From Path to Portage: Issues of Scales, Process, and Pattern in Understanding New Brunswick Riverine Trail

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From Path to Portage: Issues of Scale, Process, and Pattern in Understanding New Brunswick Riverine Trail Networks

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ABSTRACT

Scholarly questions about the effects of scales of analysis on data interpretation have been particularly pertinent to historical archaeologists, and have arisen in concert with the continuing push to expand the technical and analytical boundaries of the discipline. The advent of Geographic Information Systems (GIS) has facilitated the mapping and analysis of artifact distributions at large scales, as well as the easy revisualization of data in multiple scales. GIS has become the tool of choice for landscape archaeological approaches, which favor regional-scale surveys. While a growing body of literature exists regarding regional-scale analysis of overland trail systems, very little has been written about trail networks in riverine systems. By contrasting regional-scale and bodily-scale analyses of the riverine trail networks identified in the 1899 work of William Ganong, *A Monograph of Historic Sites in the Province of New Brunswick*, this paper explores the limitations of regional-scale approaches to analyses of movement. I argue that the complexity of processes that determine the accessibility of routes, revealed though this analysis of movement on different scales, complicates conclusions drawn from solely regional-scale analyses of paths and trails.
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This Thesis is dedicated to my family.
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Introduction

Trails and paths are physical records of human movement through the landscape. They materialize engineering and navigation techniques, local understandings of place, and memory. As material records, they provide anthropologists and archaeologists with an understanding of past infrastructure, as well as clues to social and political structure and the organization of economic exchange. Trails and paths permit the understanding of movement at multiple scales, from the embodied to the regional, but they also complicate archaeological approaches to material culture analysis. Questions of scale can be particularly difficult when analyzing trails and pathways—their web-like networks are difficult to situate as features as they lack the boundaries of traditional archaeological sites.

Issues of scale are familiar to archaeologists, who have been conducting large-scale regional surveys since the early days of the discipline (see Willey 1955). Critical discussion of scalar issues arose during the processual turn of the 1960s, in tandem with the push for an expansion of the technical and analytical boundaries of the field (Deetz 1993). This turn towards quantitative analysis, coupled with the advent of computer modeling and Geographic Information Systems, or GIS, facilitated the mapping of artifact and site distributions, and allowed archaeological projects to expand beyond regional scales and address the supra-regional infrastructure of states and empires through geographical statistics.
Previous work on trail and path networks has largely been conducted at regional scales. These networks have received a great deal of attention in western Europe in conjunction with the development of landscape archaeology, which draws attention to the ways people shaped, defined, and experienced landscapes in the past (Snead et al. 2011:5). In the Americas, analysis of trails, pathways, roads, and causeways has been largely focused on the pre-Columbian states and empires of South America, with some analysis of networks in Mesoamerica and the American Southwest (Snead et al. 2011:7). In these settings, roads and pathways have formed an integral part of landscapes of monumental architecture and regional movement. Little archaeological attention has been paid to networks in non-monumental settings, in other areas in North America (Snead et al. 2011:9).

Documentary records exist for trail networks in several areas in North America, but a particularly detailed record exists for the Canadian Maritime province of New Brunswick. This province is notable for its dense riverine systems and porous coastline, which make it especially easy to traverse by canoe. Researchers addressing the archaeology of trails have often dismissed the need for the analysis of trails in riverine systems, because they believed rivers eliminated the need for the networks of pathways that could be subjected to archaeological analysis (Earle 2011:261, 263). In New Brunswick, however, in the late 19th century, the well-known botanist and antiquarian William F. Ganong interviewed residents and compiled previously-mapped pathways into a regional-scale compendium of portage paths. The portages described in Ganong’s *A
Monograph of Historic Sites in the Province of New Brunswick (1899) formed a network of routes that connected riverine courses of travel. Along these paths, canoes and goods could be carried, avoiding rapids or areas of low water. Ganong paired his maps with narrative descriptions of the portage routes, and these narratives provide additional insight into the attributes of each route and the variability of route accessibility.

