 Hall, “Maliseet Cultivation.”
114 Kurt Knolte, University of Arizona, Yuma County Cooperative Extension, “Green Beans,” Fresh Produce Safety Information From Farm to Fork, https://cals.arizona.edu/fps/sites/cals.arizona.edu.fps/files/cotw/Green_Beans.pdf. Knolte observes that Seed Savers Exchange, an international organization based in Iowa, has more than 4000 bean varieties in their collection. This diversity indicates the extent of their significance to Indigenous peoples in the Americas, as well as the fact that many of these were likely landraces developed for very specific climates. Settlers of European descent benefitted from this history of Indigenous plant selection and production wherever they adopted beans into their diets.
116 Ashton, “A Plan for All Seasons.”
Root cellars or root houses were the key adaptation to winter food preservation in Northern North America, though these structures were not impervious to seasonal weather dynamics. Each year, farmers carefully packed root vegetables into barrels or boxes, and stored them in underground cellars beneath their houses, or close by. It was common for people digging cellars to hold a frolic or work bee to request assistance for the hard labour that was required.\textsuperscript{117} Cellars were also used to store dairy in crockware, eggs packed in boxes of course salt, sawdust or straw, preserved meats, and the roots or stubs of vegetables that were to be planted in the soil the following spring for seed or greens.\textsuperscript{118} When weather conditions threatened these storerooms, farmers took responsive action. Miles reported that two of the men who worked for him erected staging for potatoes during the high freshet of 1843. Two days later, they removed all 150 bushels, with minimal loss to rot.\textsuperscript{119} Cellared vegetables were also vulnerable to freezing in especially cold winters. The Crawfords put coals in the cellar “to keepe the frost out” on numerous occasions, including around December 14, 1821.\textsuperscript{120} In response to similar conditions, on February 2, 1860, MacDonald reported: “dreadful cold weather. We have to put a fire in the cellar for fear of the frost.” On November 6, 1864, MacDonald’s milk and water froze in the cellar.\textsuperscript{121} Conversely, an early thaw could eliminate the snow that acted as a crucial insulator, and according to English sojourner,

\begin{itemize}
  \item[\textsuperscript{117}] MacDonald’s son hosted a cellar-building frolic on July 14 to 15 1864, and I. K. Hoyt grandson attended one November 10, 1846; MacDonald Diary and Hoyt Diary, 73.
  \item[\textsuperscript{118}] For the information about egg storage, Cecilia Boyd and Mary Hall, personal communication, August 27, 2016. See also Bird, Through the Eyes of Mary, 279-80; and M. Dawn Bremner, ed., The Country Diary of Samuel Crawford (Gagetown, NB: Queens County Historical Society and Museum Inc., 1988), 10, regarding sawdust as insulation, especially in ice houses.
  \item[\textsuperscript{119}] Thomas Miles Typescript, April 26 and 28, 1843.
  \item[\textsuperscript{120}] On December 14, Crawford reported beginning to put coals in the cellar “a bout this time;” his inexact dating indicates that the practice was ongoing, and worth fixing with a tentative date because it signified that the cold had reached a certain depth.
  \item[\textsuperscript{121}] See also MacDonald, December 21 1862.
\end{itemize}
Frances Beavan, ‘the loss would have to be experienced to be believed.’ Donald, who worked at the Winslow farm, put banking around the cellar on October 30, 1806, in an effort to protect it from the freeze-thaw cycles of New Brunswick winters. These predominantly underground structures may or may not have had drainage systems, and several journals included entries about water levels in cellars during spring freshet. For example, on April 16, 1799, Winslow recorded that his cellar had flooded “owing to the drain being stopped - NB take care next year.” As he did not repeat this exhortation the following spring, it appears Winslow learned from the experience. On April 14, 1813, Crawford noted the effects of a rainstorm during freshet on his cellar: “the brook was from the barn Level with water at the wartering place much higer then I ever saw it before - the warter in the sullar is up to the stares.” If water levels remained high in cellars, farmers had to find somewhere else to store foodstuffs until the freshet abated, which could lead to losses at a time when provisions often ran low, and became increasingly precious with each passing day.

Settlers also cached vegetables in pits below the frost-line, so as to spread the risks of cellaring over multiple locations. In his History of New France, Marc Lescarbot described the Indigenous practice of burying corn in grass bags in pits on a hill to ensure drainage, or lining the pits with mats, and afterward, covering the maize with sand. He also referred to a similar practice among contemporary peasant farmers in southern France. It is thus possible that early British settlers on the River without farming

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experience learned the practice from local Wolastoqiyik, from Acadians who continued to inhabit small areas in the lower River Valley and passed the practice of burying food in pits on to younger generations, or from their neighbours who had farmed before emigrating. Each farmer of focus dug cache holes, including for potatoes, cabbages, turnips, and roots to plant out for seed or greens in spring. However, the holes could only be accessed when the ground was soft enough, so they were typically opened during the January thaw, and then again in April, when all other foodstuffs were running precipitously low. Some settlers used the moderating effect of the River’s hydroclimate on nearby soils to create caches accessible in winter. While cached vegetables did not always weather the season well, failures provided learning opportunities for farmers. For example, on April 28, 1823, Dibblee reported: “Brought in Cabbages from their hole in the Garden. Very Good - Those that I turned the Heads into the Ground all Roted - My Onions that I put into the Ground also Roted - River falls.” In addition to learning packing strategies, settlers also likely develop skills over the years in siting root holes and in timing retrieval.

Settlers supplemented their stores of salted or pickled meat, dairy, and cellared and cached root vegetables, with nuts and preserved fruit, especially wild berries. Gathering and preserving wild foods allowed settlers to take advantage of geographic and ecological knowledge of locales beyond their immediate farm. These were also often collaborative and gendered activities. Settlers’ diets benefited from the fatty acids in

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125 Miles Diary, May 5, 1853.
wild beech nuts, butternuts, and hazelnuts. While preserving fruit was generally the
domain of women, Crawford often observed ripening fruit, and always noted when his
family concocted currant wine. The MacDonalds ate currants while they were still
green, providing phenological evidence for how early in the season they could access
fruit. On June 19, 1858, after having had their first green currants of the season,
MacDonald reported that “The trees is not out of Bloom quite yet.” Salting was
another way for settlers to extend the life of a crop, and Campbell corned, or salted,
cabbage in October, 1829. Although none of the other farmers of focus mentioned
salting vegetables outright, all of their households grew cabbage, and they may have
preserved some in the fall, in addition to stumps they stored for greens, and the heads or
stumps they kept for seed. Most of the farmers of focus were men, and this was likely
“women’s work” in their households. Many farms had apple orchards, while some
farmers, including Miles and Crawford, also grew plums and other fruit. Likely due to
the gendered dimension of food preparation and preservation, MacDonald was the only
farmer of focus who annually referenced processing fruit in late summer and early fall.

127 Christie and Reicker, The MacDonalds, 7.
128 It is worthy of note that, while Dibblee set out English gooseberries May 1, 1824, John Stewart, on
Prince Edward Island in 1806, noted that “wild gooseberry… is also very common in the borders of the
forest, and is often found in the old French cleared lands…” John Stewart, An Account of Prince Edward
Island in the Gulf of St. Lawrence, North America (New York: S. R. Publishers, Johnson Reprint Corp.,
1967), 53. There is a chance that such plants were also growing along the River, and that settlers were
harvesting cultivated berries as well as berries that had gone ‘wild.’ Crawford also made reference to the
blossoming of shadblow, June plum, and may berry, as well as cranberry. Shadblow serviceberry is a
wild shrub with an edible berry, and another name for it is June berry; Crawford’s sporadic observations
of these berries through the diary indicates that the family may have harvested them, either in the early
years before they planted currants, or perhaps annually. See University of Kentucky, Culture of
Agriculture, Food and Environment, “Shadblow Serviceberry,” Department of Horticulture, last updated
February 8, 2018, www.uky.edu/hort/Shadblow--Serviceberry. H. Nase also referred to “Bilberry Point,”
and bilberry is another name for serviceberry; Henry Nase Diary, September 10, 1786. While he himself
did not mention gathering the berries, a place name dedicated to them suggests that some early settlers did.
129 MacDonald Diary, June 19, 1858.
130 Cobbett, The American Gardener, no page number; in Ch. 1v: “Vegetables and Herbs.”
Women in her household made apple pies, as well as slicing and drying copious amounts of apples. In fall of 1862, William Straight visited and peeled two barrels of apples “with the apple peeler.” She also made cranberry jelly in mid-December 1859, perhaps to enjoy with the fowl they slaughtered for the New Year’s feasting.

Diversity of elements within a system fosters the resilience of the system as a whole. Farmers’ strategies for crop selection, planting, and preservation, allowed them to survive, and in many cases, to thrive year-round in the Wolastoq/St. John River Valley. Growing and gathering foods that could be eaten in at least two ways (for example, fresh as well as dried and rehydrated), alleviated some issues of food spoilage and gave settlers of means a degree of flexibility in dietary choices, and the timing of those choices, throughout the year. Relying on a diversity of crops and wild plants, and planting summer and winter grain crops buffered some farm families from weather conditions that led to single crop failures and low productivity years for fruit. In the early decades of the 19th century, many farmers were eligible for the government grain bounties, which provided financial incentives while also encouraging grain production, both of which benefitted farm families and the colonial economy. One wonders why government administrators never offered a grain bounty strictly for winter grain crops, whether they were grown on newly cleared land or not. Planting winter grains was more common in the late-18th and early-19th century. Despite the fact that the practice was suited to the seasonality of the River Valley’s climate, it subsided over time; winter grains could have played a more significant role in creating food self-sufficiency within

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131 MacDonald Diary, October 15, 1862.
132 MacDonald Diary, December 16, 1859.
the province in the 19th century. At mid-century, agricultural improvers promoted winter grain crops for these reasons.  

19th Century Crop Failures

Despite farmers’ best efforts of observation and adaptation, including maintaining mixed farms and growing and gathering diverse plant species, sporadic crop failures placed heavy pressure on colonial settlements in the region in the first half of the 19th century. Crop failures were caused by calamities such as untimely rain or cold weather during the growing or harvest season, pest infestation, blight, rust, and farmer error; directly or indirectly, most were weather-related. Climatic factors including the lower solar radiation reaching earth during the Dalton Solar Minimum of 1790-1830, and the higher incidence of volcanic eruptions, posed challenges to New Brunswick’s farmers. Some responded through outmigration from the Wolastoq/St. John River Valley, while others adapted by altering their subsistence and commercial strategies. Infestations by the hessian fly and wheat midge, both of which carved a course through the province and ravaged wheat crops, began in the 1790s and also required adaptive responses from farmers. As Geoffrey Parker demonstrated in Global Crisis, the caloric production of agriculture is a central nexus of climate-society interactions, as a decline in temperatures leads inexorably to a decline in calories produced and a non-linear rise in prices. Government intervention only went so far toward alleviating the misery,

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133 See Robb, Agricultural Progress, 26.
134 For details, see Devor, “A Climate History of the Gulf of St. Lawrence Region,” 181-87. The extent to which crop failures hit communities in the latter half of the century is a subject for further research.
135 For a reference to outmigration from the region as well as Western Europe and the Eastern United States at this time, see Piper, “Backward Seasons and Remarkable Cold,” 51. See also Ruth Scott et al., Nashwaaksis, 1765-1973: A History (Fredericton, NB: Capital Free Press Ltd., 1986), 13.
136 For example, in Parker's first chapter, he devotes six pages (17-22) to a discussion of the relationships between climates, crops, calories, and human survival or mortality. Geoffrey Parker, Global Crisis: War,
and relief was often provisional, requiring that recipients reciprocate through statute labour or payment at a later date. Colonial trade policies could exacerbate the difficulties farm families faced when crops failed.

Europeans settled the Wolastoq/St. John River Valley during an epoch referred to as the Little Ice Age, which extended from around 1350 to 1850. These centuries overall were generally colder than average, a trend that had dramatic impacts on settlements in the Northeast.137 The Little Ice Age has recently been declared “the most pronounced global climate anomaly of the past 8,000 years (until contemporary global warming).”138 Focusing on North America, researchers have demonstrated that the 19th century appears to have been the coldest within the past 1000 years.139 Parker notes that a decline in average temperatures of just 1°C can lead to a decline in agricultural yields.140 Yet other factors also influence yields, including the quality of the soil and the length of time that it has been farmed. This means that many farmers in the Wolastoq/St. John River Valley may have seen average temperatures become potentially more amenable for agriculture in the latter half of the century, while their soils became

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138 Sam White, “The Real Little Ice Age,” Journal of Interdisciplinary History 44, no. 3 (Winter 2014): 327. White notes that the cooling of the Little Ice Age was not a trend throughout the world, rather “the change varied over time and space.” See also Büntgen and Hellmann, “The Little Ice Age in Scientific Perspective: Cold Spells and Caveats,” Journal of Interdisciplinary History 44, no. 3 (Winter 2014): 357. “In summary, pre-LIA temperatures from 1000 to 1349 were warmer than LIA temperatures from 1350 to 1899 on all six continents.”
140 Parker, Global Crisis, 18.
increasingly exhausted. Yet average temperatures alone are not an accurate gauge of conditions during a given growing season, as heat, rain, and cool weather can all be beneficial to particular crops at certain times in their growth. As well, depending on farmers’ subsistence and commercial strategies, changes in weather may have had no appreciable impact on the overall caloric production of their farms. Thus, despite evidence of climatic moderation in the region in the latter half of the 19th century, it is impossible within the scope of this study to claim that the end of the Little Ice Age necessarily lead to higher yields in the Wolastoq/St. John River Valley.\footnote{141}

Some farmers in the River Valley required government relief to survive after the shorter growing season of 1816, as did some of their counterparts throughout the Northeast. When Mount Tambora, a volcano in present-day Indonesia, erupted on April 10, 1815, it ejected aerosols into the upper atmosphere that circulated for several years, with diverse effects on climate and polities around the world. On June 7, 1816, Dibblee exclaimed: “Terrible Indeed - Never knew Snow in Summer before. … - River Rising fast - No Salmon - Never was there such weather - People Ploughing & Harrowing with their Great Coats on.” Not until June 23 did Azor Hoyt record the Bible passage, proclaimed that morning in church: “the winter is gone, the rain is over and done... the cry of the turtle dove is heard in the land.” Governments in New Brunswick, Nova Scotia, Prince Edward Island and Lower Canada mandated the distribution of

\footnote{141 Farmers who could afford to pay for fertilizers also had increasing options to do so in the latter decades of the 19th century, and thus mitigated some of the challenges of soil exhaustion. For evidence of climatic moderation and warming, see Devor, “A Climate History of the Gulf of St. Lawrence Region,” 61, 72, 76. The journals of New England farmers, and the reckoning of harbour masters in St. John’s Newfoundland, demonstrate a change in the nature of growing seasons and ice seasons, respectively, after 1860. The dates of first and last frost became less variable, and average temperatures in New England became generally warmer after 1870. The harbour masters observed milder winters and less severe ice seasons after 1860.}
conditional relief to alleviate the worst hardships faced by settlers. In New Brunswick, emergency relief took the form of “Seed Wheat, Rye, Barley, Oats, Indian Corn or Potatoes,” to be repaid through statute road labour, provided the recipient could perform the task. The colonial government also passed bills preventing the exportation of corn, meal, flour, and potatoes for a limited time, and legislators initiated a bounty system on bread corns raised on new land.\(^{142}\) The governments of Prince Edward Island and Lower Canada passed similar bills prohibiting exports.\(^{143}\) On August 25, Crawford reported “a frost about this time up the bay and other places that killed things in the ground,” and on September 11: “there has not been scarcely any corn or beens that has got ripe this season.” While local authorities on weather were at a loss to explain the unusual atmospheric patterns and agricultural corollaries, the colonial communication system brought news of the possible influence of sunspots.\(^{144}\)

Farmers were clear on the harmful effects of pests including the Hessian fly and the wheat midge, and they adopted various adaptive strategies to mitigate against failure of their wheat crops. On September 14, 1792, H. Nase experimented with protecting his crop, sowing “winter wheat said to be proof against the fly, on new ground, and seeded with Timothy and white clover.”\(^{145}\) New Brunswick’s farmers continued to feel the

\(^{142}\) “An Act to provide for the necessities of the Province, occasioned by the failure of the late Crop,” *Acts of the General Assembly of His Majesty's Province of New-Brunswick passed in the year 1817* (Fredericton, NB: George K. Lugrin, 1817) 57 George III – Ch. 7; “An Act to prohibit the exportation of Corn, Meal, Flour and Potatoes out of the Province for a limited time,” *Acts of the General Assembly of His Majesty's Province of New-Brunswick passed in the year 1817* (Fredericton, NB: George K. Lugrin, 1817), 57 George III – Ch. 1; “An Act to encourage the raising of Bread Corn on new Land,” *Acts of the General Assembly of His Majesty's Province of New-Brunswick passed in the year 1817*.


\(^{144}\) Pipers refers to several articles in the *New Brunswick Royal Gazette*; “Backward Seasons and Remarkable Cold,” 43, including fn 43.

wrath of this pest; in 1803, George Leonard Junior, conducting an economic survey of Kings County, reported that local farmers now only sent “about 200 or 300 barrels of flour to market, formerly more, but the ravages of the Hessian fly have considerably reduced the exportation.”¹⁴⁶ A report from Queens County in the same year described farmers raising winter wheat and rye, and made reference to a trial of spring wheat, indicating that farmers were working with the combination of local weather and winter grains in order to ensure the success of this crucial crop. Craig ascribes the increased production of buckwheat and oats, and decline in wheat production, in the Upper St. John River valley in the 1830s to a confluence of factors, including climate, the wheat midge, and the availability of relatively cheap flour from Lower and Upper Canada.¹⁴⁷

The midge, initially reported in the vicinity of Québec City in 1819, and in Nova Scotia in 1829, appeared in the Upper River Valley in the mid-1830s. The midge spread throughout the province over the next decade and combined with rust to decimate wheat crops in parts of the colony. According to Johnston, “the peculiarity of the seasons during the last 12 months – the severe cold of the winter and the heat and drought of the summer,” were responsible for the relative disappearance of the midge in 1849.¹⁴⁸

Isolated and more general crop failures in the latter half of the 1840s included potato blight, which hit the region as a whole and once again elicited government relief. In response to an almost general potato failure across New Brunswick in 1845, and failures of the potato and other crops in one or more counties in 1846 and 1847, the

¹⁴⁷ Craig and Dagenais, *The Land in Between*, 80-1.
government distributed relief in the form of seed potatoes (1846), and sums of money with seed (1847, 1848). When Johnston interviewed farmers regarding the agricultural capabilities of the province, Thomas Beer of King’s County reported 5 years of crop failure. Some farmers who were unable to pay their debts lost their farms. Farmers who kept their farms cultivated more oats and buckwheat, and continued to attempt to mitigate risk in the season of planting through the varieties chosen, volume sown, and by preparing wheat in lime or pickling it prior to sowing. A report to the legislature on railways advised in early 1850 that farmers needed to apply lime to soil in order to bring wheat to maturity, expressing concern that the absence of proper fertilizer was the reason that the wheat crops in the Kennebecasis Valley had failed in recent years. The authors pointed to similar soil exhaustion in “older parts of the United States,” reflecting an understanding of how the process of land clearing and field agriculture transformed soil ecology.

Some colonial and imperial administrators in the Northeast as well as in London were interested in acclimatizing and cultivating valuable starch crops introduced to the British by Indigenous informants in lands they were attempting to colonize. These projects were part of a larger effort to inventory the fauna and flora of colonies,

149 Potato blight occurred in Newfoundland in 1844 and 1856, and likely in several years between. See Devor, “A Climate History of the Gulf of St. Lawrence Region,” 187-88. The blight was also widespread in Prince Edward Island from 1845 to 1847 and in Nova Scotia, where it was most severe on Cape Breton Island in the latter half of the 1840s. Thousands of people were in need of relief. Stephen J. Hornsby, Nineteenth Century Cape Breton: A Historical Geography (Montreal and Kingston: McGill-Queen’s University Press, 1992), 114-20; Samson, The Spirit of Industry, 242.

150 Johnston, Report on the Agricultural Capabilities, 84.

151 Cronon, Changes in the Land, 153. “Farmers eventually learned to use different varieties of wheat and to sow them just before the first frost, when adult flies would be killed by the cold, but New England wheat production was never the same again.”

152 “Appendix on Railways,” ccxxvii, Journals of the Legislative Assembly of New Brunswick, January-April 1850.
understand the processes whereby plants and animals, including humans, could be
acclimatized to new ecological niches, and to adapt Imperial agriculture to the
challenges of provisioning an empire while withstanding the vicissitudes of Little Ice
Age climates.153 Abraham Gesner, who had previously served as provincial geologist in
New Brunswick, was undertaking a geological survey in Prince Edward Island in 1846
when Mi`kmaw horticulturalists showed him two “farinaceous roots” (i.e. two starchy
plants, a tuber and a legume) growing on islands along the seacoast. Gesner saw in
musquasete and Saa-gaa-ban, which he learned also grew in New Brunswick along lakes
and coasts, an opportunity to replace the blighted potato, crops of which had failed in the
region as well as in Ireland and other parts of Europe. Although Gesner sent samples of
the plants to Royal Agricultural Societies in Prince Edward Island and England, and
encouraged settlers in the Maritimes to procure samples from their Indigenous
neighbours, it is likely that his initiative failed in part because of the prejudices of
would-be participants.154 Local farmers did not necessarily have positive relationships
with their would-be Indigenous informants; Wolastoqey likely also had different names
for the two plants. Several members of the Society in England were aware of the plants,
samples of which had been procured by natural philosophers in the Thirteen Colonies
over 100 years prior, and had already been grown in England. Yet their disparaging
comments and uncertainties about the plants indicated that skepticism and cultural
preferences influenced the reception of Gesner’s samples. It is also likely that since
Gesner himself did not have extensive experience cultivating either plant, the

154 Simonds, Esq., “Editor’s Notebook: Letter from Abraham Gesner.”
instructions he was able to provide about soil quality and temperature were elemental at best. 155 Similar efforts were undertaken with wild rice by members of British imperial and colonial agricultural and botanical organizations in response to the “ungenial Springs, the chilly summers, and the rigorous winters,” of the early 19th century in Britain as well as in parts of New England. European gardeners and botanists underestimated the labour required to cultivate Indigenous wild rice, and were unable to successfully acclimatize and habituate it to landscapes in England, let alone throughout the Empire. 156

Imperial economic policies and the vicissitudes of international markets could undermine the ability of many farmers to cultivate a competency simply by working their own land, and could also influence their opportunities to labour for other farmers. In 1783, the colonies of British North America were granted a monopoly on trade with the West Indies, and they met the demand in part through the transport and sale of American goods. Within a decade, the British were allowing American ships to transport their own goods to the Caribbean. 157 While a tariff system that benefitted British colonial producers continued to be in place through the early decades of the 19th century, the 1840s saw the transformation of Imperial economic policy. The decade was not only a difficult time for crop farmers in parts of the Wolastoq/St. John River Valley, but also a period of economic depression and recovery for the maritime colonies of British North America, followed by another slump. The values of Britain’s landed elite,

156 Zilberstein, “Inured to Empire.”
including self-sufficiency and security, were rapidly eroding as an urban elite with economically liberal values, including efficiency and cheapness, gained political power in the country. In 1842, the colonies lost their advantage in imperial timber markets and New Brunswick’s exports plummeted 50% between 1840 and 1842. The British government’s 1849 repeal of the Navigation Acts, which had given priority to colonial over American shipping in transporting goods throughout the Empire, further weakened the sources of economic strength for the maritime colonies. Inland farmers felt the loss through the chain of credit. Miles’s purchase of a carpet at “Webb’s auction by the Sheriff” in December 1841, attests to the local consequences of the constriction of credit.158

In 1854, the colonies of British North America entered into a Reciprocity Treaty with the United States that allowed ‘free trade’ in natural products crossing the border. New Brunswick’s export rates were declining at this time and the treaty contributed to a leap of 137.7% in exports heading south between 1853 and 1860. This was no doubt a boon to some farmers in the Wolastoq/St. John River Valley, particularly in light of the international depression that hit in 1857.159 These larger economic forces often mediated farmers’ fortunes, as access to a market for their goods and labour was more complicated than simply living in close proximity to other settlers – although that was a significant factor, as well.

Living weather in the Wolastoq/St. John River Valley meant participation in larger flows including the migration of spores and insects through trade and air currents.

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159 Ian Ross Robertson, “The 1850s: Maturity and Reform,” in Buckner and Reid, The Atlantic Region to Confederation, 336-37.
While these factors were out of farmers’ control, they could mitigate impacts, making changes to the crops they grew, their planting practices, and production strategies. Had settlers in the Wolastoq/St. John River Valley had closer relationships with their Indigenous neighbours, they may have cultivated more locally-adapted plants that did not have the same vulnerabilities as the crops farmers preferred. While local weather conditions often contributed to crop failures, farmers’ involvement with international trade and the Imperial economy also influenced the opportunities and constraints they faced in a given year.

**Communication and Collaboration Among Farmers**

Communities mounted collective responses to weather-related vulnerabilities, and farmers frequently communicated with one another and in their journals about the implications of weather for transportation, planting, or harvesting. They relied on their neighbours, traveling family members, and visitors, to keep them abreast of weather conditions for agriculture beyond the geographical bounds of farm and neighbourhood. They also practiced mutual aid through work bees or frolics, and through the exchange of seeds and plants. The account-book style entries in Miles’s journal provide insight into the quantification of exchange that was part of early capitalism and marked the class stratification within rural communities.

Many of the journals include references to frosts, rain, harvests, or other weather and weather-related farm activities, which occurred in locales beyond the author’s own vicinity. These observations from further afield could constitute warnings for farm families and their immediate neighbours. On June 23, 1863, MacDonald reported a
dynamic storm following a change in the wind from the Northwest to the South. “The thunder was pretty heavy, it rained some and then was hail. Not much here but I think heavy in some places by the looks of it. … Mr. Ramsy here, he says at D. Chase shop the hail was heavy.” MacDonald was likely concerned about the impact of hail on sensitive new shoots in the fields of farmers who got the brunt of the storm. That these details were worth recording reflects the centrality of weather, and the seriousness of adverse weather, to livelihood in a farming community. Not only was it a topic of concern and conversation among neighbours, but even distant weather could be worthy of record. Many of the farmers of focus referred to frost in other locales, including Dibblee in his entry of August 25, 1804:

very wet and cold Summer to this Date, and for four Days Past – Remarkable Cold, with the Wind Norwest and High- and Every Night there has been a frost – the Second of which was so Severe, that it has Destroyed two thirds of the Crops of Corn and Injured a Great Deal of Wheat – Buckwheat and Potatoes. But I have escaped remarkably – Nothing being Hurt but Cucumbers – Crops of which very good.

While Dibblee’s concern for the commonweal was informed by his vocation as Anglican minister, this entry is not unusual in the context of the other journals. Members of rural communities were knit together by diverse bonds, and felt for one another as well as humbly recognizing that a good harvest was never to be assumed. In late August 1812, Long Reach had “a white frost.” While it “hurt nothing” there, Crawford heard that “at the head of the Bay,” it “killd potatoes and other things.” As the Crawfords lived along the Wolastoq/St. John River, their crops benefited from water’s moderation of air temperatures. While the white frost certainly served as a warning to them, not until

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160 Crawford Diary, August 31, 1812.
September 28 did Crawford report that frost had killed his buckwheat the night before. MacDonald’s entry on June 11, 1864, reflects a similar attention to warnings of frost in the area. “Northwest wind, quite hard. Clear and cold. We did not see any Frost, but it is cold enough for it. There must have been Frost in some places… There was frost and hurt some things.” Her daughter-in-law Beckah arrived that day, and likely carried this frost intelligence from further afield.