The historic and cartographic material collected by Ganong, coupled with data about fluctuations in accessibility and connectivity in the network of portage paths, reveal the constantly changing attributes of these routes. Despite such dynamism and fluidity, these routes are artifacts; in other words, they are multi-attribute material remains of human activity. Previous analyses of path systems have focused on how the patterning of the attributes in these systems reflect social systems or economic exchange. Still, these analyses fail to account for the ways that processes happening at large scales (like seasonal variation) and at small scales (like canoe technologies) would have together created a dynamic path network—a network of constantly changing connectivity. In this paper, I move from an analysis of fluctuations in portage networks of New Brunswick at a regional scale, to an individual-scale analysis of the ways that canoe technology and maneuvering technique could mitigate these seasonal restrictions on movement. The use of canoes and maneuvering techniques enabled people to increase the distance they were able to traverse during times of low water, and increase their speed of travel during high water times. I argue that the complexity of processes that determine the accessibility of...
routes, revealed though this analysis on different scales, complicates conclusions drawn from solely regional-scale analyses of paths and trails as static entities.
Background: From Paths and Trails to Movement

“Rivers are good to think with.” So says Matt Edgeworth, who encouraged archaeologists to break down polarities of thought, boundaries, and disciplinary lines in his recent call for the development of an “archaeology of flow.” “Flow itself,” he continues, “challenges us to adopt more fluid and dynamic forms of investigation. To think in terms of flow leads to a greater emphasis on continuities—less on discontinuities” (Edgeworth 2011).

Edgeworth’s challenge is a continuation of a long archaeological scholarly focus on issues of scale, pattern, and process, and the connections between them. Early scholars sought patterns in assemblages of material remains; by grouping these collections based on observed traits and establishing chronologies, culture-histories could be reconstructed (Lock 2003:2). Archaeologists became increasingly interested in expanding their analysis from patterns within assemblages to patterns across sites (See South 1978). With the advent of aerial photography, large-scale analysis of spatial patterning across landscapes became feasible. Gordon Willey pioneered the study of settlement patterning in the 1940s and 50s through his analysis of sites in Peru’s Viru Valley (1955). Rather than examine each settlement site individually, Willey sought to understand the relationship of sites to the valley landscape and community as a whole. By the 1960s, archaeologists had become increasingly interested in developing testable hypotheses about the development of spatial relationships in and between sites of human activity.
Settlement pattern studies in the 1960s largely followed two different avenues of investigation. The first was ecological in focus, and assumed that settlement patterns were primarily the product of interactions between environment and technology. The second approach utilized settlement pattern data as the basis for making inferences about the social, political, and religious organization of people in the past (Linebaugh and Robinson 1994:1). Trigger sought to understand the relationship between the size and distribution of sites and the social and political organization of complex societies (Trigger 1978:168-169). He advocated the utilization of settlement pattern data at three scales: individual buildings, community layout, and zonal patterns. Patterns displayed at each scalar level could be seen as functionally related to different aspects of a culture—individual structures could furnish information about family organization or craft specialization, while zonal-scale patterns could provide information about trade or warfare (Linebaugh and Robinson 1994:1).

Post-processual archaeologists questioned the validity of straightforward ties between data and past culture. Instead, they understood the relationship between the archaeologist and archaeological material record as an interpretive discourse between subject and object (Lock 2003:2). Archaeologists who follow phenomenological approaches to the study of past landscapes believe this interpretive discourse to be situated in the body of the archaeologist. This is because they understand the human body to be the principal element in the experience of our surroundings; a vehicle shared between peoples of the present and the past (Snead et. al. 2011:14). They emphasize the
subjectivity of human experience, and at times, utilize their bodily experiences as a medium to access past experiences of place and space. Tilley’s (1994) study on monumental paleolithic barrow structures in Great Britain, for example, draws upon his physical experience to aid in the interpretation of relationships between sites in the landscape. Tilley conceptualizes paths and trails as akin to textual inscriptions, formulated through bodily action, in the form of pedestrian speech acts (Tilley 1994:28-30).

In past research, archaeological analysis of trails and pathways has spanned the theoretical and scalar spectrum. In the Americas, research on paths and trail systems was spurred by Trombold’s (1991) edited volume, Ancient Road Networks and Settlement Hierarchies in the New World, which made the case that trails, paths, and roads could be treated as elements of the built environment and analyzed, described, and classified on a regional scale, much like the process followed in settlement pattern studies. The integration of digital tools with archaeological practice has become an integral part of this analysis; GIS, remote sensing, and computer simulation are capable of quickly producing, processing, and synthesizing large quantities of different types of data. The construction of visualscapes, which depict which areas are visible from vantage points around a region, and least-cost path models, which calculate the least difficult routes of movement through the landscape, are two increasingly popular ways of uncovering the locations of past trails in the landscape. In some studies, these digital tools have been used in an attempt to bridge the gap between the world-as-experienced and the world-as-mapped, by
incorporating elements of the embodied experience into large-scale maps (Snead et al. 2011:12).

Emerging theories of mobility in related fields of anthropology have touched on some of the difficulties experienced by archaeologists who attempt to develop archaeologies of paths and trails. Issues of site definition and scale are daunting when it comes to trails, which cannot be reduced to bounded spaces. “By their nature, trails, paths, and roads often have no beginning or end” (Snead et al. 2011:2-3). In addition, temporally, trails, paths, and roads have long lifespans— in many cases their use spans centuries, and may continue to the present time. In their new mobilities paradigm, Sheller and Urry categorized landscapes as “endless regimes of flows” that move at “different speeds, scales, and viscosities” (2006:213). ‘Flow’ as a way to conceptualize trails and pathways has found purchase among archaeologists, particularly among those scholars who seek to investigate informal, ad hoc paths, as opposed to more formal routes like causeways and roads. Ingold’s work on movement represents one visualization of flow; Ingold understood all organisms as constituted within a relational field. According to Ingold, trails are “lines of becoming”, which are not defined in terms of connectable points, as they are continually emerging and changing (Ingold 2008:1803).

Though “flow” as a concept shifts the focus of analysis from the construction of a static network to a consideration of the dynamic and variable nature of movement, it tends to compress the diversity of individual experiences in traversing trails into idealized types. In Rockefeller’s critique, he argues that “flow, as an image of agentless movement
with no starting point and no telos can elide agency, privilege the large scale over the small, and in the process rhetorically align the observer with the perspective of a manager” (Rockefeller 2011:558). This is problematic, for the patterns of movement that have been described as flows are “cobbled together by actors and observers from extremely heterogeneous actions, projects, and interactions that occur at many different scales” (Rockefeller 2011:567). Cresswell (2010), also engaging with theories of flow, argues for the development of a “politics of mobility” that accounts for the entanglement of diverse varieties of “motive force, speed, rhythm, route, experience, and friction” (19). According to Cresswell, “mobilities need moorings” (2010:29).

Though the riverine system in New Brunswick is certainly in a constant state of flow, I contend that the rivers of New Brunswick are “good to think with” because they highlight the frictions and dynamism of movement through complex trail system. Rather than facilitating travel as a network of neutral, unimpeded flows, the seasonality of the river system constrained or expedited movement, presenting a constellation of challenges that complicated movement through the province. According to Bourdieu (1977) and Giddens (1984), there is a complex, recursive relationship between human agency and structure; accordingly, the portage path network can be envisioned as both emerging through and shaping the actions of human agents. The ethnographic and historic evidence available for New Brunswick illuminates the ways that people encountered, negotiated with, and overcame the difficulties of movement through the province with the creation of portage trails, the development of techniques of movement, and canoe
technology. By considering the portage trails through the New Brunswick landscape cumulative evidence of this process, involving different actors moving for different purposes in different periods, it becomes clear that in the case of paths and trails, simply affiliating types of static spatial patterns with social structures may result in ambiguous conclusions. To understand movement through the province of New Brunswick, an archaeologist must make sense of the ways that seasonal fluctuations—processes happening at the regional level—and technology and technique—occurring at the level of the individual— together affected the movements that resulted in the creation of the portage path record over time.
Ganong’s Portage Path Data: A Vast Temporal Scale

In William F. Ganong’s 1899 manuscript, *A Monograph of Historic Sites in the Province of New Brunswick*, Ganong presented an analysis of portage paths and routes of travel used by the indigenous people of the province. A native of New Brunswick, Ganong gathered the material for his monograph by consulting old colonial, “exploration-era”, and early geological survey maps of the region for portage markings, by analyzing colonial and indigenous place names, consulting with local residents, and in some cases, walking the terrain in uncertain areas to identify likely portage routes (Ganong 1899:237-238). He compiled his data in a series of narrative descriptions of portage paths, and also included several small detail maps of portage paths. Some of these maps
were reproductions of drawings of locals, instead of maps produced by Ganong (See Figure 1).

Ganong acknowledged that the portage paths had been used for a very long time, and were still in use at the time of the manuscript’s compilation. He says:

Gesner states that one of the most used, that between Eel River Lake and North Lake, on the route from the St. John to the Penobscot, had been used so long that the solid rocks had been worn into furrows by the tread of moccasined feet… I have seen something very similar on the old portage path around Indian Falls on the Nepisiguit, but I am inclined to think it is the hob-nailed and spiked shoes of the lumbermen which have scored these rocks. [Ganong 1899:236-237]

Ganong’s survey of the path infrastructure took place during a boom in the lumber industry that had profoundly reshaped the landscape of New Brunswick, and it is important to understand how intensification in fishing, fur-trading, and lumber harvesting, all associated with colonization, affected the portage paths that he was able to observe.