Communication about weather was augmented by mutual aid that sought to mitigate against vulnerabilities occasioned by local weather dynamics, as well as to execute farm tasks that required multiple hands. One of the most common forms of mutual aid was the frolic or work bee. Hosting a frolic was a way to access neighbourly assistance during sometimes narrow windows of opportunity for accomplishing certain tasks, such as preparing the ground in the spring, harvesting hay and grains, and digging potatoes and ploughing in the fall. Many hands could make the work itself lighter; most importantly, they made it possible. The reciprocity inherent in a frolic meant that many farmers worked their neighbours’ fields, providing yet another opportunity to observe and interact with the wind, water, sun, slope, and other weather dynamics close to home. Class was a distinguishing factor in this system of exchange. Elite farmers did not tend to labour in other farmers’ fields. Historian Liza Piper noted a shift away from community frolics at Long Reach between 1812 and 1821, and suggested that it was related to the large pool of available immigrant and gang labour, and the rising significance of the cash economy. As Britain turned to New Brunswick for square

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On farmers’ need for work crews prior to the industrialization of farm labour, see Bittermann, “Farm Households and Wage Labour,” 47-48.
timber supplies to replace the Baltic sources cut off by Napoleon in 1807, the holds of returning lumber ships swelled with immigrants. Through direct and indirect economic stimulation, the timber trade increased the circulation of specie or cash within New Brunswick’s economy.¹⁶² Frolics and barter persisted throughout the province, and at Long Reach, the downward trend in the number of frolics per year changed to an upward trend between 1829 and 1835. When frolics became more common again, more of these work bees were related to cutting wood and brush, hauling wood, and peeling bark than in the past.¹⁶³ Further research is needed to determine the various ways that cash, immigration, and changes in population more broadly, affected community labour arrangements over time in New Brunswick.¹⁶⁴

Miles’s journal provides a window into the ways that farmers were stratified by class, including through the shares system of cropping or raising livestock. In many of his account-book style entries, Miles detailed when men worked for him, for one another, for neighbours, and on the roads, sometimes with his horses. In addition to shared labour, Miles enumerated the system of planting potatoes or grain on shares, by which the men who worked for him were effectively tenants on his land, growing grain and potatoes for themselves and paying him in kind, or less frequently, raising livestock

¹⁶² Piper, “Backward Seasons and Remarkable Cold,” 53-54. Yet between 1825 and mid-century, government administrators, as well as elite farmers, were concerned about the high cost of labour, and initiated societies to promote both agriculture and immigration, seeking in part a swelled force of wage labourers who could then facilitate intensified “improved” agriculture; White, “Speed the Plough,” 3-4, 12. See Bittermann, MacKinnon, and Wynn, “Of Inequality and Interdependence,” 1–43, regarding the dependence of more prosperous farmers on those whose circumstances required they perform off-farm labour.
¹⁶³ Crawford Diary.
¹⁶⁴ As another example from this research, Janet MacDonald’s journal demonstrates the persistence of frolics in her community on Washamadoak Lake in the third quarter of the century, although she noted fewer as the years went by. She was also less social in the latter years.
on shares. Scottish traveler and ancestor of Jacobina Campbell, Patrick Campbell, described the shares system as a way for new settlers to learn frontier farm skills, build up their own stock, and gain independence. Miles wielded the most economic and social capital on his farm, setting the wages in money and barter, determining when certain tasks were to be executed and the standards of productivity, and enumerating the reciprocity. Weather dynamics could present challenges to certain farm tasks, and could even affect the price of rent. It is unclear whether the men who worked for Miles kept records of when they worked for each other, or if they practiced mutual aid as a subsistence strategy outside of early capitalistic reckoning.

In addition to participating in frolics and wage labour, farmers utilized various collaborative strategies for addressing personal vulnerability and risk, and performing needed agricultural tasks. They shared, bartered, and sold seeds, plants, livestock, and equipment, with their neighbours. Seed-saving was a practice that transcended class, as access to seeds was influenced by distance, suppliers, and available supplies. In the wet planting season of late May 1805, Dibblee observed “the rainy weather has prevented all Burning this Spring – and Seed being very Scarce There is a bad Prospect in Regard to Crops.” For farmers with the resources, saving one’s own seeds paid off in both food security and allowing other purchases or investments. When the government distributed

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165 Miles Diary, October 11, 1848
167 For example, on March 21, 1846, when he rented out a farmhouse and land at Portobello to Tom Doherty, Miles charged 5 pounds/year for house and land (as the previous tenant had paid) “or 6 if the season is good for Crops and he is able to pay it;” Miles Diary Microfilm.
168 Craig, Backwoods Consumers and Homespun Capitalists, 12-13, 19.
169 Dibblee Diary, May 21, 1805, and June 14, 1809; Miles Diary, September 2, 1848: “the potatoes are rotting fast in all direction. I much fear there will be none for seed next yr.” See also Nashwaak Bicentennial Association, And The River Rolled On, 108.
relief, it was usually in the form of seed or loans to buy seed. Farmers saved grain seeds and some threshed their own grass seeds. Most shared seeds of various crops and varieties, as well as accessing seeds from family and neighbours. These exchanges may have helped develop cultivars suited to local weather and ecological niches, depending on whether settlers were selecting seeds from plants with specific traits. Farmers also shared seedlings with family and neighbours, as when Crawford “[s]et out some cabbage plants got of James Welpley,” June 11, 1834. On May 27, 1864, MacDonald’s son “James went to Mr. Leonards to swap potatoes for seed. Mr. McLean … is looking for roots.” Agricultural societies purchased imported or provincially grown seeds collectively, and gave participating farmers a direct seed source and access to so-called improved varieties of hay and other crops. Between 1828 and 1831, Crawford distributed clover as well as flax seed for the Society. In addition to encouraging farmers to enter vegetables and fruits in competitions at their annual fairs, some agricultural societies held field inspections and awarded prizes to those farmers who grew the most of a particular crop within a given area of land. While serving as Indian Commissioner in Nova Scotia, Gesner offered bounties to Mi’kmaq farmers who grew the best crops and built the best fences. Encouraging competition

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170 For example, in 1838 and 1850, RS 153, Northumberland County Council Records, H. Agriculture 3 a), PANB; See also RS 151 Kings County, K., Finance II, PANB, regarding the distribution of loans to buy seed potatoes in 1845-1846.
171 For example Typescript of Miles Diary, September 25, 1843; Crawford Diary, April 19, 1826.
172 See for example, Dibblee Diary, May 22, 1811.
174 For example, see Crawford Diary, April 28, 1828.
among farmers was one way that improvers and colonial administrators helped to foster individualism in rural communities.

**Concluding Thoughts**

No matter who they are or where they live, farmers pay attention to planting and harvesting dates. Social memory in Johnville, New Brunswick, maintains knowledge of early and late years for planting and digging potatoes; some farmers associate such dates with births or weddings in their families. Each of the settlers whose journal was used in this study included notes about planting and harvesting dates. While there were other aspects of colonial life on which they remained silent, most farmers kept a record in part to track crop seasons and used their journals to learn about the variable parameters of seasonal weather from year-to-year.

Farmers’ praxis of observation was deeply rooted in their own heritage and life experience, as well as in the changing traditions of European agriculture. They chose plant technologies – from seed stock to methods of cropping and care – suited to northern climates, and sought to largely reproduce the dietary staples brought by their ancestors from the British Isles. While settlers could not have imagined the “thermostatically controlled” reality ushered into the Wolastoq/St. John River Valley with New Brunswick’s shift to the mineral energy regime in the 20th century, they did their best to cultivate outdoor microclimates conducive to crop growth on scales from small hot beds and garden hurdles to large windbreaks or line fences between fields.

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176 Alma Kilfoil, personal communication, October 14, 2017; Paul Brennan, personal communication, March 16, 2018.
While 21st-century New Brunswickers are increasingly buying local food some of the time, most of us continue to rely on crops grown in California or even further away, to say nothing of our penchant for hot drinks (coffee, caffeinated tea, hot chocolate), refined sugars, and alcoholic beverages that we neither grow nor process ourselves. Some late-18th and 19th-century farmers bartered for a few of these items – especially tea, sugar, and perhaps rum – or purchased them at stores and markets, but most of them knew the sources of their food and drinks intimately, because they were responsible for much of their production. When local weather conditions challenged the growth of certain crops or the overwintering of livestock, farm families supplemented their diets with more wild foods including fish, fowl, berries, and ungulates. Despite improvement imperatives to grow more food on less land, and raise higher-quality livestock, most farmers were keenly aware of the limitations posed by the microclimates and soils on their farms, the needs and vulnerabilities of animals, and the economic and social situation of their families. Thus they made choices about the crops and animals they husbanded based on a complex of factors that balanced diverse values and included awareness of the vicissitudes of local weather.
Chapter 8:

“Living Weather” With Animals: Sharing Risk in Dynamic Farm Households

Farmers’ relationships with animals were central to their process of living weather. Domestic livestock supplied labour power for the heaviest work on farms and in the woods and facilitated travel and the transport of goods. Settlers could also ‘farm’ out the labour of their animals in the formal and informal economies. As well, animals supplied a key protein source for rural families, in addition to multiple by-products such as wool, leather, and for home use or commercial exchange. Settlers’ mixed livestock farms were strategically constituted, with mutually reinforcing subsistence enterprises grounded in self-reliance. Animals, like settlers, had to ‘live weather’ to survive the vicissitudes of the local environment, sometimes taking personal risks or facing risks imposed on them by people. As well, like humans, livestock needed food, warmth, water, and companionship to survive the long winters in the Wolastoq/St. John River Valley. Farmers responded to their animals’ climate-related and weather-related needs and vulnerabilities, and to the associated risks and uncertainties for human-livestock households, through land-use and commercial strategies that aimed to secure foodstuffs for the household through the year. Farmers thus bred and cared for livestock while considering local weather as well as economics, including mutual aid and other prudent activities within family and community. Farmers’ way of life based on their praxis of observation blended interactions with local weather, livestock, and human community with the concepts and practices of improvement agriculture.
A milk or “milch” cow often provided the initial necessary protein for pioneer families, and for many was a cornerstone of farm establishment.¹ Cows cycled nutrients on a farm through grazing, urinating, and excreting fertilizing dung. These animals were bred and their young provided meat or income, and contributed to the growth of herds.

In the late-18th century, Scottish traveler Patrick Campbell observed that emigrants wishing to establish their own homestead might work for another farmer until they had enough resources to buy a cow.² A farm apprenticeship included the opportunity to learn about local weather dynamics through personal experience, as well as through communication with others working the land. As a youth, Azor Hoyt apprenticed himself to learn the skills of farming, woods work, and carpentry following his arrival with his family in western Nova Scotia (soon to be New Brunswick) in 1783.³ Many other would-be farmers in the region worked for landowning farmers before and after leasing or purchasing their own land, and some continued out of necessity to do so through their lifetimes.⁴

The farmers whose journals were utilized in this study appear to have been among a select group whose families had resources, including in most cases, social capital, that supported their ability to work and buy land. In a study of Middle River and Hardwood Hill, two farming communities in 19th-century Nova Scotia, Graeme Wynn, Rusty Bittermann, and Robert MacKinnon estimate that 20% of farmers owned large, profitable farms. Roughly half of farm households generally commanded agricultural resources at the subsistence level, although in some years, their expenses or debts

³ Hoyt Diary, 1.
⁴ Bittermann, “Farm Households and Wage Labour,” 36-37, 39, 41.
required that they find work off the farm. Another one-third of households met less than half of their own needs with the produce of their farms and required at least 150 days of agricultural wages (calculated at the higher rate that was paid to men) to make up the difference. The authors note the correlation of the earliest emigrant arrivals with the prospects for good quality land that was less expensive, than the opportunities encountered by later arrivals.\(^5\) The late 18\(^{th}\)-century arrival of the eight families of farmers whose journals were used in this study, their status as Loyalists, and their related ownership of intervale land helped create the conditions for their self-provisioning. This included the ability to consistently overwinter livestock.

In addition to providing nourishment and stability, animals were a source of energy during what technology philosopher Lewis Mumford termed the era of ‘wood, wind, and water,’ and what world historian John McNeill dubbed “the somatic energy regime.” The bodily exertions of two- and four-legged animals – including humans – provided most of the energy to do work in this regime, with wind, water, and wood, supplying the rest. While animal labour constituted a fundamental support to human biological “converters” of energy, humans provided the predominant source of energy prior to industrialization.\(^6\) Farmers used oxen to clear the land, and for the first ploughing of new fields. Oxen helped break roads through snow, hauled cordwood out of the woods in winter, and transported people in sleds, wagons, and carts. Horses did similar work, although two or more were required to do the heavy work of an ox. Depending on their resources, a family might only have procured their own horse in later


\(^6\) For Mumford, who also termed this the Eotechnic era, see Wynn, Canada and Arctic North America, 113. See also McNeill, 2000, page 11-13, quoted in Wynn, Canada and Arctic North America, 113.
years, securing two to make a horse team when and if it was within their means.  

Thomas Miles took careful note when he loaned oxen and horses out to the men who worked for him, as well as when the men worked for each other; it is likely that he charged for his livestock’s labour, and factored it into his payment of these men. Miles also received credit for his animals’ labour when they worked on municipal road crews. Finally, horse power was used to run farm machinery like the threshing machine that Miles owned on shares between 1841 and 1853. So standard was horsepower as a commonly understood unit of measure that James Watt, the Scottish engineer who adapted the steam engine so its efficiency trumped that of the traditional somatic regime, converted “horsepower” into a unit referred to as “watts” of energy. In fact, an invention called a “horse power” was used to drive various types of machinery, including threshers and wood-cutters. The horse power generator was an inclined wooden ramp with enclosed front and sides; when a horse stepped into the machine and began to walk uphill, it generated power by turning a treadmill whose belt was attached to another machine. Various-sized treadmills were used by different animals depending on the energy required for the task at hand. Hence, oxen, mules, dogs, goats, and enslaved or imprisoned humans all powered machines by treadmill in the 19th century.

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7 See, for example, Campbell Diary, 23, 34.
9 Corey, Growing up on a Farm in New Brunswick, 24-26; for photographs, see page 25; Sandwell, Powering Up Canada, 107.
The Seasonal Needs and Vulnerabilities of Labouring Livestock

The vulnerabilities to which animals might be exposed changed over the course of the seasons as it did for their human counterparts. The variability of weather conditions during winter and spring seasons posed unique challenges to livestock, whether they were cooped up in hovels or barns or labouring at logging camps in the deep woods. Growing season conditions and weather during haying and harvest also influenced animals’ fates, as these factors combined with the timing of settlement and social status of their human counterparts to determine livestock’s nutrition throughout much of the year.

During the lumbering season, oxen and horses worked for long hours on farms and in lumber camps in the deep forest hauling wood with men, including Jacobina Campbell’s brothers and Rev. Frederick Dibblee’s son, William. Farmers made money from their animals’ labour, as well as their own, by renting livestock out to logging camps. As Béatrice Craig has noted, “[h]orses, like sons, were a source of wealth.”¹⁰ Horses also worked with voluntary hauling crews to move buildings, such as the “10 yoke of oxen 2 span of horses and 40 hands” who moved Joel Crawford’s barn at Long Reach in 1813, as well as the frolic crews that hauled wood and hay each winter.¹¹ Horses who laboured intensively through the winter required greater hay stores than those who spent the winter in barns and yards. In 1825, and again in 1853, the colonial government bemoaned the loss of currency through the purchasing of horses and hay from Prince Edward Island to service the timber trade. Officials urged the establishment

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¹⁰ Craig, Backwoods Consumers and Homespun Capitalists, 162.
¹¹ Crawford Diary, April 28, 1813.
of agricultural societies and importation of English stallions to stem this financial drain and encourage expanded breeding within the province.\textsuperscript{12}

Throughout the year, farmers relied on animals, particularly horses, for transportation when they were not walking, boating, snowshoeing, or skating. Horses pulled farmers and their families in wagons, sleds, and sleighs, and pulled boats during freeze-up or break-up in the spring.\textsuperscript{13} In the early decades of the period of study, many travel routes were mere “bridle paths,” and farmers often rode horseback for expedient transport.\textsuperscript{14} Horses were also central to colonial public transportation systems. While passenger scows, sloops, and packet schooners relied on wind power or humans hauling on oars, horses were used in ‘team ferries’ or ‘horse ferryboats,’ in which they walked on treadmills to turn paddle wheels on either side of the vessel.\textsuperscript{15} Horses also facilitated the land-based branches of the transportation network that included post coaches or carriages, and by 1840, private stagecoaches.\textsuperscript{16} Post carriages and boats also sometimes took on passengers.\textsuperscript{17} As official communication networks became more elaborate and extensive, so too did the public transportation network. Horses working in transport needed time to rest, and the colonial government sanctioned roadhouses to provision horses and riders and to switch horses.\textsuperscript{18} Regardless of the effects of climate and

\textsuperscript{13} For example, Crawford Diary, April 23, 1817.
\textsuperscript{14} For a description of the “ride and tie” method of sharing horses amongst a group of travelers, see Nashwaak Bicentennial Association, \textit{And The River Rolled On}, 112.
\textsuperscript{15} This is a description of the ferry run by the Agnews, Rev. John and Capt. Stair, from 1786 to 1813, from the mouth of the Nashwaak to the top of Waterloo Row and back in Fredericton; Squires, \textit{History of Fredericton}, 61.
\textsuperscript{16} Miles Diary Typescript, November 3, 1841. There was a stagecoach service between Fredericton and Newcastle around 1840; Nashwaak Bicentennial Association, \textit{And The River Rolled On}, xvi.
\textsuperscript{17} Winslow Diary, June 1807. Depending on the available routes of transport, the post was also sometimes carried by a post-rider. See Gesner, \textit{New Brunswick with Notes for Emigrants}, 215.
\textsuperscript{18} Soucoup, \textit{Looking Back}, 272-73.
weather on the state of roads or trails, horses and oxen helped people to traverse land-, water-, and icescapes throughout the year.19

Weather conditions could pose challenges to labouring animals, hindering human activities during the mighty spring freshet, winter thaws, and heavy snows. Yet the “brute strength” of oxen in particular could prevail over conditions. Miles reported in December 1847 that, “Alek takes care of cattle and hawls swamp mud for himself with my oxen -the travelling is very hard for horses- snow nearly gone in the road, thaws all day.”20 Such conditions could also be difficult for oxen, as Miles reported on April 17, 1841: “Woodford drawing timber with my oxen – hard work much bare ground.” Even with the help of heavy draft animals, farmers could be storm-stayed for days at a time. On January 1, 1849, after a “violent snow storm” two days prior, Miles observed “Snow flies and drifts much in the road so as to make it almost impassable.” He and his son Odber set out for a Temperance meeting with a horse and sled, but aborted the mission due to the horse’s difficulty in wading through drifts carrying its human load. On January 2nd, Miles recorded: “fresh breeze from N.west, snow drifts again. attempt to break out the road, Wm and Wood drive two oxen as far as Odber’s and return… Wood and Wm brake out the road to the woods & bring in a small load.” It was only the next day, and the fourth day after the storm, that he and William helped to “break out the highway.”21 These entries indicate that storms circumscribed long-distance travel longer than local travel and reflect the experimentation settlers engaged in with the assistance

19 Squires, History of Fredericton, 61, for rates for “four-wheeled carriages and waggons with two horses or oxen 1 s. 6 d., with one horse 1 s.”
20 Miles Diary, December 31, 1847; Crawford Diary, March 31, 1821.
21 Miles Diary, January 1, 2, and 3, 1849.
of animals when roads were snowed in. Oxen could open a road that horses could not break, and the necessity of augmenting home fuel supplies led farmers to prioritize access to the woods over attendance at social gatherings.

The necessity of hauling timber from the woods, hay from fields and islands, goods to market, and manure to fields could override the challenges presented by conditions. During a very cold week in March 1825, Benjamin Crawford reported “very bad haulling but we have dun moor this weeke then any one this season.”22 On April 8, 1825, he took advantage of the frozen conditions afforded by the cold of the night before, which allowed “a body” to “haul 2 or 3 lodes of wood in the morning.” While Thomas Haliburton estimated that Nova Scotians needed 6 to 8 weeks of good sleighing to complete their requisite hauling for the season, Alexander Monro stated that conditions in New Brunswick often allowed less than “six weeks’ sledding.” The journals indicate that variability was the norm in hauling as well as other seasons on the land. For example, Dibblee recorded that his sons had only hauled for a week by the beginning of March 1819.23 Settlers had to be flexible, as well as potentially exert more energy and spend more time, to get bulky wood and externally stored hay and crops into barns, move items to market, and transport themselves and their families.

In the wintertime, farmers were acutely aware of the quality or character of the crust on the snow and the ice conditions that determined animals’ mobility, as well as the risks of hauling loads of wood, goods, or people. A packed snow surface, hard

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22 Crawford Diary, March 26, 1825.
enough for horses to traverse, promised good travel. Conversely, as Crawford reported on January 9, 1822, snow and rain in the night could make “a crust very sharpe [that] cuts the horses legs very much.” Horses may have been slowed or rendered temporarily lame by such conditions. When animals repeatedly broke through the crust, heavy loads took longer to haul and were at greater risk of capsizing. In March 1861, Janet MacDonald reported: “There was a team crossed here today and the traveling is so bad it was nearly an hour crossing. The crust partly bears so it cuts the horses legs.” Earlier that month, she had noted “The snow is deep on the roads, it is not froze hard enough to hold horses, they slump in.”

During thaws and in the spring, when the River’s edge was open, while the frozen mainstream still afforded transport, people in animal-drawn conveyances were ferried on and off the ice. Much winter travel and hauling was done on frozen waterways, which offered the most expedient method for colonial travel at any time throughout the year. New Brunswick’s freeze-thaw weather cycles could increase and intensify the risk of encountering thin, melting, or broken ice.

Settlers put their animals at risk in the service of their own needs and desires for mobility, and each year, horses in particular died by breaking through iced-over waterways. George Head traveled through New Brunswick in the 1820s en route to Upper Canada and observed the local practice of “choking” drowning horses. This

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24 Horses and cattle were vulnerable; MacDonald Diary, March 4, 5, and 18, 1861.
25 Almost all personal accounts of winter transportation referred to horses going through the ice; MacDonald Diary, January 29, 1859, and January 8, 1863.
26 When the horse pulling Head’s sleighs plunged through the ice, the driver slipped a noose of rope around its neck. The two men, perhaps with assistance from other travelers, pulled on the rope until the horse emerged from the river and within moments, “stood frightened and shivering once more on his feet on the ice.” The driver believed it was the trapped air within the horse’s lungs that made him float, while Head wondered whether it was simply the exertion of the men pulling him out; Forest Scenes, 55-56. Head noted that locals referred to the practice as “‘choking.’”
technique was not always successful, and weather conditions could exacerbate the challenge. On February 22, 1816, “Curry’s horses drowned” during the worst snow storm the Crawfords had seen that winter. The loss of a horse was a grave and expensive occurrence in any household, as horses performed diverse and necessary labour throughout the seasons. Most farmers named horses and cows, and felt responsibility as well as a degree of care for them; farmers forged a partnership with the draft animals they relied upon for their livelihoods.

The combination of the Wolastoq/St. John River Valley’s climate and livestock breeding schedules that were typically set by their human owners posed acute vulnerabilities for livestock. Calves, lambs, and piglets were often born between February and June, a timing that could entail weather-related vulnerabilities due to the frequency of storms and the depth of cold temperatures. On January 4, 1848, Miles reported, “Clear & cold…Charles does but little today and I do less, the black Nohorn cow calves before daylight has a fine heifer calf but the weather is so cold it perished—we had it brought in the kitchen some time before it died. The night was extreme cold; I had a singular dream last night.” Delivering a calf in the middle of the night, tending to it, and watching it die, affected Miles’ psyche, both while sleeping, and while writing, since he never recorded his dream life. Other animals who were brought into farmhouse kitchens survived, including the piglets Miles was able to save in January 1849, and the recently shorn sheep Dibblee brought in during a cold rain on May 26, 1825.27 Newborn animals sometimes died in barns or hovels, such as the calf that froze to death at the

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27 See also Miles Diary, January 18, 1849. Not all of the piglets survived, as he wrote the following day: “one of the young pigs died last night, but not from cold as there was no frost in the kitchen that night.”
Crawford farm in February 1826, and the piglets Edward Winslow “lost … by the severity of the weather” in 1804.\textsuperscript{28} It was also common for farmers to record the deaths of a percentage of newborn lambs, and weather was among the factors responsible for lamb fatalities. Having recorded some very cold weather in the previous weeks, in late March 1813, Crawford reported that five of the recently born lambs had died while six survived.\textsuperscript{29} Farmer Dick Hall, of Johnville, New Brunswick, who was born in the early twentieth century, had colourful names for storms that reflected his local knowledge of weather and livestock. A “lamb killer” was a spring equinoctial or “line gale” – a term also used in several of the journals for storms on or near an equinox – that was accompanied by wet weather.\textsuperscript{30}

Animals of all ages were vulnerable during late winter and into the spring as months of confined movement and less nutritious fodder weakened their muscles, cramped their joints, and made them susceptible to illness or injury.\textsuperscript{31} Farmers were vulnerable if their draught animals suffered from malnutrition or ill health, since they needed the assistance of animals to take advantage of conditions ripe for plowing.

\textsuperscript{28} Crawford Diary, February 2, 1826; Winslow Diary, January 31, 1804. See also Campbell Diary, 169, February 19, 1836: “Old sow has pigs – all frozen.” It is possible this entry points to factors besides the weather, namely the sow’s age, which could have contributed to her little ones arriving stillborn.

\textsuperscript{29} Crawford Diary, March 28, 1813; Winslow Diary, April 4, 1804.

\textsuperscript{30} For example, MacDonald Diary, September 16, 1858 and March 17, 1862; conversation with Mary Hall, March 18, 2016. The term, “line gale,” reflected farmers’ detailed knowledge of celestial rhythms. This storm was so named because the sun crosses the line of the equator at an equinox. Note that Crawford’s report of dead lambs followed the equinox by less than a week.

\textsuperscript{31} Johnston, Report on the Agricultural Capabilities, 47. In the late twentieth century, farmers on Prince Edward Island recalled the springtime need to simply ‘get animals to the grass,’ and how this could be difficult if they had become weak or stiff from confinement or feeding on hay that had lost its nutrition through rotting, for example; Weale, Them Times, 17-18. Farmers were even willing to buy rotten hay if they were desperate enough; David Ross, Diary of David Ross: 1836-1882 (includes many cures & remedies), transcribed and annotated by Matthew Hatvany, 2008, HF 83-74-1, PARO, Microfilmed August 15, 1988, 68.
hauling manure, and other crucial preparations for planting. In his 1849 Report on the Agricultural Capabilities of the Province of New Brunswick, J.F.W. Johnston noted the greater nutritional needs of animals during cold periods, and quoted Robert Smyth of Queen’s County and Alexander Goodfellow of Miramichi who attributed livestock’s susceptibility to disease to poor nutrition and shelter over the winter. Goodfellow claimed a 20% savings in required feed once he built a barn that was predominantly enclosed and otherwise sheltered. His cattle were “always in better condition in the Spring than those of” his neighbours who kept “their stock in the ordinary buildings of the country; and much less subject to the various distempers to which cattle are liable.”

Crawford, who housed some animals in barns and some in hovels, observed in 1824 the susceptibility of the family’s horses to diseases. On March 21, he reported: “the yong big Mare is quite stiff hardly able to git up.” After having her bled, he wrote on the 26th, “The old Mear is very poor I think it proceeds from eating much hay.” A month later he received a visit from his brother James, who had “lost 3 of his horses this spring.” The next day Crawford began his initial plowing and reported: “My horses very poor.” On May 12, the family “had sum trouble with our yong Mare lifting her up.”

Farmers learned through experience how to mitigate some of their animals’ climatic- and weather-related vulnerabilities. As Robert B. Chapman of Westmoreland

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32 For an example of the interdependence of animal health and spring plowing, see Winslow Diary, May 18, 1801.
33 Johnston, Report on the Agricultural Capabilities, 80.
34 It is unclear whether the journal entry reads “rich” or “much” hay
35 As another example, see MacDonald Diary, April 21, 1862. Several farmers of focus reported horses becoming “cast” in the barn or the snow in the barnyard, including MacDonald’s several entries about a colt “cast” in the barn on the night of March 14, 1858; see also April 14, 1861. Weale noted that some farmers on Prince Edward Island referred to “the lifters,” a condition where animals required assistance to get to their feet because they were so weak and malnourished; Them Times, 17-18.
County told Johnston, “The long winters have a bad effect on stock, as it requires much care, attention and experience to keep them in good condition.” Yet farmers living close to the edge of subsistence necessarily rationed animal feed as well as human food. Some observers reported chronic underfeeding of livestock in New Brunswick, Nova Scotia, Upper Canada, and New England. While Crawford was a prosperous farmer with two decades of experience by the 1820s, it is likely that he was rationing his fodder in March 1824, since he attempted unsuccessfully to procure hay on March 17. He was able to get a “quarter” from his neighbour several days later. Crawford had to stretch the remaining hay for two more months. On May 26, the farm was hit by a hard frost and his pasture was “poor yet in the cleard land but pritty good in the woods.” The next day, Crawford’s hay was “all gon and I do not know where to git any more.” While Crawford’s cows were able to forage in the woods without requiring much fodder by May 9, he still needed feed for his horses, one of whom was pregnant.

There was a “hay economy” embedded in the larger class system, and wealthier farmers with strong family networks were better able to buffer livestock from short growing seasons and long winters than tenant farmers and less prosperous farmers. Those farmers who could not afford to overwinter livestock, but could access marsh hay or upland hay (wild or sown), used it to pay rent and to participate in the broader barter economy. Hay had high value in both the formal and informal economy in colonial society. Access to it provided farmers with the means to produce animal byproducts for sale and home use, or the potential to gain favours within the system of obligatory

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37 Crawford Diary, March 17 and 23, May 26, 27, and 9, 1824.
38 More prosperous farmers might barter for hay as well; Crawford Diary, November 1, 1824.
reciprocity underlying rural morality. Winslow reported on April 26, 1799, “I am now
almost out of hay. This is the second year that I have experienced the same misfortune
which is one of the blessings of having tenants. 2 more lambs.” On the 9th of May, yet
another cold day with a Northwest wind, he wrote, “McCoombs opening potatoe holes.
…Beauty cow calved.” Unlike his neighbours, including some of his tenants, Winslow
would not have to worry about Beauty or his ewes being nourished enough to provide
good milk for the next generation. Likewise, he and his family had access to food from
winter storage. Yet other farmers did not have this form of security, or were unable to
benefit from it every year. When Crawford went seeking hay in mid-March 1824, he
went to “the back land” to purchase or barter from a neighbour named Tom, but came
home empty-handed.39 “Backlanders” often faced various unique geographic and
physiographic challenges in comparison to their riverbank neighbours; lack of access to
marsh hay was one.40 If Tom had harvested upland hay the year before, he may have
been saving his rations for his own livestock, promised it to a landlord, or bartered or
sold his supply. Crawford, on the other hand, could access nutritious hay from his
intervalle and Grassy Island because of the microclimate and soil nutrition of these lands.
He also had two barns and harvested an average of 23.6 tons of hay per year. In 16 out
of 24 years of his record, he either bought or bartered for hay throughout the winter and
early spring.41 In his entry of January 3, 1818, Crawford identified hay shortage as a

39 Crawford Diary, March 17, 1824.
40 For evidence of the poorer quality and lower desirability of these lands, see Johnston, Report on the
Agricultural Capabilities, 86. For a discussion of the challenges of “backlanders” in the maritime
For reference to the backlands in the context of British North America, see Wynn, Canada and Arctic
North America, 123-124.
41 Crawford’s average harvest is based on 23 years of data out of 25 years, and likely underestimates his
actual average production, since it often relies on his January tally, at which point he might already have
fed out 8 or 9 tons of hay, as he had in January 1832. In 1826, he reported receiving a load of hay from a
common problem: “I often Reken up my hay but find it pritty scanty in the spring
Commonly I will in form you.” He returned to this entry in spring, adding: “after the
winter was over and spring come, my hay lasted tho Rather scant I Bought none and if I
had a half tun more I shold have fed out.” These lines clearly illustrate Crawford’s
need to ration and his desire to create a thorough and useful record of his experiences as
a farmer.

Family and community ties could serve as a form of hay insurance; Crawford and
Campbell had relatives to share haying duties and the hay itself. The farmers’ journals
provide evidence for this leeway. On March 17, 1820, Crawford “got dun on the Iland.
got one load of John Crawford.” Early in the fall of 1820 “John Crawford came down to
cut his lot on the Iland and Joel and me have dun it for him.” Many farm families
were not as prosperous, while others sought profit from the finite market for hay.
Farmers kept abreast of the price of hay on the market; sometimes, those with hay to sell
were able to respond to prices and make a good profit. At other times, farmers took
advantage of local weather conditions permitting safe and efficient travel, and moved
hay, straw, and wood to town, even though the glut of goods drove prices down. On
December 22, 1848, Miles observed: “… good travelling on the ice great run to
Fredericton today- they will be well supplied for Christmas- for very little money.” In
this case, weather facilitated a buyer’s market, while also permitting farmers to sell bulk
goods that would lose value if they spent the winter in barns or yards. Signaling the

neighbour, “for what he had of me last spring,” indicating the exchange was not directly related to
Crawford’s need in 1826.
42 Crawford Diary, January 3, 1820.
43 Crawford Diary, September 7, 1820.
44 Miles Diary, October 27, 1846, December 16, 1853; MacDonald Diary, February 28, 1865.
45 People had begun traveling on the ice with horses only the day before.
significance of hay to the larger colonial economy, the price of intervale and upland farms was tied to hay production at mid-century. Each generally sold at a rate of “£1 for every ton of hay cut on the farm.”

Farmers recorded hay scarcity in their journals in spring of 1817, 1822, 1824, 1832, 1835, 1841, 1847, 1854, 1861, and 1868. They also reported the death of cattle in one or more settlements during the winters and springs of scarcity in 1847 and 1861. Miles anticipated the pinch for himself in January 1847:

January 7 – “very little cold weather yet, don’t recollect ever seeing so warm a winter so far- The ice is considered very unsafe- snow has laid on it ever since it first froze up- the snow about two feet deep in the woods-at our place, my hay appears to be going, faster than the season- must feed with more care”
April 22 – “Hay is very scarce generally. Mine is too near the end.”
April 28 – “Hay goes fast.”
May 1 – “I feed the cattle…turned young cattle out and brot [sic] them in at night.”
May 2 – “Drove young cattle to the woods again. Woody goes for them at night appear to be willing to stop out-”
May 3 – “Hay is very scarce generally we hear that many cattle are dying for want of feed at the Nashwaak and Harvey Settlement- & many other places- Thank Heaven mine are not suffering yet- we hope to see warm weather soon.”

That spring, Miles was able to graze his young cattle out in the woods from the 1st of May, although he brought them in twice before turning them out to stay May 4. He still needed hay for two new mother cows, in addition to feeding other adult cattle and

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46 Johnston, Report on the Agricultural Capabilities, 86.
47 Crawford Diary, May 12, 1822, March 20 and May 27, 1824, April 26, 1832, March 28 and April 20, 1835; Typescript of Miles Diary, March 18 and 21, April 29, May 7, 1841; Miles Diary, January 2 and April 22, 1847, April 22 and 29, 1854; MacDonald Diary, March 28 and April 2, 1861; Philip Nase Diary, April 25, 1868. There were also times of general hardship, such as when Miles noted on May 7, 1842, “the times grow hard and money scarce” (Typescript of Miles Diary). He also recorded that 1848 was “a year long to be remembered on account of the scarcity of provisions, dullness of trade and general starvation of all kinds of business” (Miles Diary). Yet in neither of these years did he observe hay scarcity explicitly. I. K. Hoyt recorded “Hay very scarce; borrowed 500 of R M Walker,” on May 6, 1845, but this may not have been a general scarcity; Hoyt Diary, 66.
48 In addition, the death of two of Crawford’s brother’s horses in spring 1824 may have been directly related to hunger. Accounts of 1816, or the “year without a summer,” report the deaths of cattle on Prince Edward Island and in New England; Devor, “Volcano Years and the Historic Climate of Prince Edward Island,” 25, and Baron, “1816 in Perspective,” 126.
49 Miles Diary, May 1, 2, and 4, 1847.
his oxen and horses. It was not until May 29 that his brother-in-law was able to drive eight head of cattle to the woods to stay. That July, Miles mowed grass in his garden for hay, a practice that he continued in most years; perhaps witnessing the suffering of that spring encouraged him to see all grass as potential feed.\(^{50}\) Similarly, the MacDonald family weathered the scarcity of 1861 without experiencing their own losses, although they came near losing a cow that had become cast or caught in a mold of snow, on April 14. MacDonald observed that the remaining ice in the River facilitated the search for hay by farmers driving teams on March 27, April 2, and April 4. That teams were being used indicates farmers were hopeful of securing large loads. MacDonald used the term “wonderful,” meaning “astonishing” and “inexplicable,” when she wrote on the 4\(^{\text{th}}\): “It is wonderful, some men will not let any go; they expect to get more than 5 pounds a ton.”\(^{51}\) While some of these farmers likely placed profit above the well-being of neighbouring households, some were likely trying to make up for their own losses of other kinds.

Some farmers circumvented the need to fodder all winter long by letting or renting animals out in a system of insurance and profit that spread the risks and the responsibility for animal feed and care. On March 22, 1842, Campbell noted “Patrick winters C & Z for Carlen.”\(^{52}\) Similarly, on November 29, 1841, Miles wrote: “True took my steers to winter & break and to work them reasonably- and return them in the spring; for which I am to pay him ten dollars- or give him credit for that sum.” In this case, Miles may have benefited from True’s particular skill in ‘breaking’ cattle, while True had livestock to work on his farm or in the forest, or both. As hay was often at a

\(^{50}\) Miles Diary, July 3, 1847.  
\(^{51}\) “Wonder,” OED, 2018,  
http://www.oed.com.proxy.hil.unb.ca/view/Entry/229936?rskey=K9mEYt&result=1#eid.  
\(^{52}\) Campbell Diary, 229.
premium as spring rolled around, this adaptive strategy also distributed the vulnerability entailed by hay shortage. Farmers benefitted from letting or renting animals out over the winter to neighbours or to lumber camps where they might also have found employment themselves. Most farm households were resilient because of the multidimensional occupational strategies of many family members. Farm operations also had greater flexibility and margin for error when farmers’ strategies allowed them to work the soil with their own horse or oxen as soon as spring conditions permitted.\textsuperscript{53}

Getting animals to pasture was not straightforward; the vagaries of local weather powerfully conditioned ecological change during springtime which, in combination with the multiplicity of microclimates on farms, created a patchwork landscape that farmers watched and made use of as they were able. Settlers carefully monitored open grass and woodland to determine when they could let hardy sheep or cattle out to pasture or forage, and hogs and pigs out to root. On March 31, 1824, Crawford observed, “the cattle can git through the woods for brouse,” which supplemented the hay he was feeding them. The next day he factored his remaining hay in relation to the likelihood that grass would soon start to grow on open ground; there was “not much snow in the clard land,” and he had “a bout four tuns of hay.” Conversely, in the ‘backward spring’ of 1817, Crawford reported on April 29: “the snow is so deepe in the woods that cattle cannot git thrughe it.” In addition to the effects of precipitation, cool spring temperatures could also prohibit early grazing. On May 2, 1861, the MacDonalds were sawing timbers, “but it is [al]most too cold,” Janet observed. Indeed their “sheep will not go out today at all. It freezes all day. The winds blow hard. ... It is almost a match for

\textsuperscript{53} Participating in the spring log drive could also prevent farmers from getting onto the land as soon as it could be worked.
1 May, 1837. I think it did not freeze quite so hard as it did then.” On the morning of May 3, the MacDonalds let the sheep out, but “had to get them in the barn again as soon as we could. They would soon have chilled to death.” Two years later on May 18, having reported backward weather and snow on the ground, MacDonald “did not sleep much. The sheep was out and I was uneasy for fear they would die.” Farmers shared weather-related vulnerability with animals in their households.54

The multiplicity of vulnerabilities faced by livestock living weather introduced unique combinations of risks and uncertainties into the lives of farm families. When animals suffered in some form, so too did most farmers. Human activities throughout the year were dependent upon the availability of animal labour and the health and mobility of livestock. Hence there were many factors at play when farmers decided which economic strategies to pursue in terms of raising livestock for subsistence as well as commercially. They had to consider the types of vulnerabilities to which they were willing and able to respond. Economic opportunities, from lumber camps to neighbours who could overwinter livestock for them, allowed some farmers to meet the needs of livestock while accruing certain benefits to themselves. The variability of local weather day-to-day, season-to-season, and year-to-year, influenced which animal and human vulnerabilities became most acute and when.

Fencing, Pasturing, and Planting Strategies for Nutrient Distribution

Central to farmers’ decisions about land-use were concerns about the distribution of nutrients on and around their farmscapes. Influencing those decisions were colonial laws requiring that farmers construct, move, and rebuild fences throughout the year. Motivated by the desire to make good use of the lands available to them, as well as the need to provide nutritious fodder and keep animal labourers healthy, farmers planted and harvested a variety of hay and other fodder crops throughout their farms and on accessible land nearby. They also sometimes selected breeds based on their fodder requirements, which intersected with animals’ climatic hardiness. Variable weather during growing, haying, and harvest seasons led farmers to rely on a diversity of plants and farm refuse to nourish livestock through the year.

Fencing imposed order on the patchwork landscape of farms, yet farmers’ rotating use of fields for stubble-grazing in spring and fall, and livestock pasture or crops during the growing season required them to take a flexible approach to fence construction. This strategy allowed farmers to ensure that soil nutrients were replenished through manure and the rotation of land-use, benefiting landscape and farm households alike. Stubble grazing was practiced in New England in the spring and fall seasons, reflecting continuity with a much older British grazier tradition that informed the practical knowledge of some immigrant farmers’ families. According to William Wilmot, who lived at St. Mary’s or North Devon, across the Wolastoq/St. John River from Fredericton, in the mid-19th century, local farmers typically pastured all their fields in

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55 Whitney, From Coastal Wilderness to Fruited Plain, 251-52. For British grazier tradition, see Rusty Bittermann and Margaret McCallum, “‘One of the Finest Grass Countries I Have Met With’: Prince Edward Island’s Colonial-Era Cattle Trade,” Agricultural History 90, no. 2 (Spring 2016): 173–94.
the fall. Farmers who had the seed and the knowledge to do so sometimes planted summer or winter grains mixed with hay seeds, so that after the grain harvest, grasses or legumes would provide fodder for livestock, either through mowing or direct grazing. Sheep are able to graze fields lower than can cattle because of their physiology and methods, so farmers allowed sheep and cattle to graze the same fields, or rotated them through fields separately. Farmers also set animals out to graze on stubble after the first snowfall and melt, and during mid-winter thaws. Agricultural improvers were concerned about stubble grazing and, relatedly, the customary practice of leaving fence work for springtime, as that was when livestock “show a great anxiety to seek for green food.” Farmers letting livestock out on unfenced fields in spring or fall risked challenges to future crop growth, including the exposure of grass roots to frost damage, as animal hoof-prints pitted the soil and required it be ploughed prior to the next planting.

Fencing was also necessarily a multi-season activity during the settlement period because the expansion of communities and colonial law changed the context for keeping and managing livestock. When they moved livestock, cleared new land, gained

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57 Henry Nase Diary, September 14, 1792; Winslow Diary, June 17, 1799, May 7, 1810; Crawford Diary, December 4 and 7, 1824, Crawford; Corey, *Growing up on a Farm in New Brunswick*, 28. See Brian Donahue, *The Great Meadow: Farmers and the Land in Colonial Concord* (New Haven, CT and London: Yale University Press, 2004), 273, fn 60, for reference to “pasturing rye”, as well as a reference from *New England Farmer*.


neighbours, and built roads farmers erected or moved fences. Once they learned about local freshet flood heights, farmers took fence rails off in the winter or early spring. Depending on the year, farmers might move or remove fence rails into December, and the spring and early summer after the freshet had subsided were often busy times for building and replacing fencing.  

Fence repairs required labour throughout much of the year, and busy farmers did not always close fence gaps in time. This could lead to loss of precious winter fodder and crops for human subsistence or market. In late August 1824, cattle entered Crawford’s oat field destroying the few oats the family had grown that year. Animals were perennial wanderers, and if left untended could become autonomous to the point of feral, due to the practices of grazing open commons and unfenced woodland. It could take days for farmers to round up wayward livestock. In May 1834, Campbell made two trips to return her wandering cows between May 23 and 26; on May 29, her brother Patrick finished the fence, which appeared to contain all of the cows except Jet, whom the children sought out June 13 and 14. Legislatively-mandated fence viewers ensured that fences were built to standard heights and pound keepers ensured that trespassing animals were kept in safety until their owners paid for their release. Farmers’ journals suggest that neighbours often returned one another’s wayward animals voluntarily, while

60 For example, Crawford Diary, January 13, 1824; Dibblee Diary, November 19, 1805; Miles Diary, December 4, 1849, November 8 and 9, 1842, and May 11, 1843.
61 Crawford Diary, August 22 and 23, 1824.
62 Henry Nase Diary, December 1, 1787; Monro, New Brunswick, 66. For reference to the practice of grazing wood lands in 19th century Nova Scotia, see Bittermann, MacKinnon, and Wynn, “Of Inequality and Interdependence,”12. For further references to commons practices in Europe as well as in North American colonies, see Hall, “High Freshets and Low-Lying Farms,” 210, fn 51.
63 See Campbell Diary, 146-47, with gratitude to the editors for fn 159 on 146, which drew the events of May 1834 to my attention. See also pages 121-122 and 150-151 for May 10-11, 1832, September 1-2, 1834.
others pursued litigious avenues, including a case of cow theft. Livestock of various species also wandered to give birth in a location of their choosing. Hence, ‘lost’ animals sometimes turned up of their own accord with new offspring, as when Dibblee’s cow “Mull brought Home her Calf - Four Days old,” on May 3, 1809.

Farmers with intervale land sometimes built water fences, which stretched into rivers or waterways adjacent to farms. These barriers prevented livestock from wandering over to other farms, and eased the burden of trespass law on farmers who used waterways to water cattle and keep them cool in summer heat. Miles described his construction of a water fence at his upper line on September 29, 1851: “I am in the water to the knees- hawled cedars & driftwood- make a good days work.” Farmers generally removed water fences before the Wolastoq/St. John River froze, otherwise the seasonal forces of ice and water would tear them out. This meant that in many places along the River farmers rebuilt fences anew the following year. As well, shorelines may have been fenced to prevent livestock trespassing via water, including by animals pastured on islands who occasionally swam ashore.

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65 For another example, see Winslow Diary, November 24, 1803.

66 MacDonald Diary, June 22, 1861. For trespass law, see Hall, “High Freshets and Low-Lying Farms,” for example pages 206-08.

67 For example, Crawford Diary, August 6, 1817; Winslow Diary, October 21, 1803.
Fences on land and water were vulnerable to damage during storms, and no fence was animal-proof all the time.\textsuperscript{68} In a series of attempted reconciliations between the concerns of livestock farmers, crop farmers, and landowners with riverbank and island properties, the colonial assembly changed related provincial statutes over time. One adaptation to the unique contexts and concerns in different counties was to allow sessional courts to set regulations at the county level in response to local petitions and committees.\textsuperscript{69}

Pasturing livestock off the farm or rotating them through farm landscapes facilitated diverse forage for animals and allowed farmers to grow more crops for human and animal consumption. Another benefit of these practices was that farmers were often able to literally spread the benefits of manure. The year after Henry Nase began building his farm at Mount Hope, he drove his oxen home from the Hampstead Valley on December 1, 1787. Over the rest of the journal, H. Nase made four other references to driving cattle to the Valley, anywhere between April 18 and May 30, with the drive getting progressively earlier as the years went on.\textsuperscript{70} Winslow used the colonial system of pasturing cows on islands in the Wolastoq/St. John River, shipping cattle and rams to one of the River islands after the crop of hay had been harvested and protected by fencing in the fall.\textsuperscript{71} Miles’ son Odber and Alec Boone, who worked for Miles, each grazed cattle on Middle Island opposite Maugerville.\textsuperscript{72} Driving animals to pastures off

\textsuperscript{68} See for example Crawford Diary, December 13, 1829.
\textsuperscript{69} Hall, “High Freshets and Low-Lying Farms,” 209, 213-15.
\textsuperscript{70} Campbell also reported driving cows and oxen to distant pastures at various times of the year; Campbell Diary, 78, 164, and 178, November 17-18, 1828, September 18, 1835, and November 5, 1836; page 178 includes an entry about herding geese on November 3, 1836. Note that cattle are oxen, and some farmers used the terms interchangeably, while others used one or the other.
\textsuperscript{71} Winslow Diary, August 15, 1799.
\textsuperscript{72} See Miles Diary, October 25, 1846, October 11 and November 16, 1849, and November 8, 1850.
the farm freed up farmland for food crops for human and animal consumption, including winter grains. Off-farm pastureland was often part of a formal or informal “commons.” While colonial law set aside some lands “for public use,” justices of the peace in each county were authorized to rent out said lands, and the fact and process of rental entailed the closure of open, if controlled, access by all members of the public within a particular county. Animals who were pastured on more than one plot over the course of a season likely had access to more varied sources of nutrition, and may have entered the barn for winter in a healthier and more resilient state. While Crawford harvested marsh hay on Grassy Island, he appears to have kept his animals on the mainland, pasturing cattle and sheep at his extensive upper lot, part of which stretched along the River and included woodland as well as meadow. In 1815, 1816, 1824, 1830, and 1831, he fenced the cow yard in the early spring or let cows out into a new yard, suggesting that he moved them to fertilize different plots of land, in addition to hauling manure to fields and meadows. Crawford grew crops in the cow yard in 1824, including corn, which benefited from the high nitrogen content of the well manured yard, while the beans he planted there helped to make the soil nitrogen available to the corn and potatoes.

73 “An Act to enable the Justices of the Peace of the several Counties in this Province for the time being to receive for public uses Grants of Land lying in their respective Counties, and to regulate the Commons belonging to the several Townships or Parishes within the same,” Acts of the General Assembly of Her Majesty's Province of New-Brunswick passed in the year 1786 (St. John: Christopher Sower, 1786), 26 Geo III, pp. 86-87; “An Act to explain an Act, intituled ‘An Act to enable the Justices of the Peace of the several Counties in this Province for the time being to receive for public uses Grants of Land lying in their respective Counties, and to regulate the Commons belonging to the several Townships or Parishes within the same,’” Acts of the General Assembly of Her Majesty's Province of New-Brunswick passed in the year 1848 (Fredericton, NB: John Simpson, 1848), 11 Victoria – Ch. 26.

74 Crawford Diary, May 3, 1815, April 29, 1816, and June 4, 1824. As well, on May 4, 1830, he began “to put the Cows in the new yard.”

Farmers were concerned about livestock nutrition and pursued feeding strategies and breed selection that complemented their resource-base and approach to farming in the Wolastoq/St. John River Valley. Depending on the breed and the length of the season, cows needed one to two tons of hay to overwinter successfully. One to two acres of land were required to grow two to two and a half tons of hay, depending on the fertility of the soil and the type and quality of the hay crop.\textsuperscript{76} According to Peter Fisher in 1825, the uplands produced “one and a half tons [of hay] per acre, and the intervale from two to three tons.”\textsuperscript{77} Hence, backland farmers raised Hardy black cattle or horned cattle, which required less fodder and could be ‘wintered well’ on “[a]bout a ton of hay, with straw.”\textsuperscript{78}

When Johnston conducted interviews with New Brunswick farmers, he heard conflicting responses about their experiences with different breeds. Some farmers promoted Ayreshires as the cattle breed best suited to New Brunswick’s climate while also having the genetic potential to yield good milk and beef.\textsuperscript{79} Others argued that imported breeds of beef cattle, milk cows, and horses did not necessarily perform better than naturalized or native breeds, in part because they did not share hardiness to the northern climate and long winters. Additionally, as Nathaniel Hubbard observed, native

\textsuperscript{76} Hall, “River of Three Peoples,” 301; Whitney, \textit{From Coastal Wilderness to Fruited Plain}, 250. See Johnston, \textit{Report on the Agricultural Capabilities}, 10-11, for a description of hay production varying from 1 to 2.5 Tons per acre, depending on the quality of the land. He claimed that 1.5 tons could grow on second-rate upland, which he estimated was the largest class of land in the province.

\textsuperscript{77} Fisher, \textit{The First History of New Brunswick}, 32.

\textsuperscript{78} For the reference to black cattle, see MacGregor, \textit{Historical and Descriptive Sketches of the Maritime Colonies of British North America}, 61. I gained insight into the hardiness of this historic black cattle breed and heard an account of their survival in the highlands of Cape Breton in the early 20\textsuperscript{th} century in personal communication with Rusty Bittermann on July 12, 2016. For the reference to horned cattle, see \textit{Practical Information to Emigrants}, 42.

\textsuperscript{79} “Some families” of the Ayreshires had both of these qualities; Johnston, \textit{Report on the Agricultural Capabilities}, 66.
breeds did better “on what we farmers call stock hay” as opposed to merchantable hay, while others among “the middling class of farmers” were concerned that certain imported breeds “require one third more hay.” 80 Johnston joined some New Brunswick farmers in recommending the cross-breeding of native with imported breeds in an attempt to perpetuate local adaptiveness, including climatic hardiness. In addition to observing the interdependence of livestock, weather, and local ecosystems, some less prosperous farmers highlighted the cultural and economic differences that led them to choose breeds disparaged by improvers, contrasting the approaches of ‘book farmers’ with their own practical knowledge. 81

Farmers’ desire to keep livestock healthy throughout the year led them to plant and seek out nutritious fodder for the animals they sought to raise. Many farmers planted hay crops, including Timothy grass and clover, a legume that diversified livestock nutrition. Some farmers planted hay on intervale land, which would have provided marsh hay for pasturing or mowing. 82 As early as 1654, British colonials on mainland North America expressed concern about the nutritive value of marsh hay and wild grasses. Settlers in New England were concerned that local forage was leading to the ill health of their livestock. In the 19th century, members of agricultural societies and other farmers estimated that “the native saltwater and freshwater meadow hay generally had only a third to a half the value of upland or English hay.” 83 One of the first priorities of

81 White, Speed the Plough, 61-63, including a jab at an agricultural society for awarding a premium to a man who proposed to improve breeding stock with a gelding! Sandwell, Canada’s Rural Majority, 82, regarding the diverse responses of farmers to improvers’ propositions.
82 See for example, Henry Nase Diary, November 8, 1788.
83 Quoting Whitney summarizing colonists, From Coastal Wilderness to Fruited Plain, 251; see 251-55 for colonial assessments of the value of different types of hay, evidence about animals’ ill health, the physiology of North American grasses, and the encouragement of European grass husbandry.
the earliest agricultural societies initiated in British North America in 1789 was “the improvement of pasture grasses.” Yet various observers lauded marsh hay, including Christopher Atkinson, writing to attract emigrants to New Brunswick in the early 1840s. Atkinson recognized that although the intervale lands of the Oromocto were too marshy to settle, they produced useful grasses for livestock in the event that fodder crops failed. Most of the farmers of focus emerged from the tradition and practice of preferring so-called English hay crops, although it was Flemish clover that had been a driver of the British agricultural revolution. Crawford recorded purchases of agricultural society clover seed by a number of local men, including himself. Still, the need to ensure sufficient fodder for overwintered animals led many farmers who planted hay crops to harvest wild grasses and rushes from islands, marshes, swamps, and the intervales of creeks, and to reap available grasses and plants from small patches of ground on their farms. Miles mowed herbaceous white weed and bull’s-eye on his farm.

84 Gorham, “How The Swede Turnip Came Into New Brunswick.”
85 Atkinson, A Historical and Statistical Account of New-Brunswick, 33-34. Settlers on Prince Edward Island appreciated the value of marsh hay, which was used to overwinter most of the cattle population of the Island at the turn of the 19th century. See Holland, quoted in Bittermann and McCallum, ““One of the Finest Grass Countries I Have Met With,”” 178. Donahue, The Great Meadow, 171, notes that meadow hay in Concord was a dependable food source, if it did not produce the highest quality of fodder, or the highest yield. See Matthew Hatvany, ““Wedded to the Marshes’: Salt Marshes and Socio-Economic Differentiation in Early Prince Edward Island,” Acadiensis 30, no. 2 (Spring 2001): 48-51, for a discussion of how access to marsh hay was a factor in a family’s socio-economic prospects. Backland farmers were thus challenged by a host of interdependent economic and ecological factors, including the amount of time it took to clear inland forest to make pasture or hay fields, the lower price of meat these farmers received when they sold livestock in a glutted market in the late fall, and the ill health of livestock that overwintered without adequate nutrition.
86 Donahue, The Great Meadow, 166.
87 Crawford Diary, 1828, 1829, 1830, and 1831. He also purchased flax seed from the Society.
88 Miles Diary, July 1 and 8, 1848, July 8, 1851, July 9, 1853, July 11, 1854. H. Nase harvested hay from the intervale of the Mistake Creek in 1786 and 1787, which was likely native grass; Henry Nase Diary, September 1, 1786, September 27, 1787. For the persistence of native grasses in inland locations (including forests and meadows) and along creeks and streams, see Hall, “River of Three Peoples,” 304, and Fisher, History of New Brunswick, 32. Hall lists the native species and notes that “[s]ome of these
Farmers with access to islands in the Wolastoq/St. John River watershed harvested hay as participants in a comanagement system that allowed farmer-proprietors to account for seasonal weather and its variability year-to-year. Historian Jason Hall argues that the predominately community-based comanagement system emerged out of the developing local knowledge of colonial administrators who also relied on the Wolastoq/St. John for farming, milling, and lumbering. These elites recognized that the variability of the freshets and hay seasons required a flexible system of local management. They enshrined this knowledge in the 1787 Act “to Authorize the respective Proprietors of certain Islands in the River St. John, and other Rivers in this Province, to make rules and regulations for their better improvement and cultivation.”

The local discretion within this system permitted lot owners to reflect the nature of local weather and related human activity in their regulations. As Hall notes, “The Middle Island resolutions for 1800 stipulated that if landowners cut hay later than usual, mowed twice, or had a poorer than average crop, they could adjust the number of livestock allowed on the island or restrict sheep pasturing to enclosures on an individual’s land.”

Winslow hayed on an island as well as pasturing animals there, and was likely a lot owner, as title to islands or their lots was often granted to elites. As a Justice of the Peace, Crawford was involved in the management of Grassy Island, keeping records of species such as Blue Joint help stabilize wet soils from erosion and continue to compete well with introduced Eurasian species along the St. John.” Monro did not distinguish between white weed and bulls-eye in his list of herbaceous plants of New Brunswick; New Brunswick, 55.

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89 For the discussion herein, see Hall, “High Freshets and Low-Lying Farms,” 195–219, quote 211. See also “An act to Authorize the respective Proprietors of certain Islands in the River St. John, and other Rivers in this Province, to make rules and regulations for their better improvement and cultivation,” Acts of the General Assembly of His Majesty’s Province of New-Brunswick passed in the year 1787 (Saint John, NB: J Ryan, 1787), 27 Geo III, Ch. 2.
lot rentals between 1825 and 1834, and haying on the Island himself in most years.\textsuperscript{90} Miles harvested hay on Middle Island and recorded further evidence of ‘comanagement’ in the form of a standoff between two groups of men over whether an unauthorized party could harvest grain he had sown on the Island.\textsuperscript{91} Collaborative management of island fields, whether through formal or informal mechanisms, permitted farmers to safeguard the persistence of island ecosystems and thus contribute in some measure to the environmental integrity of these lands for future generations. Farmers continue to practice comanagement on certain islands in the Wolastoq/St. John River today.\textsuperscript{92}

The quality of pastures changed over the course of the 19\textsuperscript{th} century, requiring that farmers adapt their seasonal pasturing strategies to new conditions. More lands were cleared for settlement and farm expansion, and lush pasturelands like the intervales of the Hampstead Valley were no longer accessible to farmers living elsewhere.\textsuperscript{93} As farmers’ land clearing and cropping strategies altered the ecology and productivity of the soil, grazers changed the species and quality of grasses and other forage in the fields and woods, and on the Wolastoq/St. John River’s islands and banks. In an effort to stabilize riverbank vegetation and soil, the assembly passed laws in 1794 and 1795 requiring that farmers fence waterfront properties in the parishes of Maugerville, Sheffield, Waterborough, and Lincoln. The law pertaining to the first three parishes prohibited riverbank grazing between March 10 and November 10, a swath of time indicating first-

\textsuperscript{90} Hall, “High Freshets and Low-Lying Farms,” 216. Crawford noted settling with the treasurer for the amounts paid to him, which one year included barter in the form of candles (February 19, 1819). He did not leave records of lot rentals for 1829.

\textsuperscript{91} Miles Diary, August 25th 1843. The groups agreed that Mason could harvest half the grain.

\textsuperscript{92} Hall, “High Freshets and Low-Lying Farms,” 195-219.

\textsuperscript{93} For example, see Monro’s tables of population growth in Hampstead and other communities in Queens County between 1840 and 1851; \textit{New Brunswick}, 156-57.
hand experience with the variable timing of spring and fall freshets. After these statutes were re-enacted a number of times, they became perpetual in 1816.94 Yet even with administrative measures, the River’s intervale were not as productive at mid-century as they had been in former decades.95 Rotating livestock through locations that would be used again for cropping or grazing, and spreading dung and compost on fields, meadows, and gardens, in some measure closed the nutrient cycle between ruminants and the land that nourished all members of farmers’ households. Yet these practices alone could not prevent the depletion of the land over time. Grazers compacted the soil, which affected its ability to hold moisture, and exacerbated erosion and runoff, as did their munching of the roots and stems of shrubs and young trees. The River Valley’s grasses had not co-evolved with AfroEurasian livestock, so the presence of livestock constituted a disruption to the rhythms and processes of the local flora ecology.

Changes in groundcover also contributed to the leaching of the glacial legacy of the River Valley’s soils.96

94 Other legal initiatives to protect low land and Island banks and soils include the striking of a committee in 1800, including Edward Winslow, to devise regulations protecting the islands and lowlands of York County. See Hall, “High Freshets and Low-lying Farms,” 216. See also “An Act for preserving the bank of the river Saint John in front of the parishes of Magerville, Sheffield and Waterborough,” Acts of the General Assembly of His Majesty’s Province of New Brunswick passed in the year 1794; “An Act for preserving the Bank of the river Saint John, in front of the Parish of Lincoln in the County of Sunbury,” Acts of the General Assembly of His Majesty’s Province of New Brunswick passed in the year 1795.

95 Johnston, Report on the Agricultural Capabilities, 80.

96 Soil ecology interacted with local weather dynamics, as they interacted in the water, carbon, and nitrogen cycles. Microorganisms also played a role, for example, facilitating clover’s nitrogen capture and fixing in the soil. For the impacts of livestock on colonial ecologies, see Virginia DeJohn Anderson, Creatures of Empire: How Domestic Animals Transformed Early America (New York, NY: Oxford University Press, 2006), 116; Alfred W. Crosby, Ecological Imperialism: the Biological Expansion of Europe, 900-1900 (New York: Cambridge University Press, 1986); and Bittermann and McCallum, “‘One of the Finest Grass Countries I Have Met With,’” 177. For leaching, see Whitney, From Coastal Wilderness to Fruited Plain, 253. For the co-evolution, or lack thereof, of grazers and grasses, see Donahue, The Great Meadow, page 95; and Tim Flannery, The Eternal Frontier: An Ecological History of North America and Its Peoples (Melbourne, Australia: The Text Publishing Company, 2001), 320.
Within this changing ecological context, farmers could exert a measure of control by planting hay and other fodder crops, though they faced weather-related vulnerabilities during harvest and sometimes storage and transport. As with the timing of harvest for all other crops, farmers faced considerable variability in when the haying season began, as well as in its length, from year-to-year. The farmers of focus in this study began haying anywhere from early July to mid-August. The season could extend into October, although most of the farmers finished haying before mid-September. Haying began as early as July 9 (1814) on the Crawford’s farm, and as late as August 5 (1816), and the season could be from 4 to 12 weeks long, although it often spanned 7 weeks. The earliest that Miles recorded haying was June 30 (1846), while his latest start date was July 25 (1843). His haying season could be anywhere between 5 and a half to 9 weeks long, although it was often 6 to 7 weeks long.

The start date of hay harvest was largely determined by how local weather had affected the maturation of the crop over the spring and summer, while the duration of the haying season was dependent on the number of workers, number and location of fields, and competing responsibilities on the farm. Farmers often hosted a mowing frolic and reciprocated with support for family and neighbours who did the same. Community members supported widows through haying frolics as well. Frolics were particularly important in years when a combination of wet and dry weather placed pressure on farmers to get hay into barns and storage sheds or hives expediently. “Hives” were mounds, covered with an insulating layer of sod, straw, or similar material, to protect the

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97 Crawford Diary.
98 MacDonald Diary, June 28, 1858; Vickers, “Competency and Competition,” 3-29, regarding the coexistence of communal morality with self-interest in practices of mutual aid, including frolics.
hay from spoilage and permit easy retrieval. Once it was cut, hay usually needed three to four days of dry weather to “cure” before it was gathered for hiving or storage; a week of dry weather ensured optimum curing. The weather repertoire of the Wolastoq/St. John River Valley includes wet summer and autumnal seasons, which often posed challenges for haying. Winslow delighted on August 4, 1799, on the third day of rain, “[m]uch gratified that I have no hay exposed. Generally - between 30th July and 7th August weve a long storm of rain. Vide journals for six years past.” Yet, precipitation is not so predictable as this, and on August 10 he “finished mowing on the island. Hay is all spread. A gret rain at night.” Two days later, the hay was “much damaged. All day employed turning etc.” MacDonald recorded diverse conditions that challenged haying, including September 2, 1862 when it ‘rained and blowed’ very heavy and her sons had to leave the marsh having done nothing. As well, on November 9, 1864, they fetched a load of hay with the scow but “the wind blowed so hard they left it there.”

Hay could lose its nutrition if it was stored too green, including if late season moisture caused grass seed heads to continue to grow, even as the potential of frost increased; such hay was more susceptible to rot. While farmers fed out rotting hay in lean years, their livestock suffered. Hay crops could also lose their nutrition if they were allowed to mature for too long, which meant that conditions during growing and harvest seasons could interact to create urgency behind the timing of harvest.

99 Crawford Diary, February 14, 1816. In his annotations to the David Ross diary from Prince Edward Island, Hatvany explains that farmers used marsh hay to thatch stacks of produce in their fields if they did not have storage space indoors; *Diary of David Ross: 1836-1882*, 8.
Haying in multiple locations could extend the haying season and sometimes allowed farmers to spread out the risks of wet weather, storms, and other weather-related vulnerabilities during growing and harvest seasons. Campbell’s family harvested hay from two or three of her brother’s farms, at the red bank, one year each from “the park,” “the little meadow,” the hill, and perhaps also “up the Tay.”103 Similarly, when he harvested hay, Winslow typically mentioned mowing on the nearby meadows and fields first, the Island next, and the hill last. Occasionally, he harvested on the hill before the Island. The microclimate of the hill would have been affected by elevation and slope, including the direction that the slope was facing; hay crops might have taken longer to mature there.104 Hay crops on islands and intervales were also the most vulnerable to damage by storms, which sometimes toppled stacks or pitched hay into the rushing water. As well, rising freshet floods in the fall dispersed and damaged hay or carried it away entirely.105 While farmers occasionally used scows to move hay from islands in the fall, it was most common for them to haul hay home across the ice once waterways had frozen.106 The hauling of heavy loads across ice that may have been newly formed and was susceptible to thawing introduced further vulnerabilities to farmers seeking to secure the crop. Crawford typically recorded the beginning of the hauling season for heavy loads of hay, as evidenced by the date people initially hauled from the island,

103 See Campbell Diary, 163, 206, 214, July 31, 1835, August 30, 1839, August 19, 1840; for “up the Tay” see 187, August 30 and September 2, 1837.
104 Winslow farmed on the West side of the Wolastoq/St. John River, and may have had access to slopes facing east and south.
105 Winslow Diary, December 1-20, 1803; MacDonald Diary, December 2, 1862.
106 This is a generalization based on the journals utilized in this study; MacDonald Diary, November 8 and 9, 1864.
signaling the importance of this task.\textsuperscript{107} Relatively low-friction transport on well-frozen waterways was the optimal method for moving hay and other heavy loads.

In addition to harvesting hay crops – including grasses, legumes, marsh hay, and rushes – farmers sought to provide nutritious fodder for livestock by supplementing their animals’ diets. In addition to clover, turnips were one of the biological engines of the British Agricultural Revolution. Both clover and turnips substituted for the fallow period in the medieval three-crop rotation system. Proponents argued that turnips yielded more food, and more nutritious fodder, from the same land as compared to hay crops. In 1793, Swedish turnips were introduced to British North America by Lord Dorchester and his brother Thomas Carleton, lieutenant-governor of New Brunswick, as a reliable livestock fodder that would keep well into the spring season of scarcity.\textsuperscript{108} Farmers fed turnips, turnip and carrot tops, potatoes, apples, cornstalks, buckwheat straw, and other organic material to livestock who could turn it into productive energy. Finally, oats were the most reliable grain grown in New Brunswick, and were a staple of farm households; livestock and people ate them.\textsuperscript{109} Oats provided the protein and fibre that horses needed, as well as having a volume that allowed horses to recognize they were full. This helped farmers to prevent intestinal illnesses in horses including colic.\textsuperscript{110}

Farmers had to contend with so many factors beyond their control that it was adaptive to practice flexibility in their approach to fencing, diversity in their choices about what to grow, and cooperation with neighbours to secure wandering livestock or

\textsuperscript{107} For example, Crawford Diary, December 16, 1820, and December 26, 1823.
\textsuperscript{108} Gorham, “How the Swede Came to New Brunswick.”
manage a timely hay harvest. While farms were not a closed system, successful farmers were able to maintain high levels of nutrients in the soils upon which they relied, while also harvesting the nutrients required for their household throughout the year. Over time, the methods of colonial farming exhausted soils. The adoption of chemical fertilizers in the mid-to late 19th century only staved off farmers’ awareness of the depletion of nutrients in soils as well as in crops.

Feed and Food Preservation and Livestock Overwintering

Farmers ensured that all members of their households would be nourished throughout the year by careful husbanding of resources. This included the use of diverse methods for preserving different kinds of meat, both domestic and wild, as well as rationing feed slowly enough to make it last as long as possible while not compromising animal health. Multiple types of storage meant a better chance to prevent food spoilage. Keeping livestock in good health meant the human members of the household might maintain access to eggs and dairy longer into the season, and draft animals could begin work as soon as possible in the springtime. Less prosperous farmers, and often farmers in the early stages of settlement, enjoyed neither a diversity of winter meat, nor the ability to overwinter livestock in optimal condition. Nonetheless, by supplementing the food they could raise with wild fish, fowl, and ungulates, as well as wild plants, these families were often able to eke out a living across the seasons.

In the fall, farmers fattened animals for slaughter, butchered them, and processed their bodies in various ways, depending on whether they were for home use or sale. The
heavy tasks of slaughtering and butchering were often a collaborative activity; together
with five men Miles slaughtered five pigs and two hogs in late October 1848. The
butchering process included the separation and rendering of various grades of tallow or
fat, which could then be melted into candles, used for cooking and soap-making, and
sold or gifted to family and neighbours.¹¹¹ Once animals were butchered, farmers
employed a variety of methods to preserve their meat and other parts. Fresh meat was
often pickled in brine, using a recipe like this one from Miles’ journal: “Pack down the
329 pounds [lbs] of hams – put on 9 pounds sugar 1 quart Molasses ¾ lb salt petre.”¹¹²
Pickled meat was sometimes further preserved by smoking, and many farmers built their
own smokehouse or had access to one within the community.¹¹³ Farmers also stored
fresh meat if they didn’t sell or distribute it to family members immediately. The
Dibblees stored fresh meat “in the Garret,” which would not have been insulated
whether it was at the top of the house, barn, or shed, and packed slaughtered fowl in
snow.¹¹⁴ Many farmers froze meat in their oat bins in winter, where it remained cool
and safe for human consumption for as long as the frost held, free from decomposition
through exposure to open air.¹¹⁵ The MacDonald men cut ice from the race by their
mill, usually in March or April, which they may have used to augment the cool

¹¹¹ For example, Miles Diary, January 19, 1854; Campbell Diary, April 4, 1834. Leather was another
important by-product of slaughtering livestock, and in their journals, farmers often recorded taking it to a
tanner to be tanned on shares. This may have meant that the tanner kept some of the finished leather. See
also quote from Daily Gleaner November 18, 1937, in Nashwaak Bicentennial Association, And The River
Rolled On, xix. When the sons of Crawford, Miles, and MacDonald made or repaired boots and shoes,
they would likely have used their own leather. Having their own leather supply when they sought
cobblers’ services likely also defrayed some of farmers’ expenses. According to the Gleaner quote
referenced above, a particular type of leather was required for good soles, and people may have purchased
this and taken it to the shoemaker.
¹¹² Typescript of Thomas Miles Diary, December 4, 1844.
¹¹³ Dibblee Diary, April 14, 1817; Ashton, “A Plan for All Seasons.”
¹¹⁴ Dibblee Diary, December 10, 1817, December 8, 1819.
¹¹⁵ Cecilia Boyd and Theresa and Clarence Pickard, personal communication, August 27, 2016.
conditions of the cellar where they stored their milk.\textsuperscript{116} They may also have used ice stored in sawdust to keep meat supplies frozen, as they needed a new source of cooling as spring warmth began.\textsuperscript{117}

A diversity of protein sources, butchered at different times and preserved in different ways, created flexibility in farmers’ household food supplies. Catching, preserving, or procuring fish also helped accomplish this goal. Salted and smoked fish helped keep farm households nourished for the hard physical labour of woods work, snowplowing, and road clearing during the dead of winter.

While some farmers butchered animals and sold the meat throughout the year, the late fall was typically the period of greatest butchering and meat preservation activity. Salted and smoked pork and beef were durable sources of protein that farm families consumed over the winter, sold or bartered, or distributed among family and friends. The Miles, Dibblee, and MacDonald families killed hogs in late fall and early winter, and typically pickled the meat in addition to occasionally smoking it; the MacDonald’s always made sausages. Crawford slaughtered and sold livestock fresh throughout the year, as well as killing his hogs in late fall or early winter. Yet he never spoke of preserving them, and often appeared to sell them fresh in town. It may be that Crawford was able to sell his pork to butchers who paid a higher price than that paid in the

\textsuperscript{116} MacDonald Diary, November 6, 1864.
\textsuperscript{117} Bremner, \textit{The Country Diary of Samuel Crawford}, 12 n. 2; Bird, \textit{Through the Eyes of Mary}, 279.
Many farmers sold their livestock – live or butchered – at market in fall, as they needed to lighten their foddering responsibilities for the winter.\(^{119}\)

Farm families that were prosperous enough to take advantage of higher prices in the late winter and spring could afford to leverage the effects of seasonal weather on the market. Most springs, for example, the Crawfords sold young calves as veal in Saint John. The higher frequency of their trips to town in spring and fall suggests that cusp season travel conditions did not pose enough of a challenge to encourage alternative arrangements.\(^{120}\) The interaction of weather with land-, water-, and icescapes did sometimes entail longer or more complicated trips at these times of the year.

Farm families supplemented meat and fish with eggs, the flesh of domestic fowl, wild fowl and ungulates, and dairy products. In the dead of winter, the only available eggs from hens and geese were likely those that farmers had saved or procured and chilled in cellars or root houses. Eggs were preserved by surrounding them with coarse salt, sawdust, or another insulation medium, or brined and stored in crockware.\(^{121}\) While farm improvement literature suggested that warm, well-nourished hens would lay throughout the year, Crawford’s journal revealed that year-round laying was unlikely, even on relatively prosperous farms.\(^{122}\) In the year 1826, his family sold five dozen eggs

\(^{118}\) For reference to the higher prices charged at the butcher’s market as compared to the “country market,” see Johnson, *Report on the Agricultural Capabilities*, 37; for an example of a high price offered to a prosperous farmer by a butcher, see Miles Diary Microfilm, January 2, 1845.

\(^{119}\) Even when a family was prosperous, lightening overwintering responsibilities in late fall was advantageous, as it allowed farmers access to ready cash or barter privileges so they could procure flour and other required items, during winter. For example, see Crawford’s entries for October 28, 1812 and November, 1824.

\(^{120}\) Refer to page Table 6.1 on page 231 herein for details about the Crawfords’ transportation patterns.

\(^{121}\) For the technique of using coarse salt, I am grateful to Cecilia Boyd and Mary Hall for our conversation August 27, 2016; for brine and crocks, see Ashton, “A Plan for All Seasons.”

in January. In all other years for which he left detailed records, the family generally sold eggs from February or March to September or October.\textsuperscript{123} In addition to harvesting eggs, farmers picked goose feathers for down-filled pillows, quilts, and feather mattress ticks.\textsuperscript{124} They also slaughtered fowl in the late fall or early winter for sale, raffles, or to provision the upcoming social season. If they overwintered fowl, the farmers of focus sometimes recorded when geese began to lay, marking the return of a protein source that could also diversify home baking.\textsuperscript{125}

Wild geese and other fowl, as well as venison and moose, were an occasional part of farm families’ foodstuffs. On April 17, 1817, Crawford observed that “there hes ben moor geece Killd this spring then ever I knew in one season.”\textsuperscript{126} The crop failures of the year before increased the significance of wild food, as Dibblee evidenced while waiting for the return of the salmon. Dibblee also noted his sons’ wild fowl kills in addition to their trapping, which appears to of been predominantly for furs.\textsuperscript{127} The Crawfords often shot pigeons, which were a crop pest, and sold the meat.\textsuperscript{128} Settlers in the frontier stages of land clearing and farm building, those with fewer resources or livestock, those living adjacent to extensive woods, and those who were skilled hunters or preferred wild meat,

\textsuperscript{123} Crawford left detailed monthly records from 1824-1832, with sporadic details for earlier years. While the Crawfords themselves may have consumed a small quantity of eggs that hens laid during the winter months, multiple farmers made reference to the first eggs of spring in their journals.\textsuperscript{124}Campbell Diary, 160, fn 196.\textsuperscript{125}Campbell Diary, 82, March 19, 1829.\textsuperscript{126}Henry Nase Diary, December 1, 1787. Miles and MacDonald made infrequent references to wild fowl kills by their sons and sons-in-law.\textsuperscript{127}Dibblee Diary, June 18, 1817; “Caught a small Salmon - the River has Fallen so as to make Good Eddies yet very Few Fish - never so few before, Which is much to our Disadvantage, as Provitions are so Scarc and Dear.”\textsuperscript{128}Crawford Diary, August 11, 1831.
may have relied more heavily on hunting. For example, Crawford noted three successful
deer hunts in his early years of homesteading.\textsuperscript{129}

Farmers had to factor and manage the seasonal availability of fresh dairy as part of
their overall strategy to feed the household. As with egg-laying by hens, cows’ lactation
flows change over the course of the seasons.\textsuperscript{130} A cow’s rate of lactation depends on
whether or not she is pregnant or feeding a calf, her body weight, nutritional intake,
overall health, and local weather and time of year.\textsuperscript{131} On January 7, 1843, Miles
observed “More snow about the house & barn than I ever saw before. Cows fail much in
their milk.”\textsuperscript{132} Low milk production in the dead of winter was common, and when cows
were expecting, farmers let them “dry” until their calves came.\textsuperscript{133} Farmers rarely made
reference to dairying in their journals, perhaps because it was so much a part of the
mundane daily rhythm that it was not considered worthy of note, or because it was
generally taken care of by members of the opposite sex or hired help. Farmers
occasionally recorded weaning calves, a significant activity because it meant humans
could then use all of the milk themselves. Campbell weaned calves in the summer and
accessed dairy through the fall. She was able to preserve some milk in the form of
cheeses that she made between late August and early October. At some point in the

\textsuperscript{129} Crawford Diary, August 9 (year unclear; the order of this entry in relation to others on microfilm
suggests that it was after 1801, and before 1810).
\textsuperscript{130} Monro claimed that the dairying season lasted for about four months, which does not take into
consideration the idiosyncratic needs and choices of farmers; Monro, New Brunswick, 61. Johnston,
Report on the Agricultural Capabilities, 34-35, 38, provided several enumerations of the length of the
dairying season, including four farmers who recorded a six month season, and one who recorded a season
of seven months. For a contrast between the milk production of English cows and cows of the colonial
Chesapeake, see Anderson, Creatures of Empire, 112.
\textsuperscript{131} John Moran, “Managing Cow Lactation Cycles,” The Cattle Site, May 18, 2015,
\textsuperscript{132} Numerous previous days had been cloudy with some warmth.
\textsuperscript{133} Campbell Diary, 159, fn 193.
winter, Campbell shifted to a reliance on family or neighbours to supply her household with butter and had to wait for the cows to calve before she could access milk again. In 1835, she had milk to begin churning again on April 18. 134 That year she let the milch cow Jet feed her calf for two months before weaning it August 10. Farmers likely decided to wean based on a variety of factors, including number of dairy cows, relative importance of dairy to household economics, and the weight gain of the calf. 135

Records of butter production and sale indicate the seasonality of dairying, with some variation from farm-to-farm and year-to-year. 136 Miles used butter as barter, selling it in town and gifting it to family members through the seasons – except summer – until 1854. His cows typically gave birth between March and June, suggesting that he staggered the milking capacities on the farm to allow at least his immediate household a supply of dairy over the summer when it was most susceptible to spoilage in transport. Butter stored in cellars was further insulated in earthenware crocks or firkins. In 1854, Miles referred to a scheme whereby he and John Howe, who also worked on his farm, had shares in a dairy cow. Howe sold the butter in town between May and August, and the men split the profits. It is likely that the cow itself belonged to Miles and that he incorporated Howe’s labour, and the dairy profits, into his larger tally for Howe. Thus,

134 There were scant references to dairying in Campbell’s journal, and in the years when she mentioned weaning, she did not mention the birth of calves.
135 The one record from Crawford about weaning was also in August, and he made no references to drying any of his cows that year. See Crawford Diary, August 31, 1810; September 18, 1813; January 28, 1833.
136 As with egg production, the Crawford family shifted between 1824 and 1825 to a much lower reliance on butter sales. Crawford referred to horned cattle numbers in 1829 and again in 1832, so it is possible that a shift in breeds occasioned the shift in production.
while the arrangement was mutually beneficial and kept goods and systems of exchange local, it also ramified the class distinction between the two men.\footnote{137}

The commercial production of durable protein was an economic strategy that farmers might adopt or abandon in relation to local weather over time. The Crawfords adapted their economic strategies after the poor harvests and challenging seasons of the 1810s.\footnote{138} Their butter sales almost halved between 1818 and 1821, from 583 lbs to 299 lbs, and generally declined precipitously after that, not returning to triple digits after 1824. The Crawford’s egg sales almost halved from 1822 to 1823, and did not return to their previous height (dozens of eggs in the triple digits), indicating that the family was shifting its production priorities. During the same decade, they increased their stock of sheep, which are generally easier to overwinter than cows, in part because they do not require large stocks of hay.\footnote{139} It could be that the vulnerabilities and uncertainties the family faced in the 1810s, which dendrochronologists categorize as the coldest decade in the northern hemisphere over the last 500 years, catalyzed multiple changes in the Crawford’s subsistence and commercial strategies.\footnote{140} As Crawford referred to horned cattle numbers in 1829 and again in 1832, it is possible that a shift in breeds was related to the move away from dairy.

\footnote{137 See footnote 126 in chapter 3 herein regarding the inequality inherent within various types of colonial labour arrangements.}
\footnote{138 For a breakdown of the weather at Long Reach during this decade, see Piper, “Backward Seasons and Remarkable Cold.”}
\footnote{139 See Henry Stommel and Elizabeth Stommel, \textit{Volcano Weather: The Story Of 1816, The Year Without A Summer} (Newport, 1983), 61.}
To ensure foodstuffs for the four-legged members of their households, farmers tailored foddering schedules to the needs and abilities of their livestock year-to-year. Farmers generally began to fodder livestock they did not plan to slaughter between mid-October and late November. Like the harvest season itself, foddering was often a stop-and-start endeavour, as the first snowstorm could blanket fields for but a short time, after which animals could graze for another month or so before it was time to put them up in barns or hovels. Crawford, Miles, and Dibblee made diligent note of when they began to fodder, and often tracked foddering through sporadic entries across the season. Entries that tracked what they fed out developed their capacity to gauge how much hay would last for how long, and to determine whether they needed to pursue other sources of feed or if they had adequate supplies for the season. Crawford consistently recorded details of the beginning and end of foddering season, in addition to a series of detailed notes throughout the winter and early spring as to how much of each type of hay he had left – English or Island – and where it was kept. In December 1843, Miles noted that one of the men working for him was pickling straw.\textsuperscript{141} That year, the haying and general harvest season had been rainy, and the Miles family had found themselves short of needed hay supplies the spring prior. Pickling would have helped damp or green hay (both of which they had harvested) to keep more of its nutrients.\textsuperscript{142}

Crawford’s journal revealed that he treated his cattle, cows, sheep, horses, and hogs, in accordance with their differing needs in terms of shelter, foddering, and winter

\textsuperscript{141} See Thomas Miles Typescript, December 8, 1843.
\textsuperscript{142} Pickling straw allowed it to keep some nutrients longer, like the modern practice of producing fermented silage; Food Technology Information Center, “3. The History of Forage Preservation by Ensiling, and Basic Terminology,” \textit{Technology of Forage and By-Products Preservation}, December 9, 2016, \url{http://ftic.co.il/Forage%20Manual%20History-en.php}. 
food stores. Cattle needed less fodder than cows. Horses generally needed to be foddered earlier in the fall and later into the spring than other livestock. The needs of different animals were partly a function of the breed. Dibblee’s horses appear to have been able to stay out longer in the winter, and he returned them to pasture earlier in the spring, as compared to the horses of other record-keepers. The differences in timing and pasturing practices may also have been related to the shelter available on a particular farm, late fall and early winter weather, as well as farmers’ level of experience and understanding of how warm animals needed to be. Due to their different grazing abilities, farmers often pastured sheep longer and let them out on the grass earlier than cattle.

Crawford’s detailed foddering records permit insight into the variability of the timing of foddering seasons through the decades of the early 19th century. The earliest date Crawford initiated foddering was October 31, 1822, when he began “to feed the cattle sum straw in the morning.”143 The earliest days on which he may have begun to fodder twice a day were between November 10 and 14 (1820, 1828, 1812, 1825, 1827).144 The latest date on which Crawford began to fodder twice a day was December 3, 1813. The overall variability in the start of his fodder season was thus three weeks and two days. The difference between the earliest and latest dates on which he stopped foddering cows was the same length of time, and spanned May 9 (1812 and 1824) to June 1 (1816). Taking these dates into consideration in light of his experience with

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143 Most years in early spring, Campbell recorded the harvest of straw, and while she only ever noted making hats from it, it is likely the family also used it to supplement hay and other livestock feed, as cattle, horses, and sheep, can all eat straw; Campbell Diary, 145, 146, 147 fn 160, April 9 and May 24, 1834.

144 In each of these entries, Crawford simply stated that he began to “fother.”
scanty hay supplies come spring, at least in his early years at Long Reach, provides some idea of the skill involved in rationing finite food supplies over an unpredictable season. In addition to strategizing the planting and harvesting of foodstuffs and pasturing strategies during the other half of the year, farmers had to be attentive throughout the winter in order to ensure a sufficient supply of fodder for all types of animals in their care. Depending on the season and the needs of livestock, the feeding period could last 6 or 7 months.\textsuperscript{145}

Winter weather, particularly cold temperatures and storms, created particular vulnerabilities for livestock, who were reliant on the human members of their households to provide shelter as well as food and water. Cold winds blew through barns, stables, and hovels. On February 8, 1861, MacDonald described:

Clear and the coldest morning that ever was seen in New Brunswick. It is beyond description, the intense cold, the dreadful cold. Northwest wind. People could not be out anytime without freezing…. This day will long be remembered… It is so cold there is no school … The cattle and horses in their stables was so cold and trembled so, some had to cover their horses with skins besides their blankets they was covered with in common. Not doing anything today only keeping on fires and seeing to the cattle.

The province’s agricultural improvers were particularly concerned about the effects of the cold on overwintering animals, who were often kept in makeshift or semi-permanent hovels with openings that let in the wind and chill.\textsuperscript{146} Crawford reported on December

\textsuperscript{145} See journals. For reference to “near seven” months, see Johnston, quoting Wilmot, \textit{Report on the Agricultural Capabilities}, 80. Fluctuations in the local prices of fodder, or in the market for it, would have caused anxiety for farmers looking to buy or sell. Craig reports that in 1863, prices for fodder in the Upper Saint John Valley were at an “all-time low: oats fetched 1s.8d. or 25 cents a bushel instead of the customary 50 cents.” \textit{Backwoods Consumers}, 128.

\textsuperscript{146} Farmers’ hovels appear to have been of varying levels of permanence. Dibblee’s were makeshift and built annually. Crawford reported hauling an old house for use as a hovel November 18, 1811, and then raising a frame hovel on May 16, 1829. See Wynn, \textit{Timber Colony}, 58, for an image of a livestock stable with open air passage beneath the slanted roof.
13, 1829, that “the River is brok up - the wind last night mooved the Back hovel four feete and Blew down much fence.” While hovels were more liable to be damaged, shelters of all kinds were vulnerable during winter storms. On March 10, 1861, MacDonald reported: “Last night was the heaviest wind we ever heard, it was from the southard in the evening, then came from the southeast. It was dreadful, done considerable damage about buildings. It blowed [sic] down barns and other out buildings and some houses and fences. About 2:00 AM was the heaviest wind and rain.” Many farmers in the Wolastoq/St. John River Valley were fortunate to have ‘community insurance;’ they could count on support to make repairs or raise toppled barns anew.

Livestock also experienced particular vulnerabilities related to their need for water and the social-ecological context of some water sources. For many farmers, taking care of cattle involved manually bringing them water every day.\(^{147}\) Others were able to dig out a watering place for livestock when the ground was soft enough. Miles dug a well in his cow yard on November 22, 1841, and in 1850 responded to the difficulty of getting “the cattle to water” with the onset of winter by digging a new watering hole December 27. On January 19, 1847, he reflected the time-consuming nature of cattle care in winter when he wrote, “Alek has hard times to get the cattle taken care of and get in wood, no time to saw or cut any.” On some farms, it was possible to water cattle at the River on the ice or in a small open brook or spring.\(^{148}\) However, the weather could sometimes eliminate this natural water source, as when Crawford reported on February 13, 1816: “it is bad wortring Cattle the brooks freezes to the bottom.” Cold weather also froze up

\(^{147}\) MacDonald Diary, February 25 and December 6, 1862.

\(^{148}\) Miles also watered his cattle on the River ice on November 30, 1842. Wells and springs needed to be cleaned out periodically, and this was an important seasonal job that facilitated the watering of livestock all year round, as well as human access to safe water supplies.
pumps, which required maintenance through the winter season, and likely required
farmers to use alternative water sources at times.\(^{149}\) The combination of watering holes
and animal personalities and weaknesses also posed risks. By March 10, 1821, the
Dibblees had lost “Two sheep killed by the Cattle and a Calf by the Spring where they
water.” There was also the danger of livestock getting mired. On February 16, 1851,
Miles’ “young bull fell in the water hole. Young Mr. Camp drove up & let me know and
assisted to pull him out, very kind.”\(^{150}\)

Farmers sought to mitigate some of the potential vulnerabilities related to
overwintering livestock by exchanging animals with their neighbours at social events
held for the purpose in late fall and winter. Individual farmers in the Long Reach area
hosted community raffles at this time of year, and the Crawfords usually slaughtered
their geese to be raffled off. This was also the season for farmers, including Crawford’s
cousin Joel, to host “vandues” to sell livestock and possibly other items to community
members. These informal social institutions combined community gatherings with the
practical distribution of protein and likely other foodstuffs. They also complemented the
shared overwintering strategies discussed above, by serving as another point of
transaction. When live animals were purchased or won, these events diversified the
genetic stock on local farms. This was also accomplished by the common practice of
swapping livestock.\(^{151}\) In December 1831, Crawford referred to another reciprocal
arrangement with benefits distributed across time. “Benet took 6 sheep of Nan
[Crawford’s daughter] to Return 12 in four years and B took the same - got 2 turkeys of

\(^{149}\) Miles Diary, January 13, 1854.
\(^{150}\) This type of accident could happen in any season. See Miles Diary, June 6 and 9, 1851.
\(^{151}\) Crawford Diary, December 26, 1832; Hoyt Diary, 50, April 15, 1831.
Benet for 2 ghee.”\(^{152}\) Although Crawford provided no further details on Benet’s situation, such an arrangement would have been a boon to farmers who were just building up their stock. While there was no certainty in farming, it provided a form of insurance for Nancy that she held collateral equal to 12 sheep, protected by community ties and codes of reciprocity, and by her father’s position as justice of the peace.\(^{153}\)

The concept of “living weather” becomes more dynamic when the climate-related and weather-related vulnerabilities and capacities of animals are considered. Animals’ survival within local weather systems was central to the well-being of farmers’ households, communities, and colonial society; farmers were ultimately dependents of their animals. The weather, landscape, and climate of the central and lower Wolastoq/St. John River Valley required the animal members of farm households to engage in their own experiential learning.\(^{154}\) Working alongside the human members of their households, many animals literally shouldered the burden of labour required for homesteading, maintaining a farm, and harvesting fuel supplies.

This study historicizes ‘living weather’ in partnership with animals in the River Valley while exposing some roots of the values and practices that have separated many of the world’s people from their food sources. The rising significance of the values of productivity and efficiency and their implications for agriculture as well as industry transformed farming over the late 19\(^{\text{th}}\) and 20\(^{\text{th}}\) centuries. From the mid-20\(^{\text{th}}\) to early-21\(^{\text{st}}\) centuries, urbanization, the fossil fuel revolution, the factory farm system, and free trade

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\(^{152}\) Crawford Diary, December 12, 1831.

\(^{153}\) For testimony about the ways that respect for an elder family member is extended to younger generations in rural communities, see Rebanks, *The Shepherd’s Life*, 70-74.

\(^{154}\) For a discussion of how sheep learn local geography and inculcate this knowledge in their young, Rebanks, *The Shepherd’s Life*, including xiii.
almost completely destroyed the partnership between humans and animals described herein. Our food system has been transformed from one in which farmers worked with animals to live wisely within climatic parameters, to one that generates enough greenhouse gases to be a notable cause of climate change. The carbon footprint of an omnivorous human diet – or the amount of carbon dioxide released into the atmosphere through the combination of agricultural production and related deforestation, transportation, and refrigeration – has dramatically out-paced the footprint of an herbivorous diet.\footnote{Lindsay Wilson, “The Carbon Foodprint of 5 Diets Compared,” \textit{Shrink That Footprint}, accessed March 22, 2018, \url{http://shrinkthatfootprint.com/food-carbon-footprint-diet}, citing Sonja J. Vermeulen, Bruce M. Campbell, and John S.I. Ingram, “Climate Change and Food Systems,” \textit{Annual Review of Environment and Resources} 37 (November 2012):195-222.}

Hunger, malnutrition, poverty, and corporate control of the food supply in many parts of the world pose questions about the ethics of eating meat when lands devoted to pasture and the growth of grain crops for animal fodder, not to mention industrial biofuels, could be used to grow crops to feed people and maintain healthy ecosystems that allow water and nutrient filtration and recycling.\footnote{Vandana Shiva, \textit{Soil Not Oil: Climate Change, Peak Oil and Food Insecurity} (London: Zed Books, 2008); Shiva, \textit{Making Peace with the Earth}; Lael Brainard, Abigail Jones, and Nigel Purvis, eds., \textit{Climate Change and Global Poverty: A Billion Lives in the Balance?} (Washington, D.C.: Brookings Institution Press, 2009).} In the globalized and ecologically porous world of the 21st century, living weather has truly become living climate, while at the same time our intimate relationships with weather in our home places continue to inform our understanding of what climate change actually means.
Conclusion

Forms of consciousness are power structures. When one worldview is challenged and replaced by another during a scientific or ecological revolution, power over society, nature, and space is at stake.

– Carolyn Merchant¹

Living weather was a form of consciousness that informed an entire way of being-knowing. Late 18th- and 19th-century farmers in the Wolastoq/St. John River Valley had direct relationships with local weather systems, waterways, flora and fauna, and one another. While the 10 farmers whose journals were used in this study all practiced elements of improvement agriculture, scientific approaches were unable to replace their need for Local Traditional Knowledge (LTK) about the weather. This study has identified farmers’ personal and collective strategies for living weather, analysed their experiential learning processes, and explored the intersections of weather, climate, and society in colonial New Brunswick. The discussion that follows summarizes the findings of this research and elaborates on recommendations and contributions to knowledge arising from this study, including how 21st-century inhabitants of the River Valley and others can cultivate habits of attention and preparedness in response to climatic change in the Anthropocene.

Research Findings

Farmers lived weather through their personal praxis of observation, a way of being-knowing that involved experiential and collaborative learning and combined

¹ Ecological Revolutions, 22.
habits of moment-by-moment awareness with the historic agricultural knowledge developed within farmers’ recent and ancestral homes. Indigenous cultivars, including maize, beans, and gourds, were also readily adopted by settlers. Although some farmers believed that British improvement literature could tell them everything they needed to know in order to establish prosperous farms, most learned that hard-won LTK was the only form of knowledge they could rely upon for survival, let alone a ‘comfortable sufficiency.’

Personal responsibility for close and consistent observations combined with interdependence within family, community, and colony in settlers’ cultivation of LTK. Social knowledge was invaluable to settlers of all generations, yet nothing could substitute for personal experience. LTK is derived from visceral bodily experiences within particular weather conditions at certain geographical locations throughout the seasons over time. Unlike visual and aural cues in nature that can be communicated through speech, proprioception and other forms of spatial awareness must be experienced personally by individuals.

These senses condition one’s inner parameters for orientation and movement and are central in fostering a sense of place and a sense of home.

Social knowledge and robust communication networks were also central to farmers’ praxis. Social knowledge was codified in rules of thumb about safe planting dates and ice thickness and in strategies including testing the strength and depth of ice with a stick while traveling on foot. Farmers also shared adaptations to potentially devastating freshet floods including removing fence rails, erecting staging in barns and cellars, and building their homes away from the River’s edge on heights of land. Settlers

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2 Vickers, “Competency and Competition.”
3 Parr, Sensing Changes, 9; page 18 herein.
kept one another abreast of changing local weather conditions to support informed decisions about agricultural activities, travel, and the transport of goods throughout the year. They exchanged intelligence gleaned on trips to mills, market, and church about safe and dangerous transportation routes close to home and further afield, as well as the details of high and low prices and political developments. Oral as well as written information and stories were conveyed within rural communities. Newspapers and essays on agricultural improvement were passed around and read aloud so that diverse literacy levels were not necessarily a barrier to accessing ideas. When engagement with the state required literacy skills, such as in the claims process for Loyalist immigrants and in the petitions system, settlers who participated stood to benefit. Petitions were one way for farmers to take collective action when one or more crops failed. Nonetheless, rural culture remained predominantly oral throughout the 19th century, in part due to large households, work bees, and a dynamic social sphere including frequent visiting.

Farmers’ socioeconomic status and opportunities, ecological resources, literacy level, and aspirations all potentially influenced their interest in applying the tenets of improvement agriculture on their farms. While the imperative for improvement was part of the cultural package brought to the Wolastoq/St. John River Valley by farmers from the colonies to the south and the British Isles, the ecological constraints they encountered in New Brunswick required that many farmers adjust their expectations about what was possible in their new homes. The entwining of culture with socioeconomic status made this more difficult for some settlers than for others; many Loyalists refused to accept that they could not expect to replicate their former high
society days in New Brunswick and Nova Scotia.⁴ Other settlers were drawn to improvers’ promotion of increased economic gains from agricultural endeavours, yet the means to achieve these gains were not within their reach. Distance from waterways and therefore to markets as well as microclimatic moderation, debts to merchants or patrons, weather, colonial economic policies, and other factors hindered many farmers from surpassing the median subsistence level of a farm that produced a surplus in some years and accrued debt in others. Still, many farmers incorporated improvement practices of spreading manure on fields, planting turnip and clover as fodder crops for livestock, and crop rotation.

Each time of year and every set of activities on the farm and in broader colonial society had corresponding weather-related and climate-related dimensions. Settlers learned to perform subsistence, commercial, and administrative tasks in ways that were sensitive to the opportunities and challenges posed by the weather and season. The variability of weather conditions hour to hour and from place to place required that settlers maintain awareness, practice flexibility, and communicate amongst themselves about weather signs, frosts, and safe travel routes. Contending with this degree of dynamism meant settlers needed to recognize multiple interrelationships among conditions and given activities, whether planting, plowing, husbanding livestock, transporting goods to market, or hauling firewood.

Some of the signs that farmers learned to interpret as weather portents have been supplanted in the 21st century as a result of dramatic changes wrought upon the physical environment by industrialization. Air pollution has altered the composition of the

atmosphere, changing the sky’s appearance and lowering visibility across distance. Atmospheric phenomena are often not as readily visible, which can literally cloud farmers’ perceptions of previously reliable weather indicators. Interestingly, the trend toward an anthropogenic influence on weather signs has not been linear. Changes in human technologies have influenced the nature of the weather portents that are carried by air currents. For farmers in parts of the central River Valley, the coming of the railway in the late 19th century introduced the train whistle as an audible portent of rain on the way. As moisture in the air improves its ability to conduct sound as well as smells, emissions from the Nackawic pulp mill constructed in the 1960s gave residents further North along the River and its tributaries an olfactory cue when the air pressure dropped and wet weather approached from the South. The train stopped traveling in the late 1980s and scrubbers installed on the mill’s smokestacks in the late 1970s and 1980s led to a decrease in air pollution. Farmers once again had to recalibrate their methods for apprehending evidence of incoming weather systems bearing moisture from the South. New Brunswickers now use smartphone apps to monitor changes in weather forecasts, reflecting the ways that many people in the 21st century rely on indirect

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5 Maurice Corbett, personal communication, April 2016; John D. Cox, Weather For Dummies (Hoboken, NJ: John Wiley & Sons, 2011), notes that air pollution can prevent observation of sun dogs and other atmospheric phenomena; Julian Mayes and Dennis Wheeler, Regional Climates of the British Isles (New York: Routledge, 2002), 129. Zacharias Kunuk and Ian Mauro film, Qapirangajuq: Inuit Knowledge and Climate Change, included the observations of Inuit elders across Nunavut that the sunset had shifted its location in relation to the horizon and time of year, and the stars were not in their anticipated and known locations either. It appeared that “the world has tilted on its axis.” The changes elders were perceiving were caused by refraction, which occurs during a temperature inversion when warm air lies over top of cold air in the lower atmosphere. NASA scientists had previously postulated the potential of this phenomenon, but had never observed it themselves; Isuma TV, “Inuit Knowledge and Climate Change,” accessed April 7, 2018, http://www.isuma.tv/inuit-knowledge-and-climate-change; Cape Farewell Foundation, “Qapirangajuq: Inuit Knowledge and Climate Change, Zacharias Kunuk + Ian Mauro,” Carbon 14: Climate Change is Culture Exhibit at the ROM, October 19, 2013 - February 2, 2014, http://www.capefarewellfoundation.com/carbon14/qapirangajuq-inuit-knowledge-and-climate-change/.

6 For reference to this requirement for “sensory rehabituation” or recalibration in other historical circumstances, see Parr, Sensing Changes, 5, 15-16.
evidence to guide their interactions with local weather. As freshet flooding has taken on new dimensions over time with increased infrastructure such as dams on the Wolastoq/St. John River, and changes to banks and some low-lying lands, the provincial government instituted The Saint John River Forecast Centre in 1977. Housed within the New Brunswick Department of Environment, the Centre was created as part of the Canada-New Brunswick Flood Forecasting Agreement. Provincial government restructuring led to the establishment of River Watch in 1994.7 River Watch uses diverse technologies to detect water levels, warns New Brunswickers as the River nears flood stage in specific locations, and informs emergency response measures.8

Changes in methods of animal husbandry and crop raising have also transformed or eliminated particular ‘natural’ processes and related weather signs.9 Whereas farmers in Perth Andover and Mactaquac used to forecast winter weather based on the spleen of pigs butchered in the fall, livestock raised on factory farms are not exposed to the elements the same way as farm animals in the late 18th and 19th centuries. Thus changes in their organs and the thickness of hair or fat – once natural adaptations in preparation for winter – are less likely to tell butchers anything about the weather. The same may

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7 With thanks to Brent Newton and Patrick Tang, of New Brunswick’s Department of Environment and Local Government, and formerly of River Watch, respectively, for personal communications on April 26, 2018.
9 “Nature” separate from humans is a construction, and yet the concept of ‘natural processes’ distinguishes between ecological systems whose functioning was historically less influenced by human activity, and the elevated intensity of human impact brought about through industrialization, general population growth, and urbanization.
also be true for the bones of chickens and turkeys, which farmers on Prince Edward Island and elsewhere in the region have historically used to forecast the weather.  

Regardless, when livestock are slaughtered and their flesh sometimes shipped long distances from the places they are raised, consumers are unable to interpret relationships among local weather and animal physiology. Meteorologist Cindy Day notes that weather proverbs related to crops such as “A cold May fills the barn with hay,” may have applied more before the use of chemical fertilizers and insecticides.  

Other human interventions in ‘natural’ processes, such as the construction of hydroelectric dams, have influenced the timing of ice seasons on the River and some of its tributaries. In 2006, Environment Canada meteorologist Bill Richards created a graph demonstrating changes in the ice season on the Wolastoq/St. John River at Fredericton between 1825 and 2005. Richards observed that the season of open water lasted approximately 60 days longer than it did in the early 19th century. The trend towards a lengthening season includes later dates of freeze-up as well as earlier break-up dates. The Mactaquac dam, constructed in the mid-1960s, propelled the trend towards longer open water seasons from 1.5 days per decade to 9 days per decade. When Richards published his analyses, the longest season of open water had just occurred in 2005 and lasted 331 days. Currently, the longest open season extended from February 20, 2016, to February 2, 2017, and lasted 348 days.  

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11 Day, Grandma Says, 23.  
Contributions to Knowledge

This research into late 18th- and 19th-century settlers’ cultivation of local knowledge of weather and climate responds to the call from climate historians and other scholars for research into the relationships among culture, weather, and climate.13 This study sought to understand farmers’ experiential learning processes, recognizing that responsiveness to weather conditions and climatic change is only possible when a person has a sense of what to expect from local weather and can interpret its signs. Understanding farmers’ ways of being-knowing, their praxis of observation, can help us identify what is different in our habits of awareness – specifically, to recognize our own habits of inattention and opportunities to amend them so that we, too, may witness and respond to nature’s signs.14

This research demonstrates that the best way to cultivate habits of awareness for the purpose of living weather is careful and sustained observation in place. Through interaction with land, waters, and human neighbours, and through trial-and-error over time, the observer identifies patterns, such as the types of weather that tend to blow in from certain directions and how these change over the course of the year. Tracking local weather forecasts and staying abreast of changes to them complements personal observation. Talking to local nature observers and learning to identify plant, bird, and


14 In *Sensing Changes*, Parr historicizes these habits of inattention, noting that rural people moving into urban environments cultivated them as a necessity in order to cope with the sensory disorder they experienced. She refers to such habits as “adaptations to losses that were made acceptable by the promise of material gain.”(16)
animal species, and with them, local phenological changes, are ways to participate more fully in the meshworks that are constantly unfolding in one’s world.

Some people are more inclined towards social knowledge and may see their role as bringing neighbours together to build relationships that are initially pragmatic – how can the neighbourhood responded collectively in case of disaster if people do not know one another? – but over time may become lasting friendships. Street parties, community picnics, roadside and riverside cleanup efforts, and nature hikes are fun and build relationships across generations while also emphasizing the interdependence of people and place. The stronger a social network – family, religious, community – the higher the resilience in the face of ecological, economic, or other shocks.

The scale of social networks matters as well. Small-scale interactions, and their persistence over time, foster the ability to adapt to change. Researchers and leaders in settings from Hutterite colonies to corporations have discovered that in groups of 150 or fewer, humans reliant on lifeways including hunter-gathering and agriculture are capable of maintaining social bonds that facilitate empathy and cooperation. When we are challenged to live or work in groups that exceed 150 people, our ability to practice functional solidarity frays and we may begin to form factions. The farmers in this study all lived in communities in which face-to-face interaction with family and neighbours supported the development of strong social bonds. While they operated within a system of rural reciprocity in which farmers were interdependent, if “unequal,” and some quarrels were taken to the petty courts, they nonetheless came to one another’s

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In communities with a strong social fabric, social memory can act as a catalyst of adaptation. When local people know how unusual conditions are, they can identify changes and provide insights that their neighbours can act on by trying new varieties of food plants and flowers in their gardens, and reappraising local traditional rules of thumb about typical last frost dates and when to tap for maple syrup.\footnote{I have personal experience with such changes, as I help to cultivate a garden and maintain a small sugarbush in Johnville, New Brunswick.} As it takes time and commitment to cultivate LTK, culture-keepers and record-keepers have important contributions to make to the resilience of 21st-century communities.

Work by the Conservation Council of New Brunswick demonstrates the need for the province’s citizens to cultivate increasing awareness and responsibility when it comes to extreme weather events. Director of Climate Change and Energy Solutions, Louise Comeau, conducted surveys on the extent to which citizens were prepared for post-tropical storm Arthur in July 2014 and the ice storm of January 2017. She found that New Brunswickers “need to be educated about risk awareness and risk preparedness, including their own responsibilities for preparedness.” During the ice storm, many citizens were unaware of simple steps they could have taken to live weather wisely, such as storing food outside in sealed containers when their homes lost power.
Among those who vacated their houses during the storm, many did not drain water pipes; sub-zero temperatures led to pipes freezing and bursting, exacerbating storm-related damages and expenses. By comparing the addresses of survey respondents with maps of present and future flood prone areas, Comeau concluded that New Brunswickers living in areas at risk of flooding generally have a low level of awareness of the risks they and their families face now or may face in the future, and are consequently unprepared for small- or large-scale emergencies.19

In a 2017 letter to Clerk of the Executive Council, Judy Wagner, who was conducting an internal review of the response of the Emergency Measures Organization (EMO) and NB Power to the ice storm that January, Comeau wrote that “[s]cientists working on climate change adaptation increasingly urge a move from short-term emergency response to extreme events. Instead, we are being encouraged to move toward long-term risk reduction and preparedness.”20 In other words, instead of treating adaptation as our ‘reactive’ capacity, we should conceptualize it as a repertoire of strategies that are useful on different timescales and relevant to a diversity of scenarios. This type of response-ability requires members of the public to hone diverse attitudes as well as practical skills for self-reliance and sustainability. The call to become increasingly risk-averse and prepared to respond to long-term emergencies contrasts with messages disseminated by federal and provincial authorities focused on household preparation for 72-hour self-sufficiency. It also departs from aspects of the province’s

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20 Comeau, “Re: Internal Review of EMO and NB Power Response to the February 2017 Ice Storm.”
climate change action plan such as the recommendation that people living at high risk of flooding have access to robust insurance. At the very least, it disregards the increasing frequency of extreme floods on the Wolastoq/St. John River. Although the province also promotes critical assessment of infrastructure requiring replacement or repair in the case of a disaster – “‘build back better’ or relocate” – the insurance of high-risk property may encourage homeowners to overlook their own responsibilities for adaptive action.

Disagreements over the necessary scale of “risk reduction,” as well as over which parties will shoulder the greatest risk, point to some of the more socially unpalatable aspects of climate change adaptation. Analyses of the risk awareness and responsiveness of the provincial population, including government administrators, demonstrate the reasons that some climate change researchers and educators are concerned about the construction of climate change as a global phenomenon. Local knowledge studies that illuminate how climate is changing on geographical and temporal scales to which people can relate also bridge the cognitive gaps formed by the abstraction of global systems change. The Conservation Council’s research demonstrates the kinds of adaptations that are required in communities within the Wolastoq/St. John River Valley and along some of the province’s (and region’s)

\[\text{(Footnotes continued on next page)}\]
coasts. Highlighting locally specific risks and responses in ongoing climate change education helps citizens identify their personal stake in the transformation of the atmosphere. When a person understands what exactly they have to lose and could seek to gain from limiting greenhouse gas emissions, climate change becomes more concrete, as do potential responses including sacrifice.

LTK is invaluable to studies of climate change and public education campaigns, as several recent projects demonstrate. In 2008, as part of its participation in the Climate Change in Atlantic Canada film project, the Fundy Biosphere Reserve produced a short film for classrooms about two record-keepers living near Alma on the Fundy coast. For over 35 years, minister and educator Lee Whitney and his wife, Alice, have kept records of the phenological changes around their home. As gardeners and newcomers to the area in the 1970s, the Whitneys had to learn to work with the local growing seasons. Mr. Whitney developed his own rules of thumb, for example, when dew falls and it is below 40°F at around 10 PM, there is probably going to be a frost. Like Crawford at Long Reach in the early decades of the 19th century, the Whitneys often recorded when spring peepers began to sing. Their record reflects that the peepers have been singing an average of five days earlier in recent years. Over the past 35 years, ‘peeper season’ has extended so that it lasts an average of 24 days longer than it used to. Robins and redwing blackbirds are arriving earlier in spring and poplars are leafing out earlier, too. While there is no appreciable difference in when maple trees leaf out, they are dropping their leaves later in the fall.26 The Whitneys’ nuanced records of ecological change, painstakingly recorded day-by-day for decades, can serve as a Rosetta Stone of sorts for

26 Phillips and Norris, The Whitney Journals; Mauro, Phillips, and Norris, “Climate Change in Atlantic Canada.”
neighbours who might notice sporadic changes such as early bird return or late leaf drop, but do not have the context to grasp the significance of these events. In addition to being used for public education in New Brunswick, the video was part of an exhibit at the Royal Ontario Museum in Toronto in late 2013 and early 2014, as was the film *Climate Change in Atlantic Canada.*

Another New Brunswick minister, Judson Corey, had authored several local history books before being inspired to juxtapose reflections on the farming life he had known growing up with the modern context of fossil fuels, materialism, processed food, and climate change. In *Growing Up on a Farm in New Brunswick*, he recounts how members of his family and community lived weather in the backland settlement of Knowlesville in Carleton County in the early- to mid-20th century. Corey’s concluding chapters focus on the values undergirding rural community, including neighbourliness, hospitality, low consumption, resourcefulness, creativity, and what he refers to as “direct action.” As a child, Corey received support from a local school trustee to counter bullying at school. As a youth witnessing his siblings “gathering around the dining table, with oil lamps, doing homework,” he decided to take responsibility for his own education.28 While Corey relishes the transformation of certain technological and qualitative features of the farm and family life of his childhood, he and his peers are uniquely placed to educate those of us who believe that science and technology alone will “solve” the myriad implications of climate change. As well, Corey’s experiences with direct action reinforce the capacity within each one of us to reach out and to take

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responsibility for that which we value. Our elders know the power of value—conceived as a moral tenet as well as a system of evaluation that identifies the ultimate worth of a decision, thing, or practice—to sanction or sever ways of being in the world.

The *Second Atlas of Breeding Birds of the Maritime Provinces*, published in 2015, is a recent local knowledge project than engaged the passions of more than 1,300 ‘citizen scientist’ volunteers throughout the Maritime provinces. Through the coordination of 30 volunteer Regional Leaders, they conducted direct observations of 222 bird species. As the first *Atlas* was published in 1992, researchers who compiled the recent data were able to expand on the impact of climate change on avian species including the turkey vulture, eastern bluebird, and northern cardinal, as well as to identify recent newcomers to the region from further south. The new *Atlas* is available online where it allows birdwatchers throughout the region to communicate with one another, their neighbours, and the broader public.²⁹

This study has uncovered elements of the LTK of 18th- and 19th-century farmers whose strategies for living weather offer alternatives to contemporary “scientific” agricultural practices and economics that have proven to be destructive of soil fertility, water quality, relative atmospheric stability, and the viability of rural communities. By tracing some of the roots of 19th-century conceptualizations of agricultural “science,” this research demonstrates that disregard for the uniqueness and specificity of local

nature and culture was one of its most dangerous contributions to the modern world.\textsuperscript{30} Improvers promoting agricultural science, efficient field crop production, and the application of manufactured chemical fertilizers understood local climate and soils as surmountable obstacles rather than guides about what could and should be grown in particular locations. This attitude and the chemical industry that it came to support in the latter half of the 19th century directly facilitated the introduction of hyper-efficient large-scale monoculture cropping in the 20th century, along with genetically modified ‘high-yield’ strains of maize and wheat that require chemical inputs to manifest miracles of drought and pest ‘resistance.’\textsuperscript{31} Agricultural scholars and historians have demonstrated how these approaches transformed farming around the world from a way of life into an industry. International trade ‘liberalization,’ competition, and capitalization are the determining factors in agribusiness, not weather, climate, and other local ecological factors, or the adaptive capacity and food security needs of farm families, their communities, regions and nations.\textsuperscript{32}

Some New Brunswick crop and livestock farmers are practicing living weather today as they respond to the opportunities posed by climate change, including the ability to adapt their own operations to reduce greenhouse gases and chemical inputs. Farmers take advantage of lengthened growing seasons by planting new crop species and

\textsuperscript{30} Jasanoff, “A New Climate for Society,” 234-35, notes that changing 19th-century conceptualizations of the ‘‘state’’ and ‘‘society’’ similarly disregarded local cultures, as do current discourses of global climate change.

\textsuperscript{31} Jane Goodall, with Gail Hudson, in Seeds of Hope: Wisdom and Wonder from the World of Plants (New York: Grand Central Publishing, Hachette Book Group, 2014, 2015), 240, notes that agriculturalists around the world have already bred varieties to be tolerant of drought through seed-saving and selective replanting, and that Monsanto recognizes that their drought-resistant corn does not necessarily outperform the non-GMO strains.

\textsuperscript{32} Shiva, Making Peace With the Earth; Merchant, Ecological Revolutions, 261-70; Sandwell, Rural Majority, 193-94, 220; Berry, The Unsettling of America; Barbara Kingsolver, Steven L. Hopp, and Camille Kingsolver, Animal, Vegetable, Miracle: A Year Of Food Life (New York; Toronto: HarperPerennial, 2008); Rebanks, The Shepherd’s Life.
varieties and lobbying the government to support plant breeding programs that will allow them to grow even more climate-appropriate crops. Some of this lobbying takes place under the aegis of the Agricultural Alliance of New Brunswick/Alliance agricole du N.-B., a bilingual organization that was formed in 2006 by a merger of French and English farmers’ organizations so that they could work collectively and communicate with levels of government more effectively. The organization supports the voluntary completion of Environmental Farm Plans through which farmers strategize about changes to tillage practices and the application of fertilizers, among other initiatives to promote responsible soil and water stewardship. Farmers have noted that such plans save them time over the long run and allow them to reach consumers seeking food that has been produced using environmentally-responsible methods.33 New Brunswick’s farmers are also working with the provincial government to create an Agriculture Land Policy and regulations for the preservation of topsoil. The goal of the land policy is to protect the financial viability of farms as well as the legacy of agricultural land, some of which was cultivated by farmers in this study, for future generations.34

Cedric MacLeod of MacLeod Agronomics runs a 100-acre cattle farm in Carleton County and consults with other farmers in the province and around the world who want to increase the sustainability of their farm operations. The company’s services include encouraging the use of historic methods such as planting shelterbelts and frost-seeding crops. Staff also consult on the reduction of greenhouse gas emissions, including

through nutrient management, “no-till” field methods, and “intensive rotational grazing systems” that preserve soil carbon and ensure the most productive use of pasture lands while also allowing time for their rejuvenation.35 MacLeod recommends that farmers plant species and varieties of forage crops that are “highly digestible” by ruminants. The benefits of these crops include reduced methane production through livestock flatulence and healthier animals.36 Methane traps 84 times the amount of heat that carbon dioxide is capable of holding in the atmosphere. Globally, ruminants are estimated to contribute 30% of methane emissions into the atmosphere, and 5.5% of greenhouse gas emissions attributed to human activities.37

In the 18th and 19th centuries, living weather encompassed a set of strategies and practices that reiterated the mutual interdependence of farmers and animals, as well as family members, neighbours, travelers and other strangers. They experienced weather not as discrete numeric values pertaining to particular delimited geographical areas, but as an embodied factor that intertwined with personal and collective subsistence and commercial activities and necessarily joined settlers together. A shared vulnerability to the vicissitudes of the weather as well as to disease humbled people whose Christian faith was also often central to their lives and further reinforced the importance of


treating one’s neighbour as oneself. Christian faith and charity certainly did not preclude prejudice based on race, culture, or religion, nor did it prevent some farmers from taking advantage of their neighbours or of opportunities to benefit themselves. Nonetheless, settlers’ lived experience with cold, crop failure, and the unanticipated loss of loved ones of all ages encouraged solidarity if not compassion. Living weather was among the realities of colonial society that posed challenges to all.

Recommendations

This research has raised questions about the relationship between the life experiences of farmers and their strategies for living weather. Close analysis of records of farmers living in the same community or along a particular stretch of the Wolastoq/St. John River could reveal more about specific local adaptations to late springs, crop failures, market incentives, and other factors. How diverse or similar were farmers’ responses and what factors influenced their choices the most? An investigation of farmers’ journals throughout the River Valley covering the years surrounding the 1840s, when in some places crops failed in five or more years out of 10, would also permit a case study in adaptation. Research encompassing a broader swathe of farmers’ journals, including those of Acadians and other Catholics as well as recent immigrants from the British Isles and elsewhere, would support understanding of the variety and relative diversity of farmers’ strategies for living weather. It would also tell us more about the

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38 While attending to Bittermann’s caution against romanticizing the independent rural community based around equitable systems of sharing, I am also skeptical of Vickers’ blanket characterization of the persistence of competition and limited abundance in rural areas; Bittermann, “Farm Households and Wage Labour,” 65-66, and Vickers, “Competency and Competition,” 12-13, 28-29. See Rebanks, The Shepherd’s Life, 28, 55-56, and 72-73 for references to the enduring influence of family connections, friendships, and shared labour experiences of the past and to his experience of pastoral ‘egalitarianism.’
roles of cultural and religious values in influencing farmers’ choices. Including more women’s journals would facilitate a gender analysis of such strategies. Ensuring that the journals of first-, second-, and third-generation immigrants were examined would allow analyses of distinctive elements within learning processes for farmers living increasingly removed from the agricultural heartlands and experiences of their ancestors. Conducting interviews with members of families that have inhabited lands on or adjacent to the River’s floodplain for multiple generations would reveal insight into the ways that risk, vulnerability, and adaptation become part of people’s relationships to the land over time and perhaps part of their identities. How has this intimacy altered the ways of being-knowing of such residents?

Local Traditional Knowledge studies with Wolastoqwiyik offer another approach to understanding how people have historically cultivated local knowledge of weather and climate in the Wolastoq/St. John River Valley. The examples of “puni-apuwockiye” and “asakon” from the Introduction to this study demonstrate that Wolastoqey words encapsulate detailed knowledge of weather and climate.39 Oral traditions about the animacy of elements of weather indicate how cultural interpretations of weather and climate inculcate specific human attitudes to the elements in particular places. As Hall describes, Koluscap’s interactions with giant creatures including the bird who made the wind, toad, and beaver, led to the moderation of local climate and the regulation of the River’s flow. Wolastoqwiyik who were reliant upon the climate and hydromorphology of the River Valley were grateful for Koluscap’s interventions.40 How did this inform their strategies for living weather? How did plant knowledge, hunting practices, and

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39 Quote from Hall, “River of Three Peoples,” 38-9; pages 14 to 15 herein.
40 Hall, “River of Three Peoples,” 38-41.
material culture inform Wolastoqey knowledge of weather and climate? What could a rejuvenation of Wolastoqey LTK of weather and climate offer Wolastoqwiik? How could learning more about the knowledge and attitudes of Wolastoqey as well as other Indigenous peoples influence the ways other inhabitants of the River Valley conceptualize local adaptations to climate change? At the United Nations Council of the parties to the UN Framework Convention on Climate Change in Bonn, Germany in December 2017, official delegates “finally acknowledged” that Indigenous peoples’ “care for country” holds vital insight for human responses to climate change worldwide.41

The methodology used in this study could also be used to examine contemporary farmers’ strategies for living weather and the ecological and economic dynamics of farming in a changing climate. What weather signs, including phenological changes, do farmers in the Wolastoq/St. John River Valley observe today? Have there been changes in the types of observable weather signs and their reliability over time? What does the phrase “climatic instability” mean to farmers in the River Valley? Are weather patterns or spring freshet heights less predictable? To which communication fora do farmers turn for reliable and timely information about local weather conditions? If they raise livestock, what practices and technologies do they use to support their animals’ capacities for living weather? What kind of maintenance do on-farm vehicles and other machinery require in order to be operational year-round or at the times when they are needed? What are the most significant factors influencing farmers’ decisions about subsistence and commercial pursuits?

Climatic instability has exacerbated the challenge of living weather for farmers worldwide in an era in which large agribusiness has predominantly eclipsed small-scale sustainable agriculture as a viable way of life for families and communities. Farmers in Malawi, Rwanda, and Honduras, for example, have observed that rainfall has become increasingly erratic. Rains have been more intense and thus more likely to cause floods. In the first decade of the 21st century, Honduran farmers observed that a heavy flood that used to happen every five years was happening annually. Farmers shifted the planting season to the end of July instead of June in an effort to protect their crops, yet continued to be vulnerable to crop loss.42 Rapid glacier recession in the Himalaya threatens the future water supply of half of the world’s population as the glaciers that feed into the massive rivers of the Asian subcontinent shrink. Villagers in the region as well as further downstream rely on glacier melt water and monsoonal rains to replenish their water supply. In some villages, residents have had to stop farming altogether. Other communities have been washed away and more will likely follow as rapid melt leads glacial lakes to overflow.43

On scales from local to global, current climatic change is unprecedented in the instrumental record and “epic” according to natural proxies including ice cores from glaciers around the world.44 In 2017, abnormally warm temperatures in January played a role in the Wolastoq/St. John River freezing the latest in recorded history on February 2, 2017. As the River had broken up on February 20 the previous year (the second

43 Shiva, Making Peace with the Earth, 103-110.
earliest break-up on record), the 348-day open water season was the longest on record.45 These details mark significant deviations from historic patterns of freeze-up and break-up. In the journals consulted for this study, farmers sometimes recorded an opening of the Wolastoq/St. John during the February thaw, but it always froze up again. The first time the open water season began in February was 1981. This occurred once again in 1998, and then between 2000 and 2016, the River opened completely in February four times. The first time the River froze up in February was in 2017, following increasingly frequent January freeze-ups since the 1970s.46 These trends suggest that the new “normal” is a moving target.

The Earth’s climate systems as a whole have been transformed by human activities. In the 137 years between 1880 and 2016, average global surface temperatures climbed by 1.69°F (0.94°C).47 The warmest year on record thus far is 2016, with 2017 second in line behind it. Since the year 2000, humanity has lived through 17 of the 18 warmest years on record.48 Ice cores from the poles reveal that current atmospheric levels of “carbon dioxide, methane and nitrous oxide” are higher than at any time “in at least the last 800,000 years.”49 As engineer Sandra Knight, formerly with the American

45 Gulf of Maine Region Partners, “Gulf of Maine Climate Quarterly Impacts and Outlook: March 2017.”
46 Rick Fleetwood, Environment Canada, “Freeze-up-Breakup_saint_john_river_2018-updated-file (master),” shared with the author April 5, 2018; Gulf of Maine Region Partners, “Gulf of Maine Climate Quarterly Impacts and Outlook: March 2017.”
Federal Emergency Management Agency, reflected when commenting on the accelerating frequency of extreme weather events such as large floods: “We’re looking at historical data when really we have something that is called non-stationarity. … The world isn’t stationary anymore and the hydrology isn’t. The landscape isn’t. So why are we still presuming the future will look like the past?”50

We as a species have entered unfamiliar realms with regards to the current composition of the biosphere as well as in terms of our own population (almost 7.6 billion and expected to reach 9 billion by around 2040), and perhaps, what we can learn from our own history.51 Yet we are still human. We retain our capacity for awareness and for creative and thoughtful responses to new challenges and opportunities. Natural scientists, neuroscientists, and positive psychologists are among the researchers reminding us that the neocortex, which is the brain structure that we understand to give us skills that are uniquely human, is capable of cultivating compassionate awareness and extending it to many more than just the 150 people we can fit within our social sphere.52

We also have a wellspring of wisdom to draw from in the form of LTK and social memory, as members of many cultures around the world retain recent, if not current,

51 Esben Larsen, Karsten Bjerring Olsen, and Victor Emanouilov, “World Population Clock Live,” The World Counts, accessed April 8, 2018,
knowledge of how to live weather. As this research has demonstrated, we, too, have abundant imaginative resources in our near past that directly address the needs of the present and the future.53

Many farmers who moved to New Brunswick in the late 18th and early 19th centuries faced a steep learning curve. Yet with the assistance of simple if engrossing attitudes and practices, at the heart of which were collaboration with place as well as with one another, settlers made homes in what was to them a new world. We face the same challenge in our particular homes and on our shared planetary home.54 This study prepares us to adopt living weather as a form of consciousness that challenges the worldview of industrial capitalism, which has placed “power over society, nature, and space” in the hands of a few.55 Living weather is a way of being-knowing that grounds scientific understandings within LTK or ‘citizen science,’ making it accessible for anyone wishing to take responsibility for their personal relationship with the place, people, weather, and climate, to which they are local.

May we learn to live weather well.

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53 See also Fabien Locher and Jean-Baptiste Fressoz, “Modernity’s Frail Climate: A Climate History of Environmental Reflexivity,” *Critical Inquiry* 38, no. 3 (Spring 2012): 579–98, argue that the Western conceptualization of humans as separate from nature and therefore climate is extremely recent.
55 Ommer et al., *Coasts Under Stress*, 24-25.
<table>
<thead>
<tr>
<th>Source (pg no.)</th>
<th>Year(s)</th>
<th>Location</th>
<th>Mo./Season</th>
<th>Day</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>James Simonds (194) 1</td>
<td>1768-1769</td>
<td>Saint John</td>
<td>March</td>
<td>6</td>
<td>Have had but little snow this winter, but few days that the ground has been covered.</td>
</tr>
<tr>
<td>Raymond (195) 1</td>
<td>1769-1770</td>
<td>Saint John</td>
<td>Winter</td>
<td></td>
<td>*severe</td>
</tr>
<tr>
<td>James Simonds (195) 1</td>
<td>1770</td>
<td>Saint John</td>
<td>May</td>
<td>10</td>
<td>This spring has been so backward that there has been no possibility of burning any lime. The piles of wood and stone are now frozen together...</td>
</tr>
<tr>
<td>James Simonds (195) 1</td>
<td>1770-1771</td>
<td>Saint John</td>
<td>February</td>
<td>18</td>
<td>There has not been one day's sledding this winter, and … There cannot be much more than enough to get the hay from the marsh.</td>
</tr>
<tr>
<td>Henry Nase</td>
<td>1784</td>
<td>Beaubear's Point</td>
<td>April</td>
<td>2</td>
<td>never was there better weather in this world, than we have experienced, this winter, and the spring appears equally promising</td>
</tr>
<tr>
<td>Henry Nase</td>
<td>1784</td>
<td>Beaubear's Point</td>
<td>May</td>
<td></td>
<td>The winter 1784, concluded with only 28 snows</td>
</tr>
<tr>
<td>Henry Nase</td>
<td>1784</td>
<td>Beaubear's Point</td>
<td>November</td>
<td>21</td>
<td>The winter begun, about this time, and continued with little interruption, till the 8th April '85 at which time the rain began and the snow which, is four feet and upwards begins to decay</td>
</tr>
<tr>
<td>Henry Nase</td>
<td>1786</td>
<td>The Nerepis</td>
<td>December</td>
<td>16</td>
<td>from ... [Nov 26]...the weather was very severe and the snow three feet deepe</td>
</tr>
<tr>
<td>NB Lt. Gov. Letter Books 2</td>
<td>1787</td>
<td>Lower W/SJRV</td>
<td>March</td>
<td>9</td>
<td>*Early frost previous summer and hard winter, government aided settlers</td>
</tr>
<tr>
<td>Henry Nase</td>
<td>1791</td>
<td>The Nerepis</td>
<td>March</td>
<td>28</td>
<td>every appearance of an early spring</td>
</tr>
<tr>
<td>Date</td>
<td>Location</td>
<td>Season</td>
<td>Notes</td>
<td></td>
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<tr>
<td>1792</td>
<td>The Nerepis</td>
<td>April 1</td>
<td>[since Dec 15] a very pleasant season; the River has been open since the 26th ult [March] The Nerepis has been open 4 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1794</td>
<td>The Nerepis</td>
<td>March 26</td>
<td>This winter ... has been remarkably pleasant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1794-1795</td>
<td>The Nerepis</td>
<td>January 3</td>
<td>The first snow that laid the winter from that to the 8th April, there never was a finer winter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1796</td>
<td>The Nerepis</td>
<td>March 27</td>
<td>the winter has been beyond account easy and pleasant; on this day the Rapids were safe, and I rode down and up them, and found the ice perfectly good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1797</td>
<td>The Nerepis</td>
<td>March 24</td>
<td>From [Nov 4] … the winter been cold and dry, only one rain of any Consequence in the time; a very comfortable snow and chiefly gone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1796-1797</td>
<td>Madawaska</td>
<td></td>
<td>*spring floods and early frosts damaged crops in Madawaska; winters &quot;unusually severe&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1796-1797</td>
<td>Nova Scotia</td>
<td>Winter</td>
<td>the longest and most severe winter known since the settlement of the province.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1804</td>
<td>below Woodstock</td>
<td>April 9</td>
<td>very Backward, and there is more Snow on the Improvements and in the Woods than we have known for a Number of years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1804</td>
<td>below Woodstock</td>
<td>May 14</td>
<td>The grass has now grown So as to afford the Cattle good living, and the Trees are very Forward</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1804-1805</td>
<td>New Brunswick</td>
<td>Fall and Summer</td>
<td>autumn of the year 1804, was ushered in with such premature and severe frosts as occasioned a great diminution of the crops, and in some parts of the Province the inhabitants suffered much distress throughout the spring and summer following. The evil appeared too general for the private hand of charity.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1806</td>
<td>below Woodstock</td>
<td>April 8</td>
<td>Never was so backward a Spring.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1806</td>
<td>Kingsclear</td>
<td>November 25-30</td>
<td>The weather continues remarkably mild and Pleasant... The cattle are now feeding in the fields and there is but very little snow on the ground.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1807</td>
<td>below Woodstock</td>
<td>May 17; 26</td>
<td>A very bad spring; Never had so cold a spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Location</td>
<td>Month</td>
<td>Day</td>
<td>Event Description</td>
<td></td>
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<tr>
<td>1808</td>
<td>below Woodstock</td>
<td>April</td>
<td>28</td>
<td>Clear and warm as June. Grass grows very fast. The Trees begin to bud, a fine Spring.</td>
<td></td>
</tr>
<tr>
<td>1808</td>
<td>below Woodstock</td>
<td>May</td>
<td>2</td>
<td>To appearance there will be no Fresh this Spring. There is now plenty of grass for the cattle - Never a better Spring.</td>
<td></td>
</tr>
<tr>
<td>1809</td>
<td>below Woodstock</td>
<td>May</td>
<td>1</td>
<td>We never had such a Spring, all appearance of Grass is entirely Gone, and the Trees has not the least appearance of Buding - There is Snow in the low Places on the Improvements and Considerable in the Woods -</td>
<td></td>
</tr>
<tr>
<td>1809</td>
<td>below Woodstock</td>
<td>May</td>
<td>11</td>
<td>The Trees or Grass has not Grown in the Least for 4 Days, owing to the Could Cloudy Weather. Never so bad a Spring.</td>
<td></td>
</tr>
<tr>
<td>1809</td>
<td>below Woodstock</td>
<td>July 10 – August 20</td>
<td></td>
<td>We have had continual Cool Weather, so much so, that the Corn grows very little, but everything looks very well – Wheat very backward but good.</td>
<td></td>
</tr>
<tr>
<td>1810</td>
<td>below Woodstock</td>
<td>March</td>
<td>13</td>
<td>From the last Date we have had a most Excellent Winter – A Few Days Cold Indeed, but in general very Mild and less Snow than was ever known. For 12 Days Past the Rain carried off all the Snow on the Improvements and on the River nothing but Ice, which made very Good Travelling on the River, but it was Impossible to keep the Road, as the Snow was entirely Gone.</td>
<td></td>
</tr>
<tr>
<td>1810</td>
<td>below Woodstock</td>
<td>March</td>
<td>23</td>
<td>a very backward March</td>
<td></td>
</tr>
<tr>
<td>1810</td>
<td>below Woodstock</td>
<td>April</td>
<td>7</td>
<td>We never had so much Snow at this time of year.</td>
<td></td>
</tr>
<tr>
<td>1810</td>
<td>below Woodstock</td>
<td>June</td>
<td>5</td>
<td>*never wetter/colder this season; &quot;People very backward with their crops.&quot;</td>
<td></td>
</tr>
<tr>
<td>1811</td>
<td>Long Reach</td>
<td>May</td>
<td>15</td>
<td>grass and trees very forward</td>
<td></td>
</tr>
<tr>
<td>1812</td>
<td>Kennebecasis</td>
<td>May</td>
<td>5 – 6</td>
<td>The coldest snowstorm known in 20 years</td>
<td></td>
</tr>
<tr>
<td>1812</td>
<td>Kennebecasis</td>
<td>June</td>
<td>4</td>
<td>a number of birds found dead with cold</td>
<td></td>
</tr>
<tr>
<td>1813</td>
<td>Kennebecasis</td>
<td>September</td>
<td>28</td>
<td>Went to St. John by water, five days head wind; the water lower than any time this season.</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Location</td>
<td>Month</td>
<td>Day</td>
<td>Description</td>
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<td>------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1813</td>
<td>Kennebecasis</td>
<td>November</td>
<td>13</td>
<td>a long spell of warm rainy weather with high tides</td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1813</td>
<td>Kennebecasis</td>
<td>November</td>
<td>20</td>
<td>Water very high</td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1815</td>
<td>Kennebecasis</td>
<td>April 30 - May 9</td>
<td><em>COLD and two snowstorms</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1815</td>
<td>Kennebecasis</td>
<td>May</td>
<td>15</td>
<td>ice thick as window glass</td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1816</td>
<td>Kennebecasis</td>
<td>May</td>
<td>30</td>
<td>ice forms pretty thick</td>
<td></td>
</tr>
<tr>
<td>Crawford 1816</td>
<td>Long Reach</td>
<td>June</td>
<td>18</td>
<td>the season worse than last year- God have mercy on us</td>
<td></td>
</tr>
<tr>
<td>Crawford 1817</td>
<td>Long Reach</td>
<td>January</td>
<td>24</td>
<td>the Ice is as good I sepose as it ever was known this thirty years past</td>
<td></td>
</tr>
<tr>
<td>Dibblee 1817</td>
<td>below Woodstock</td>
<td>April; May</td>
<td>18; 13</td>
<td>coldest spring; most backward spring</td>
<td></td>
</tr>
<tr>
<td>Crawford 1817</td>
<td>Long Reach</td>
<td>March; April</td>
<td>29; 1</td>
<td>Backward; this is the hardest season that we have ever had for many years</td>
<td></td>
</tr>
<tr>
<td>Miles 1817</td>
<td>Burton (Oromocto)</td>
<td>May</td>
<td>8</td>
<td>Water higher than in four years and rising</td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1818</td>
<td>Kennebecasis</td>
<td>March</td>
<td>2</td>
<td>great rain breaks up the River. Sweeps away a good deal of fence</td>
<td></td>
</tr>
<tr>
<td>Dibblee 1818</td>
<td>below Woodstock</td>
<td>April</td>
<td>8</td>
<td>The Snow hardly melts any toDay - and the Ice Just So – a bad Spring.</td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1820</td>
<td>Kennebecasis</td>
<td>January</td>
<td>19</td>
<td>This month throughout uncommonly fine.</td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1821</td>
<td>Kennebecasis</td>
<td>August</td>
<td>19</td>
<td>Warm and a very great drought.</td>
<td></td>
</tr>
<tr>
<td>Dibblee 1821</td>
<td>below Woodstock</td>
<td>April</td>
<td>6</td>
<td>Water never lower in April, snow almost off the improvements, To appearance a very early spring</td>
<td></td>
</tr>
<tr>
<td>Dibblee 1821</td>
<td>below Woodstock</td>
<td>April</td>
<td>6, 7, 29</td>
<td>*early spring</td>
<td></td>
</tr>
<tr>
<td>Dibblee 1822</td>
<td>below Woodstock</td>
<td>April</td>
<td>29</td>
<td>we have not had so bad a spring since the year 1817</td>
<td></td>
</tr>
<tr>
<td>Dibblee 1822</td>
<td>below Woodstock</td>
<td>May</td>
<td>10</td>
<td>A large Quantity of Snow in the Woods - This is the worse Spring - … Nothing Grows</td>
<td></td>
</tr>
<tr>
<td>Dibblee 1822</td>
<td>below Woodstock</td>
<td>June</td>
<td>19</td>
<td>Small Frost, but killed nothing, but makes everything backward.</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Year</td>
<td>Location</td>
<td>Month</td>
<td>Date</td>
<td>Weather Note</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
<td>-----------------------</td>
<td>--------</td>
<td>------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Dibblee</td>
<td>1822</td>
<td>below Woodstock</td>
<td>July</td>
<td>10; 25</td>
<td>everything promising but buckwheat; almost as forward as common years</td>
</tr>
<tr>
<td>Hoyt Journal</td>
<td>1823</td>
<td>Kennebecasis</td>
<td>February</td>
<td>25; 26</td>
<td>The most violent driving snow storm known in 30 years; All inhabitants out shovelling roads.</td>
</tr>
<tr>
<td>Dibblee</td>
<td>1823</td>
<td>below Woodstock</td>
<td>April</td>
<td>7, 16, 23</td>
<td>*anticipate early spring</td>
</tr>
<tr>
<td>Dibblee</td>
<td>1823</td>
<td>below Woodstock</td>
<td>May and June</td>
<td></td>
<td>*Some very cold weather.</td>
</tr>
<tr>
<td>Crawford</td>
<td>1823</td>
<td>Long Reach</td>
<td>June</td>
<td>10</td>
<td>Backward weather</td>
</tr>
<tr>
<td>Dibblee</td>
<td>1825</td>
<td>below Woodstock</td>
<td>March</td>
<td>1</td>
<td>We never had so Mild and Pleasant a Winter Since we came to this Country.</td>
</tr>
<tr>
<td>Crawford</td>
<td>1825</td>
<td>Long Reach</td>
<td>August</td>
<td>30</td>
<td>Great complaint of the drouth</td>
</tr>
<tr>
<td>Crawford</td>
<td>1825</td>
<td>Long Reach</td>
<td>August</td>
<td>31</td>
<td>the Brookes and springs very low</td>
</tr>
<tr>
<td>Hoyt Journal</td>
<td>1825</td>
<td>Kennebecasis</td>
<td>September</td>
<td>4-5; 7-9</td>
<td>*Very fine weather</td>
</tr>
<tr>
<td>Hoyt Journal</td>
<td>1825</td>
<td>Kennebecasis</td>
<td>October</td>
<td></td>
<td>*very hot; great fires</td>
</tr>
<tr>
<td>Crawford</td>
<td>1825</td>
<td>Long Reach</td>
<td>October</td>
<td>7</td>
<td>..Fredricstount Burnt and Meremeshi the same day</td>
</tr>
<tr>
<td>Crawford</td>
<td>1825</td>
<td>Long Reach</td>
<td>October</td>
<td>11</td>
<td>great fiers back on the Mountains on the other side of the River</td>
</tr>
<tr>
<td>Dibblee</td>
<td>1825</td>
<td>below Woodstock</td>
<td>December</td>
<td>8</td>
<td>River never so low.</td>
</tr>
<tr>
<td>Dibblee</td>
<td>1825</td>
<td>below Woodstock</td>
<td>December</td>
<td>18</td>
<td>*snow all gone, rain</td>
</tr>
<tr>
<td>Dibblee</td>
<td>1825</td>
<td>below Woodstock</td>
<td>December</td>
<td>20</td>
<td>River appears rise little and ice remains. Never such a winter to this date.</td>
</tr>
<tr>
<td>Hoyt Journal</td>
<td>1826</td>
<td>Kennebecasis</td>
<td>May</td>
<td>6</td>
<td>season very forward</td>
</tr>
<tr>
<td>Crawford</td>
<td>1826</td>
<td>Long Reach</td>
<td>July</td>
<td>26</td>
<td>People complains of the drought</td>
</tr>
<tr>
<td>Hoyt Journal</td>
<td>1827</td>
<td>Kennebecasis</td>
<td>May</td>
<td>12</td>
<td>A long spell of N. E. wind with rain; backward weather</td>
</tr>
<tr>
<td>Hoyt Journal</td>
<td>1828</td>
<td>Kennebecasis</td>
<td>January</td>
<td>15</td>
<td>very open weather; Ground almost bare; very moderate</td>
</tr>
<tr>
<td>Hoyt Journal</td>
<td>1828</td>
<td>Kennebecasis</td>
<td>February</td>
<td></td>
<td>Very open weather until the 24th; ground bare so that Justus Wetmore was harrowing rye.</td>
</tr>
<tr>
<td>Date</td>
<td>Location</td>
<td>Month</td>
<td>Description</td>
<td></td>
<td></td>
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<tr>
<td>------------</td>
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<td>------------------------------------------------------------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Hoyt Journal 1828</td>
<td>Kennebecasis</td>
<td>June</td>
<td>wet and cold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1830</td>
<td>Kennebecasis</td>
<td>March 17</td>
<td>very heavy rain carried away the Mill Stream Bridge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1830</td>
<td>Kennebecasis</td>
<td>May, June, 1/2 July</td>
<td>*Wet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1831</td>
<td>Kennebecasis</td>
<td>January - February</td>
<td>*Warm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1831</td>
<td>Kennebecasis</td>
<td>March</td>
<td>open and moderate till the 20th</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1831</td>
<td>Kennebecasis</td>
<td>December 1</td>
<td>Winter sets in, a very severe cold month; snow upon snow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1832</td>
<td>Kennebecasis</td>
<td>April 12</td>
<td>Cold and backward weather; *appears cold until May 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crawford 1833</td>
<td>Long Reach</td>
<td>February 28</td>
<td>The snow is deeper than ever was known since the country was settled and the worst storms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crawford 1834</td>
<td>Long Reach</td>
<td>April 12</td>
<td>this is a forward spring Sheep would get their living if put to it[?]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crawford 1835</td>
<td>Long Reach</td>
<td>January 3</td>
<td>this winter since one December has been very severe weather</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crawford 1835</td>
<td>Long Reach</td>
<td>April 10</td>
<td>This is a backward spring – the sheep begin to Lamb the eleventh.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1835</td>
<td>Kennebecasis</td>
<td>April 17</td>
<td>Snow and cold, very backward weather</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Craig and Dagenais (7) 1835-1836</td>
<td>Upper W/SJRV</td>
<td>April 17</td>
<td>*winters unusually cold, dry summer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1842</td>
<td>Kennebecasis</td>
<td>February 15</td>
<td>The greatest gale of wind ever experienced here, blew down… barns; great damage done to shipping...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoyt Journal 1844</td>
<td>Kennebecasis</td>
<td>May 24-25</td>
<td>snow; very backward weather</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P. Nase 1847</td>
<td>Indiantown</td>
<td>May 1</td>
<td>very backward season</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles 1847</td>
<td>Maugerville</td>
<td>May 6</td>
<td>the water is very low for the season</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles 1848</td>
<td>Maugerville</td>
<td>April 21</td>
<td>Ice runs slowly, River full all day water very low.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles 1849</td>
<td>Maugerville</td>
<td>February 16</td>
<td>freezes harder in our well than ever known before- and we have had the longest spell of dry severe cold weather ever remembered in this country.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Miles
1849
Maugerville
May
3
very cold for the season. The ice in a tub near the door is sufficiently strong to bear me, the water about one inch deep in the tub…

Miles
1853
Maugerville
April
9
The ice moves off today very gently as far as my upper line – the water is quite low

Hoyt Journal
1854
Kennebecasis
April
1; 13
very cold backward weather; season very backward… ice 2 feet thick in the River

MacDonald
1857
Central Cambridge
May
14
clear and cold for the season.

MacDonald
1857
Central Cambridge
May
21
It is very cold and backward this spring.

MacDonald
1858
Central Cambridge
May
17
quite cold weather, very backward

MacDonald
1858
Central Cambridge
November
16
The river is all froze. The lake is froze down… is uncommon weather for so early in the season.

MacDonald
1858
Central Cambridge
November
21
Clear and fine for the season.

MacDonald
1859
Central Cambridge
April
19
quite cold weather but the grass is starting

MacDonald
1859
Central Cambridge
December
29
This is uncommon cold weather.

P. Nase
1860
Nerepis
May
18
weather very unusual for drouth – fires raging

P. Nase
1860
Nerepis
late May
* crops suffer for rain which eventually came May 30, early June

P. Nase
1860
Nerepis
July
6
The weather is and has been very dry for a long time.

MacDonald
1860
Central Cambridge
June
9
The crops grow some but there is so little sun it keeps them back, and worms is eating things very much [very wet time].

MacDonald
1860
Central Cambridge
September
9; 29
cold for the season/month

MacDonald
1861
Central Cambridge
April
3
Clear and cold, backward weather for spring.

P. Nase
1861
Nerepis
May
17
The spring so far has been cold and backward.

MacDonald
1861
Central Cambridge
January
18
Had to put props under the mill roof for fear the weight of snow would break it; there has been some buildings broke that way this winter, there is such a body of snow.
<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Month</th>
<th>Day</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2; 3</td>
<td>Central Cambridge</td>
<td>May</td>
<td></td>
<td>very cold: *almost too cold for the men to saw; *too cold to let the sheep stay out</td>
</tr>
<tr>
<td>May 3</td>
<td>Central Cambridge</td>
<td>May</td>
<td></td>
<td>It is wonderful weather for May it don't look much like farming.</td>
</tr>
<tr>
<td>April 11</td>
<td>Central Cambridge</td>
<td>April</td>
<td>11</td>
<td>Drifting like January. It is wonderful to see what depth the drifts is yet and they have gone considerable. They are over the garden fences is a good deal in places. It has been a dreadful winter for heavy storms. The 24th and 25th of February was dreadful storms, great shipwrecks and loss of life.</td>
</tr>
<tr>
<td>August 30</td>
<td>Central Cambridge</td>
<td>August</td>
<td>30</td>
<td>It is wonderful time for heavy winds.</td>
</tr>
<tr>
<td>November</td>
<td>Central Cambridge</td>
<td>November</td>
<td></td>
<td>*Very mild month; strawberry blossoms and other flowers long shore.</td>
</tr>
<tr>
<td>February 7</td>
<td>Nerepis</td>
<td>February</td>
<td>7</td>
<td>This so far has been the openest winter I remember of, the shortest duration of sledding, etc.</td>
</tr>
<tr>
<td>November</td>
<td>Central Cambridge</td>
<td>November</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 26</td>
<td>Nerepis</td>
<td>May</td>
<td>26</td>
<td>the spring is considered backward.</td>
</tr>
<tr>
<td>May 9</td>
<td>Nerepis</td>
<td>May</td>
<td>9</td>
<td>very backward spring but very little done yet in farming. I have not a seed in the ground.</td>
</tr>
<tr>
<td>June 8</td>
<td>Nerepis</td>
<td>June</td>
<td>8</td>
<td>very pleasant spring</td>
</tr>
<tr>
<td>April 8</td>
<td>Central Cambridge</td>
<td>April</td>
<td>8</td>
<td>Earliest the ice ever went since my remembrance.</td>
</tr>
<tr>
<td>May 8</td>
<td>Central Cambridge</td>
<td>May</td>
<td>8</td>
<td>backward spring</td>
</tr>
<tr>
<td>April 12</td>
<td>Nerepis</td>
<td>April</td>
<td>12</td>
<td>earliest spring I ever remember of seeing…</td>
</tr>
<tr>
<td>May 18</td>
<td>Nerepis</td>
<td>May</td>
<td>18</td>
<td>a very backward one for farming on account of the frequent rains</td>
</tr>
<tr>
<td>April 20</td>
<td>Nerepis</td>
<td>April</td>
<td>20</td>
<td>Our spring is backward</td>
</tr>
<tr>
<td>July 1</td>
<td>Nerepis</td>
<td>July</td>
<td>1</td>
<td>our spring was quite wet, Farmers found it difficult getting in early crop. …from 1st June the weather has been very favorable for farming purposes etc.</td>
</tr>
</tbody>
</table>
Our past winter commenced very early and has continued all through unusually severe.

Very backward spring

Saxby Gale; *extensive damage through much of the province

The past autumn and first of winter...noted for Heavy Gales, High Tides, and the heaviest Earthquake ever felt in N.B. The woods in many parts of the country was blown down to a fearful extent as was also Houses, Barns, Hay Stacks, etc. etc. And the shipping suffered great loss.

*unusual winter, little snow, weather "broken and unsettled"

The past summer and autumn so far has been unusual for continued drouth and fine weather. Fire has raged in many parts of the country to a fearful extent. A change of weather appears to have set in during the past few days we have had some rain.

During this month the weather has been rainy and quite a large quantity of Lumber has been got into market, which was kept back for want of rain.

everything but grass backward

very wet disagreeable

This year famous for lowness of water in the River.

The weather was unusually favorable for cropping in spring consequently a larger acreage than usual was put in, the growing season was very good indeed. The hay crop (now being cut) is beyond the average and the weather unusually fine for gathering it.

A great drouth; too low to "pump water up to bathroom" and mill could not saw

Water lower in the River than it has been since 1825.

We have had a cold backward spring, until lately.
<table>
<thead>
<tr>
<th>Writer</th>
<th>Year</th>
<th>Location</th>
<th>Month</th>
<th>Day</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morrison</td>
<td>1874</td>
<td>Fredericton</td>
<td>June 5</td>
<td></td>
<td>*Cold; fires in parlour</td>
</tr>
<tr>
<td>Morrison</td>
<td>1874</td>
<td>Fredericton</td>
<td>October</td>
<td>14</td>
<td>River very low</td>
</tr>
<tr>
<td>Morrison</td>
<td>1874</td>
<td>Fredericton</td>
<td>November</td>
<td>4</td>
<td>Weather continues more spring than fall; sporadically mild through month</td>
</tr>
<tr>
<td>Morrison</td>
<td>1874</td>
<td>Fredericton</td>
<td>November</td>
<td>8</td>
<td>River very low</td>
</tr>
<tr>
<td>P. Nase</td>
<td>1874</td>
<td>Indiantown</td>
<td>November</td>
<td>21</td>
<td>*a very fine autumn; &quot;but little Frost until recently, last evening our first snow&quot;</td>
</tr>
<tr>
<td>P. Nase</td>
<td>1875</td>
<td>Indiantown &amp; beyond</td>
<td>February</td>
<td>1</td>
<td>During the past month... a continuation of cold and snow storms,... the snow... from 3 to 3 1/2 feet deep all over the Country, which is quite unusual for this season of the year. We usually have our deepest snow later, say the last of this month.</td>
</tr>
<tr>
<td>P. Nase</td>
<td>1875</td>
<td>Nerepis</td>
<td>May</td>
<td>10</td>
<td>Nothing done yet in Farming. Spring cold and backward.</td>
</tr>
<tr>
<td>Morrison</td>
<td>1875</td>
<td>Fredericton</td>
<td>June 2-6</td>
<td></td>
<td>*Dry smoky - fires in woods</td>
</tr>
<tr>
<td>P. Nase</td>
<td>1875</td>
<td>Indiantown &amp; beyond</td>
<td>August</td>
<td>23</td>
<td>We have had an unusual amount of fog and dull weather of late. Hay making having almost come to a stand still.</td>
</tr>
<tr>
<td>P. Nase</td>
<td>1875</td>
<td>Indiantown &amp; beyond</td>
<td>Sept.</td>
<td>2</td>
<td>Have had 10 days splendid weather, extra good for haymaking.</td>
</tr>
<tr>
<td>P. Nase</td>
<td>1875</td>
<td>Indiantown &amp; beyond</td>
<td>September</td>
<td>27</td>
<td>Times still flat, weather cold crops have been very good all over the country.</td>
</tr>
<tr>
<td>Morrison</td>
<td>1875</td>
<td>Fredericton</td>
<td>December 2; 9-31</td>
<td></td>
<td>Unusually cold for the season;*Sporadic thaw/mild weather after</td>
</tr>
<tr>
<td>P. Nase</td>
<td>1875</td>
<td>Indiantown</td>
<td>November</td>
<td></td>
<td>Very cold weather for the season during the latter part of this month and up to 3rd Decr.</td>
</tr>
<tr>
<td>P. Nase</td>
<td>1876</td>
<td>Indiantown</td>
<td>February</td>
<td>13</td>
<td>The past winter has been very broken and mild.</td>
</tr>
<tr>
<td>P. Nase</td>
<td>1876</td>
<td>Indiantown &amp; beyond</td>
<td>August c. 1-17</td>
<td></td>
<td>*Very dry, fires &quot;on the Musquash, Nerepis &amp; other&quot;</td>
</tr>
<tr>
<td>Date</td>
<td>Location</td>
<td>Month</td>
<td>Event</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
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<td>----------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1876</td>
<td>Fredericton</td>
<td>August</td>
<td>*Generally too dry until 15 including Smoke; [fires in woods]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1876</td>
<td>Fredericton</td>
<td>September</td>
<td>3</td>
<td>water risen in river</td>
<td></td>
</tr>
<tr>
<td>1876</td>
<td>Indiantown</td>
<td>November</td>
<td>16</td>
<td>River very high for the season [after a rainy week]</td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Fredericton</td>
<td>January</td>
<td>15</td>
<td>Snow very deep for time of year.</td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Fredericton</td>
<td>May</td>
<td>27</td>
<td>vegetation looks stunted. [Drought]</td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Fredericton</td>
<td>May 30 – July</td>
<td>*smoky; drouth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Saint John</td>
<td>June</td>
<td>20</td>
<td>visited by a most calamituous fire.</td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Fredericton</td>
<td>July</td>
<td>27</td>
<td>River very low for time of year. Never saw such a long drought.</td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Fredericton</td>
<td>August</td>
<td>5 – 6</td>
<td>River scarcely ever known to be as low; slight shower. Our pumps both dry.</td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Fredericton</td>
<td>October</td>
<td>1</td>
<td>River very low. Inside pump dry.</td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Fredericton</td>
<td>November</td>
<td>10</td>
<td>River higher, logs floating down.</td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Indiantown</td>
<td>November</td>
<td>30</td>
<td>A very little snow fell last night, in all we have not had beyond one inch this autumn yet, which is very unusual indeed.</td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Fredericton</td>
<td>December</td>
<td>12</td>
<td>Weather mild. Extraordinary season. No real cold weather so far.</td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Fredericton</td>
<td>December</td>
<td>19</td>
<td>never knew so fine a winter</td>
<td></td>
</tr>
<tr>
<td>1878</td>
<td>Indiantown</td>
<td>January</td>
<td>16</td>
<td>Weather of late very mild. Colder to day. Have no sleighing at present.</td>
<td></td>
</tr>
<tr>
<td>1878</td>
<td>Indiantown</td>
<td>March</td>
<td>7</td>
<td>Weather very mild and spring like, no snow around here.</td>
<td></td>
</tr>
<tr>
<td>1878</td>
<td>Fredericton</td>
<td>April</td>
<td>23</td>
<td>everything very forward</td>
<td></td>
</tr>
<tr>
<td>1878</td>
<td>Fredericton</td>
<td>May</td>
<td>8</td>
<td>earliest spring since 1860</td>
<td></td>
</tr>
<tr>
<td>1878</td>
<td>Fredericton</td>
<td>May</td>
<td>27</td>
<td>Mill shut down ... want of logs. Water very low in rivers and streams. Fine growing weather.</td>
<td></td>
</tr>
<tr>
<td>1878</td>
<td>Indiantown &amp; beyond</td>
<td>July</td>
<td>22</td>
<td>Untill quite recently the weather was very dry, last night we had a very heavy rain. Crops are looking well.</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Year</td>
<td>Location</td>
<td>Date</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
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<td>----------------</td>
<td>---------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>P. Nase</td>
<td>1878</td>
<td>Indiantown</td>
<td>October</td>
<td>9 Our Autumn is open and pleasant for the most part.</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1879</td>
<td>Fredericton</td>
<td>May</td>
<td>27 season very backward</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1879</td>
<td>Fredericton</td>
<td>June</td>
<td>18 very cold for the season. Everything stunted.</td>
<td></td>
</tr>
<tr>
<td>P. Nase</td>
<td>1879</td>
<td>Indiantown</td>
<td>July</td>
<td>12 Our spring and summer for the most part has been cold of late</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>however the weather has been warm, and crops are looking well.</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1879</td>
<td>Fredericton</td>
<td>October</td>
<td>30 Cleared off, River rising. It has been very low.</td>
<td></td>
</tr>
<tr>
<td>P. Nase</td>
<td>1880</td>
<td>Indiantown</td>
<td>February</td>
<td>4 The weather of late has been very changeable indeed</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1880</td>
<td>Fredericton</td>
<td>March</td>
<td>24 Equinoctial Gail</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1880</td>
<td>Fredericton</td>
<td>May</td>
<td>20 Fires in the woods making it very warm.</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1880</td>
<td>Fredericton</td>
<td>July</td>
<td>16 river very low. Stopped rafting in upper boom.</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1880</td>
<td>Fredericton</td>
<td>August</td>
<td>15; 16 Looks and feels like fall; very cold for time of year</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1880</td>
<td>Fredericton</td>
<td>October</td>
<td>3 River has not been as low since October 1825</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1880</td>
<td>Fredericton</td>
<td>December</td>
<td>10 Very cold weather but splendid for the woods. [Gets mild again]</td>
<td></td>
</tr>
<tr>
<td>P. Nase</td>
<td>1881</td>
<td>Indiantown</td>
<td>February</td>
<td>1 We have had quite a moderate winter, have now say 2 to 3 feet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>snow. This is our coldest day for the winter and only five below</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>zero</td>
<td></td>
</tr>
<tr>
<td>P. Nase</td>
<td>1881</td>
<td>Indiantown</td>
<td>April</td>
<td>11 Our past winter has been unusual for mildness, March was also</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>very mild indeed April until 10th somewhat colder</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1881</td>
<td>Fredericton</td>
<td>August</td>
<td>6 Last night ... warmest for some years.</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1881</td>
<td>Fredericton</td>
<td>August</td>
<td>23-26 Water rising fast over flat; 24th: 1,000,000 logs run over</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Gibsons dam and Tom Robenson lost logs and deals…</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1881</td>
<td>Fredericton</td>
<td>August</td>
<td>27 Water has fallen good deal.</td>
<td></td>
</tr>
<tr>
<td>P. Nase</td>
<td>1881</td>
<td>Indiantown &amp;</td>
<td>September</td>
<td>24 Have had an unusually wet summer. Heavy rains, River and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>beyond</td>
<td></td>
<td>tributaries very high, much of the low land grass will not be cut,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>and thousands of Tons of upland hay seriously damaged from</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>continual rain.</td>
<td></td>
</tr>
<tr>
<td>P. Nase</td>
<td>1882</td>
<td>Indiantown</td>
<td>May</td>
<td>21 has been cold and backward</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Location</td>
<td>Month</td>
<td>Day</td>
<td>Details</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-------------------</td>
<td>-------</td>
<td>-----</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1882</td>
<td>Fredericton</td>
<td>November</td>
<td>1</td>
<td>The ground has not been frozen hard this fall. All through October lovely mild weather, today ditto</td>
<td></td>
</tr>
<tr>
<td>1882</td>
<td>Fredericton</td>
<td>November</td>
<td>3; 8</td>
<td>A very dry spell; River lower than it has been for years at this season. [observed dryness in Sept. and Oct.]</td>
<td></td>
</tr>
<tr>
<td>1882</td>
<td>Indiantown</td>
<td>November</td>
<td>27</td>
<td>Our autumn has been very, unusually pleasant, little Frost until quite recently, one fall of snow yet…</td>
<td></td>
</tr>
<tr>
<td>1883</td>
<td>Indiantown</td>
<td>January</td>
<td>late</td>
<td>Our winter has been pretty cold and steady, without any important thaw…</td>
<td></td>
</tr>
<tr>
<td>1883</td>
<td>Indiantown</td>
<td>March</td>
<td>17</td>
<td>Have had cold winter weather all along up to the present, with very little exception</td>
<td></td>
</tr>
<tr>
<td>1883</td>
<td>Fredericton</td>
<td>May</td>
<td>4; 19</td>
<td>Very discouraging weather for it lumber men, water falling fast; weather very dry, interfering with stream driving</td>
<td></td>
</tr>
<tr>
<td>1883</td>
<td>Fredericton</td>
<td>August</td>
<td>23</td>
<td>*Very dry; details plants that are suffering throughout September</td>
<td></td>
</tr>
<tr>
<td>1883</td>
<td>Fredericton</td>
<td>September</td>
<td>8, 14, 21, 27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1883</td>
<td>Indiantown</td>
<td>September</td>
<td>18</td>
<td>Quite a drought, have had but little rain</td>
<td></td>
</tr>
<tr>
<td>1883</td>
<td>Fredericton</td>
<td>September</td>
<td>22</td>
<td>No signs of rain. Fires raging in all directions.</td>
<td></td>
</tr>
<tr>
<td>1883</td>
<td>Fredericton</td>
<td>September</td>
<td>24</td>
<td>All the barrels filled round mill with water. Watchman watching to night. I came in &amp; packed 3 trunks with clothes</td>
<td></td>
</tr>
<tr>
<td>1883</td>
<td>Fredericton</td>
<td>October</td>
<td>5, 22</td>
<td>Weather very cold for time of year</td>
<td></td>
</tr>
<tr>
<td>1883</td>
<td>Fredericton</td>
<td>October</td>
<td>6</td>
<td>River unusually low, have not been able to pump water up stairs for 3 weeks.</td>
<td></td>
</tr>
<tr>
<td>1883</td>
<td>Fredericton</td>
<td>October</td>
<td>18; 20</td>
<td>Water in the River rising fast.; No water in our pump</td>
<td></td>
</tr>
<tr>
<td>1884</td>
<td>Indiantown &amp; beyond</td>
<td>May</td>
<td>30</td>
<td>The greater portion of this month has been rainy, difficult for farmers to get in their crops, owing to wet weather</td>
<td></td>
</tr>
<tr>
<td>1884</td>
<td>Fredericton</td>
<td>May</td>
<td>31</td>
<td>I never saw vegetation so slow.</td>
<td></td>
</tr>
<tr>
<td>1884</td>
<td>Indiantown &amp; beyond</td>
<td>July</td>
<td></td>
<td>This month has been very unsuitable for haymaking</td>
<td></td>
</tr>
<tr>
<td>Morrison</td>
<td>1884</td>
<td>Fredericton</td>
<td>December</td>
<td>5</td>
<td>A great many on ice skating. Weather unusually mild and pleasant. Indeed summer.[Indian?]</td>
</tr>
<tr>
<td>---------------</td>
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<td>-------------</td>
<td>----------</td>
<td>---</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>P. Nase</td>
<td>1884</td>
<td>Indiantown</td>
<td>December</td>
<td></td>
<td>*Much of the weather for the month was mild; only two short stints of sleighing.</td>
</tr>
<tr>
<td>Morrison</td>
<td>1885</td>
<td>Fredericton</td>
<td>June</td>
<td>28</td>
<td>Everything drying up for want of rain.</td>
</tr>
<tr>
<td>Morrison</td>
<td>1885</td>
<td>Fredericton</td>
<td>July</td>
<td>1</td>
<td>frequent and heavy showers. Water rising very fast.</td>
</tr>
<tr>
<td>Morrison</td>
<td>1888</td>
<td>Fredericton</td>
<td>September</td>
<td>7</td>
<td>*Frost killed a number of flowers including nasturtiums; &quot;Water froze along side the road.&quot;</td>
</tr>
</tbody>
</table>

**Endnotes:**


<table>
<thead>
<tr>
<th>Source (page number)</th>
<th>Year or Date</th>
<th>Location</th>
<th>Freshet Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Villebon 1</td>
<td>1690s</td>
<td>Nashwaak-Jemseg</td>
<td>*River thaw and ice as well as snow accumulation highly variable</td>
</tr>
<tr>
<td>Villebon 1</td>
<td>Mar. 31, 1692</td>
<td>Fort Nashwaak</td>
<td>*after the fort had flooded, &quot;the water rose still higher, and I thought the Fort and house would be carried away by the pressure of the ice. The Indians and the oldest settlers say they never saw the like before.&quot;</td>
</tr>
<tr>
<td>Kindervater (54) 2</td>
<td>Spring, 1696</td>
<td>Jemseg</td>
<td>late and very high … late planting and crop failures; *French considered abandonment of Jemseg.</td>
</tr>
<tr>
<td>Kindervater (54) 2</td>
<td>1701</td>
<td>Jemseg</td>
<td>*French left Jemseg for Port Royal; had lost crops and cattle to flood</td>
</tr>
<tr>
<td>Kindervater (54) 2</td>
<td>Nov. 3-4, 1759</td>
<td>Saint John area</td>
<td>&quot;Saxby&quot; type storm and damages in Saint John area</td>
</tr>
<tr>
<td>Kindervater (54) 2</td>
<td>Spring, 1768</td>
<td>Saint John area</td>
<td>*Spring ice freshet swept away Simonds and White's trading post</td>
</tr>
<tr>
<td>Wiggins (19) 4</td>
<td>May 20, 1782</td>
<td>Long Reach</td>
<td>*high freshet</td>
</tr>
<tr>
<td>Hall (274) 1</td>
<td>1783</td>
<td>Maugerville</td>
<td>*devastating flood, contributed to Loyalists' rejection of Maugerville as county capital</td>
</tr>
<tr>
<td>Kindervater (54) 2</td>
<td>1785</td>
<td>Maugerville</td>
<td>An unusually high freshet flooded most of the land</td>
</tr>
</tbody>
</table>
| Gilchrist Reicker (17) 5 | 1785    | Musquash and Long Island | *prior to freshet there were around 170 people living on Musquash and Long Island in the lower part of the county but that year, an "unusually high freshet
covered the islands and the residents had to move to higher ground to build their homes."

<table>
<thead>
<tr>
<th>Author</th>
<th>Date</th>
<th>Place</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindervater</td>
<td>Apr. 25, 1789</td>
<td>Prince William to Maugerville</td>
<td>*ice freshet and damage</td>
</tr>
<tr>
<td>H. Nase</td>
<td>Oct. 8 or 13, 1789</td>
<td>Nerepis</td>
<td>a Freshet covering the Island…and Millers' wheat not cut</td>
</tr>
<tr>
<td>Kindervater</td>
<td>Oct., 1798</td>
<td></td>
<td>Flood at Fredericton and Maddeskesway (Kewsick)</td>
</tr>
<tr>
<td>Dibblee</td>
<td>May 6, 1807</td>
<td>below Woodstock</td>
<td>the River is now 6 ft higher than we ever knew</td>
</tr>
<tr>
<td>Dibblee</td>
<td>May 17, 1807</td>
<td>below Woodstock</td>
<td>River … is as High as a Common Fresh. A very bad Spring.</td>
</tr>
<tr>
<td>Dibblee</td>
<td>Apr. 17, 1810</td>
<td>below Woodstock</td>
<td>high as a common fresh</td>
</tr>
<tr>
<td>Dibblee</td>
<td>Nov. 1-11, 1811</td>
<td>below Woodstock</td>
<td>*rainy time, River &quot;very high - Almost Equal to the Spring&quot;</td>
</tr>
<tr>
<td>Crawford</td>
<td>Apr. 14, 1813</td>
<td>Long Reach</td>
<td>a Dreadfull raine storm the brook was from the barn Level with water at the wartering place much higer then I ever saw it before - the warter in the sullar is up to the stares. the Ice went from this shoere</td>
</tr>
<tr>
<td>Hoyt Journal</td>
<td>Apr. 5, 1814</td>
<td>Kennebecasis</td>
<td>A flood</td>
</tr>
<tr>
<td>Dibblee</td>
<td>May 18, 1816</td>
<td>below Woodstock</td>
<td>lowest fresh we ever had</td>
</tr>
<tr>
<td>Dibblee</td>
<td>June 7, 1816</td>
<td>below Woodstock</td>
<td>never knew snow in summer</td>
</tr>
<tr>
<td>Dibblee</td>
<td>June 14, 1816</td>
<td>below Woodstock</td>
<td>Never… Such a Season</td>
</tr>
<tr>
<td>Dibblee</td>
<td>May 10, 1817</td>
<td>below Woodstock</td>
<td>the highest fresh out of 3, but 1, since we have been in this country</td>
</tr>
<tr>
<td>Crawford</td>
<td>May 15, 1817</td>
<td>Long Reach</td>
<td>Freshet was &quot;as high as was ever known I Believe&quot;</td>
</tr>
<tr>
<td>Dibblee</td>
<td>May 19, 1820</td>
<td>below Woodstock</td>
<td>^ never so low and long a fresh</td>
</tr>
<tr>
<td>Dibblee</td>
<td>May 10, 1822</td>
<td>below Woodstock</td>
<td>as high as common fresh</td>
</tr>
<tr>
<td>Dibblee</td>
<td>June 4, 1822</td>
<td>below Woodstock</td>
<td>never so high in June</td>
</tr>
<tr>
<td>Dibblee</td>
<td>Apr. 7, 1823</td>
<td>below Woodstock</td>
<td>we may look for a heavy freshet. [Unclear whether it was or not]</td>
</tr>
<tr>
<td>Dibblee</td>
<td>Apr. 10, 1825</td>
<td>below Woodstock</td>
<td>breaking up late indeed</td>
</tr>
<tr>
<td>Dibblee</td>
<td>May 3, 1825</td>
<td>below Woodstock</td>
<td>greatest freshet this season than for 7 years past – and we fear will rise again</td>
</tr>
<tr>
<td>Campbell</td>
<td>1826</td>
<td>Nashwaak</td>
<td>*High water April 22 and 30, May 1, 2, 4, Sept. 29, Dec. 10</td>
</tr>
<tr>
<td>Campbell</td>
<td>1827</td>
<td>Nashwaak</td>
<td>*High water May 9, 10, July 17</td>
</tr>
<tr>
<td>Name</td>
<td>Year</td>
<td>Location</td>
<td>Notes</td>
</tr>
<tr>
<td>-----------------</td>
<td>------</td>
<td>------------</td>
<td>-----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Campbell</td>
<td>1828</td>
<td>Nashwaak</td>
<td>*High water Apr 25, May 17, Jun 27, Oct. 25</td>
</tr>
<tr>
<td>Campbell</td>
<td>1829</td>
<td>Nashwaak</td>
<td>* High water April 25, 27, May 12, June 3, 25,August 10,</td>
</tr>
<tr>
<td>Hoyt Journal</td>
<td>Jan. 16, 1829</td>
<td>Kennebecasis</td>
<td>Very great Freshet; breaks up Little River (Hammond River)</td>
</tr>
<tr>
<td>Campbell</td>
<td>April 9, 1831</td>
<td>Nashwaak</td>
<td>Dreadful wind and high water. … Bridge carried off.</td>
</tr>
<tr>
<td>Campbell</td>
<td>1831</td>
<td>Nashwaak</td>
<td>*High water April 24, 26, 30, and May 13, 30, July 4, Nov. 1, 5</td>
</tr>
<tr>
<td>Campbell</td>
<td>1832</td>
<td>Nashwaak</td>
<td>High water June 19</td>
</tr>
<tr>
<td>Crawford</td>
<td>May 27, 1832</td>
<td>Long Reach</td>
<td>River rather falls…. this is being a great freshet</td>
</tr>
<tr>
<td>Audobon 1</td>
<td>1832</td>
<td>Fredericton</td>
<td>Flood</td>
</tr>
<tr>
<td>Campbell</td>
<td>1833</td>
<td>Nashwaak</td>
<td>*High water May 10, 13, July 1</td>
</tr>
<tr>
<td>Crawford</td>
<td>May 19, 1833</td>
<td>Long Reach</td>
<td>merely a common freshet this year</td>
</tr>
<tr>
<td>Campbell</td>
<td>1834</td>
<td>Nashwaak</td>
<td>*High water April 19, May 19, June 25, Oct. 10, 27</td>
</tr>
<tr>
<td>Crawford</td>
<td>May 17, 1834</td>
<td>Long Reach</td>
<td>begins to fall it is not as high as before by one last[?]</td>
</tr>
<tr>
<td>Campbell</td>
<td>May 24-25, 1835</td>
<td>Nashwaak</td>
<td>*High water</td>
</tr>
<tr>
<td>Crawford</td>
<td>May 12, 1835</td>
<td>Long Reach</td>
<td>River rises fast higher then it was last year</td>
</tr>
<tr>
<td>Crawford</td>
<td>May 27, 1835</td>
<td>Long Reach</td>
<td>River rises it is what is called a high freshet</td>
</tr>
<tr>
<td>Campbell</td>
<td>1836</td>
<td>Nashwaak</td>
<td>*High water May 3, 6, 8, 9, 16, August 31, Sept. 1</td>
</tr>
<tr>
<td>Campbell</td>
<td>1836</td>
<td>Little River</td>
<td>Little River [Hammond River?] very high August 12</td>
</tr>
<tr>
<td>Campbell</td>
<td>1837</td>
<td>Nashwaak</td>
<td>*High water May 1, 2, 8, 20, June 7, 10</td>
</tr>
<tr>
<td>Campbell</td>
<td>1838</td>
<td>Nashwaak</td>
<td>*High water April 30, May 10, very high Nov 6</td>
</tr>
<tr>
<td>Campbell</td>
<td>1839</td>
<td>Nashwaak</td>
<td>*High water May 2</td>
</tr>
<tr>
<td>Campbell</td>
<td>1840</td>
<td>Nashwaak</td>
<td>*High water June 2, 22</td>
</tr>
<tr>
<td>Campbell</td>
<td>1841</td>
<td>Nashwaak</td>
<td>*High water May 4, 8</td>
</tr>
<tr>
<td>Campbell</td>
<td>1842</td>
<td>Nashwaak</td>
<td>*possibly high water August 4</td>
</tr>
<tr>
<td>Campbell</td>
<td>Aug. 23, 1843</td>
<td>Nashwaak</td>
<td>High water. Bridge gave way.</td>
</tr>
<tr>
<td>Miles</td>
<td>Apr. 29, 1843</td>
<td>Maugerville</td>
<td>water is now higher than it has been since I have lived on this farm say 15 yrs [logs lost]</td>
</tr>
<tr>
<td>Name</td>
<td>Date Range</td>
<td>Location</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------</td>
<td>--------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Miles</td>
<td>Mar. 28, 1846</td>
<td>Maugerville</td>
<td>Water is uncommonly high and pouring into all the creeks and over the low grounds –</td>
</tr>
<tr>
<td>Kindervater (55) 2</td>
<td>Mar. 20 - Apr. 5, 1846</td>
<td>Wolastoq/SJRV</td>
<td>*Damages from the Aroostook River and Presque Isle, ME, to Indiantown</td>
</tr>
<tr>
<td>Miles</td>
<td>May 6, 1847</td>
<td>Maugerville</td>
<td>Water is very low for the season…</td>
</tr>
<tr>
<td>Kindervater (56) Oct. 31 - Nov 4., 1851</td>
<td>Grand Falls-F'ton</td>
<td></td>
<td>*Cattle, hay, lumber, lost, and homes damaged, but telegraph from Grand Falls allowed Frederictononians to prepare and prevent loss of goods on wharves</td>
</tr>
<tr>
<td>Miles</td>
<td>May 11, 1852</td>
<td>Maugerville</td>
<td>The water is higher than the 1st rise and still rising.</td>
</tr>
<tr>
<td>P. Nase</td>
<td>May 23, 1854</td>
<td>Indiantown</td>
<td>Great freshet at height</td>
</tr>
<tr>
<td>Miles</td>
<td>May 13-23, 1854</td>
<td>Maugerville</td>
<td>*Extensive flooding including in Miles' cellar and barn; removed root vegetables and erected staging for livestock</td>
</tr>
<tr>
<td>Hoyt Journal</td>
<td>November, 1854</td>
<td>Kennebecasis</td>
<td>GREAT FLOOD</td>
</tr>
<tr>
<td>Kindervater (40) 2 November, 1854</td>
<td>Kennebecasis</td>
<td></td>
<td>a flash flood</td>
</tr>
<tr>
<td>Kindervater (56) 2 April, 1857</td>
<td>Fredericton</td>
<td></td>
<td>*ice jams and flooding</td>
</tr>
<tr>
<td>P. Nase</td>
<td>May 15; 21, 1861</td>
<td>Mt. Hope/Nerepis</td>
<td>Freshet on a stand… The island on the .Mount Hope farm nearly covered with water; Freshet remains high</td>
</tr>
<tr>
<td>P. Nase</td>
<td>June 8, 1864</td>
<td>Mt. Hope/Nerepis</td>
<td>A very low freshet</td>
</tr>
<tr>
<td>P. Nase</td>
<td>October 14, 1864</td>
<td>Mt. Hope/Nerepis</td>
<td>The water is rising fast...driving logs in the Nerepis, this boom… gave way… They swung another at Ox Bow and secured most of their logs.</td>
</tr>
<tr>
<td>MacDonald</td>
<td>May 24-26, 1865</td>
<td>Central Cambridge</td>
<td>High freshet</td>
</tr>
<tr>
<td>P. Nase</td>
<td>May 27, 1865</td>
<td>Mt. Hope/Nerepis</td>
<td>Freshet higher than in any year since 1854 – not as high now as then, over the highest part of the island on Mount Hope farm – six inches.</td>
</tr>
<tr>
<td>Morrison</td>
<td>May 23, 1871</td>
<td>Fredericton</td>
<td>No such freshet since 1854; *booms broke/gone</td>
</tr>
<tr>
<td>Morrison</td>
<td>May 14, 1873</td>
<td>Fredericton</td>
<td>Water higher than ever since we came here.</td>
</tr>
<tr>
<td>Morrison</td>
<td>May 15, 1873</td>
<td>Fredericton</td>
<td>Water has not been as high since 1854. Mill had to shut down</td>
</tr>
<tr>
<td>P. Nase</td>
<td>May 15; 29, 1873</td>
<td>Saint John area</td>
<td>Rising fast, covers public wharf; falling a little</td>
</tr>
<tr>
<td>Name</td>
<td>Date</td>
<td>Location</td>
<td>Comment</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------</td>
<td>--------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>P. Nase</td>
<td>May 11, 1876</td>
<td>Saint John area</td>
<td>Freshet just coming over end Public Wharf</td>
</tr>
<tr>
<td>Morrison</td>
<td>May 22, 25, 1876</td>
<td>Fredericton</td>
<td>Mill had to shut down on account of high water</td>
</tr>
<tr>
<td>Morrison</td>
<td>May 4, 1879</td>
<td>Fredericton</td>
<td>water very high this spring. Splendid stream driving…</td>
</tr>
<tr>
<td>Morrison</td>
<td>May 2, 1880</td>
<td>Fredericton</td>
<td>not as high on Nashwaak for 20 years</td>
</tr>
<tr>
<td>P. Nase</td>
<td>May 21, 1882</td>
<td>Saint John area</td>
<td>freshet moderately high</td>
</tr>
<tr>
<td>Morrison</td>
<td>Apr. 20, 1884</td>
<td>Fredericton</td>
<td>Water as high as it ever is except an ice jam.</td>
</tr>
<tr>
<td>P. Nase</td>
<td>Apr. 26, 1884</td>
<td>Indiantown</td>
<td>height of freshet at I. Town which was to top of base and bottom of trough of the Kenedy Fount, or Monument</td>
</tr>
</tbody>
</table>

^ This comment from Dibblee is difficult to interpret; my calculations suggest that most of the freshets up until this point had lasted longer. I am reckoning freshet from the first comment about water rising, to the last comment about water falling (if they do not comment on the fall, then I took the date of their last freshet comment). How did Dibblee reckon the length of freshet? Did he mean that water levels were consistently low during the freshet of 1820?

Endnotes:


## Appendix III:

**Highest Freshets of the 19th Century in Parts of the Central and Lower River Valley**

Note: "Fredericton" is abbreviated as "F'ton," "IT" stands for "Indiantown," and "SJ" stands for Saint John.

<table>
<thead>
<tr>
<th>Year</th>
<th>Season</th>
<th>Month</th>
<th>Day</th>
<th>Source (page number)</th>
<th>Location</th>
<th>Height details/Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1817</td>
<td>Spring</td>
<td></td>
<td></td>
<td>P. Nase (19)</td>
<td>IT</td>
<td>Highest on record at Indiantown</td>
</tr>
<tr>
<td>1817</td>
<td>Spring</td>
<td>May</td>
<td>10</td>
<td>Dibblee</td>
<td>below Woodstock</td>
<td>&quot;The highest fresh out of 3, but one, since we have been in this country&quot;</td>
</tr>
<tr>
<td>1832</td>
<td>Spring</td>
<td>May</td>
<td>20</td>
<td>Crawford</td>
<td>Long Reach</td>
<td>&quot;the freshit Rises fast very high - it is a high freshet&quot;</td>
</tr>
<tr>
<td>1832</td>
<td>Spring</td>
<td>May</td>
<td>27</td>
<td>Crawford</td>
<td>Long Reach</td>
<td>&quot;The River rather falls. ... a great freshet 2 feet up wood on the beach at the upper lot&quot;</td>
</tr>
<tr>
<td>1832 or 1831</td>
<td>Spring</td>
<td>April</td>
<td>11</td>
<td>Kindervater (55) 1</td>
<td>Keswick Isl.s and F'ton</td>
<td>May have been higher than the floods of 1854 and 1887 at Fredericton</td>
</tr>
<tr>
<td>1832</td>
<td>Spring</td>
<td></td>
<td></td>
<td>Audobon (277) 2</td>
<td>F'ton</td>
<td>Flood</td>
</tr>
<tr>
<td>1846</td>
<td>Spring</td>
<td></td>
<td></td>
<td>Flood Database 3</td>
<td>Grand Falls to SJ</td>
<td>Melting of a heavy snow accumulation plus heavy rain for a week beginning March 13. There may have been some ice jams. The event has been referred to as the &quot;Great Freshet&quot; of 1846.</td>
</tr>
<tr>
<td>1846</td>
<td>Spring</td>
<td>March</td>
<td>28</td>
<td>Miles Microfilm</td>
<td>Maugerville</td>
<td>&quot;water continues to rise rapidly the swamp is all covered, and on the causeway sufficiently deep to cross it with a large Canoe. The Ice remains stationary yet in the River, must be pretty strong- as the water is uncommonly high and pouring into all the creeks and over the low grounds.&quot;</td>
</tr>
<tr>
<td>1846</td>
<td>Spring</td>
<td>April</td>
<td>3</td>
<td>Miles Microfilm</td>
<td>Maugerville &amp; upriver</td>
<td>&quot;Heard Old Mr Thos Sewell is drowned and that Col. Shore has lost his barn and all his stock on the island.&quot;</td>
</tr>
<tr>
<td>Year</td>
<td>Season</td>
<td>Month</td>
<td>Date</td>
<td>Source</td>
<td>Location</td>
<td>Event Description</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
<td>-------</td>
<td>------</td>
<td>--------</td>
<td>----------</td>
<td>--------------------</td>
</tr>
<tr>
<td>1846</td>
<td>Spring</td>
<td>Mar.- Apr.</td>
<td>20 to 5</td>
<td>Kindervater (55)</td>
<td>Aroostook R. to IT</td>
<td>&quot;Great Freshet&quot;; *extensive damages to infrastructure, homes, and wharves</td>
</tr>
<tr>
<td>1854</td>
<td>Spring</td>
<td>May</td>
<td>23</td>
<td>P. Nase (19)</td>
<td>IT</td>
<td>“Great freshet at its height, 14 inches higher than in 1817, that being highest on record, 10 1/2 inches over my counter (Cassidy Building), I. Town.”</td>
</tr>
<tr>
<td>1854</td>
<td>Spring</td>
<td>May</td>
<td>21</td>
<td>I. K. Hoyt</td>
<td>Kennebecasis</td>
<td>&quot;The freshet higher than for 25 years, traveling nearly suspended on the Great Road, by the water flowing over the Road and Bridges.&quot;</td>
</tr>
<tr>
<td>1854</td>
<td>Spring</td>
<td>May</td>
<td>24</td>
<td>I. K. Hoyt</td>
<td>Kennebecasis</td>
<td>&quot;Hampton Ferry Bridge afloat; Freeze moved upstairs in his house, water 6 inches deep over the lower flat&quot;</td>
</tr>
<tr>
<td>1854</td>
<td>Spring</td>
<td>May</td>
<td>25</td>
<td>I. K. Hoyt</td>
<td>Kennebecasis</td>
<td>&quot;Water begins to run off. River 16 feet above Summer level&quot;</td>
</tr>
<tr>
<td>1854</td>
<td>Spring</td>
<td></td>
<td></td>
<td>Kindervater (61)</td>
<td>F’ton to IT</td>
<td>High at Fredericton, Sheffield, and Indiantown; at Fredericton, possibly higher than in 1887</td>
</tr>
<tr>
<td>1854</td>
<td>Fall</td>
<td>Nov.</td>
<td>14</td>
<td>I. K. Hoyt</td>
<td>Kennebecasis</td>
<td>&quot;GREAT FLOOD&quot;</td>
</tr>
<tr>
<td>1887</td>
<td>Spring</td>
<td></td>
<td></td>
<td>Kindervater (61)</td>
<td>F’ton to IT</td>
<td>at Fredericton, may have been higher than 1854; was 14 inches higher at Sheffield; may have been a foot higher at Indiantown</td>
</tr>
</tbody>
</table>

**Endnotes:**

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Teresa Evelyn Margaret Devor Hall

Education

University of New Brunswick, 2012, Masters of Arts in History

St. Thomas University, 2008, Bachelor of Arts in History with Honours

Publications


Co-authored Publications


Conference Presentations:


“Historical Climatology and Climate History in Canada: A Reconnaissance and One Historian’s Approach,” The Climate is History Conference, University of Western Ontario, 12 May 2014.

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