Ganong divided New Brunswick into seven districts, including the Passamaquoddy district (composed of the Chiputneticook-St. Croix drainage and Passamaquoddy Bay), the St. John district (the St. John drainage area), and the Petitcodiac-Missequash, Richibucto, Miramichi, Nepisiquit, and Restigouche districts (which today form the eastern coastline) (see Figure 7). Most archaeological work to date has been done in the Passamaquoddy and St. John areas. Archaeologists generally agree that there was a largely unbroken cultural sequence in the region for the 1500-year-span prior to European contact (Deal 2002:321). Ongoing research suggests a trend from the Middle to Late Woodland period (Middle Woodland ca. 2000-1000 B.P, Late Woodland ca. 1000-500
B.P.) towards the increased exploitation of a wider range of resources through trade, and the adoption of agriculture by communities in the region (Deal 2002:321). Archaeologists understand the communities of Passamaquoddy, Wolastoqiyik (Maliseet), and Mik'maq who lived in the area at the time of European contact to be descendants of Late Archaic populations in the area (Deal 2002:321).

In the Passamaquoddy district, around the bay area, archaeological research suggests that ancestral communities relied heavily on sea-mammal hunting for food, due to the relative richness of marine resources in the area. Older communities were established on outlying islands, but towards the Late Woodland and early historic period, people shifted towards building major residential villages at the heads of tide of major rivers, while maintaining smaller sites for resource-gathering on the islands (Deal 2002:332). The Chiputneticook-St. Croix drainage area, as well as the area around Spednic Lake, are believed to have been the principal interior resource areas for the Passamaquoddy (Deal 2002:333). The Saint John drainage basin and the Tobique and Témiscouata rivers up to the St. Lawrence river, which together compose Ganong’s Saint John district, were major portions of Wolastoq territory in the historic period (Deal 2002:334). Archaeological work in this region has been less comprehensive to date than in nearby areas, but Burke’s (2000) investigations suggest that Wolastoq populations along the St. John were loosely divided into two groups—an interior-dwelling group,

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1 The ‘head of tide’ or tidal limit is the furthest point upriver where the river depth fluctuates with the effects of the tides. It is considered to be the inland boundary of a river’s estuary.
characterized by small family bands that used major lithic resources as they completed their annual round, and a coastal group that was more sedentary and utilized coastal resources for subsistence (Deal 2002:334-335). Early Historic Mì’kmåq territory extended along the rivers of the eastern coastline of New Brunswick, as well as into Nova Scotia and Prince Edward Island (Erickson 1978:124). Narratives from Le Clerq (1910) and Denys (1908) describe movement in the area during the Early Historic period: year-round, Mi’kmaq people would hunt moose and caribou, while in the winter they would rely more heavily on coastal resources, including hunting sea-mammals and gathering shellfish. Overall, indigenous patterns of movement in the early colonial period are still poorly understood archaeologically, but seem to have been based around cyclical movement from the interior to the coasts and returning with the seasons.

The fur trade, which arose in conjunction with the establishment of contacts with Europeans, significantly altered traditional subsistence strategies and mobility patterns for the indigenous peoples of New Brunswick. Most research has been done on the effects of the fur trade on the Mi’kmaq of New Brunswick’s northern coast and Nova Scotia. Sources suggest that the fur trade before 1710 emerged from casual contacts between fishermen, who would trade for furs when drying their fish catch on the coastline. The beginning of the fur trade had profound consequences for the Mi’kmaq, who began to change their annual subsistence cycles, and their movement around the province, so that they could engage in this trade with Europeans (Burley 1981:211). For example, archaeological evidence from the 16th century suggests that Mi’kmaq people
began to abandon their summer fishing villages in the interior and return to the coast to trade, a reversal of their traditional subsistence cycles (Deal 2002:336).2

Early colonists believed the St. John River basin to be the richest area for furs in all Acadia. Such was reported by early voyager Etienne Bellenger, who in 1583 sailed up along Cape Breton and Nova Scotia into the Bay of Fundy and then down along the Maine coast to Penobscot bay, collecting furs along the way (Gwyn 2003:69). As the New England fur trade developed, the bulk of furs originating from the New Brunswick area were shipped to Boston for mass re-export to London. Some records exist of the activities of Boston merchants in the St. John Valley; in 1763-4, Benjamin Greene and Michael Francklin purchased furs in the St. John Valley, and shipped them to London through Benjamin Faneuil of Boston (Gwyn 2003:71). The following year, the firm of Simonds, Hazen & White began operations in the valley, trading with the Wolastoqiyik at Aukpaque (Gwyn 2003:71). The centrality of the St. John's trade to fur export from New Brunswick suggests that the Wolastoqiyik may have had control over the key fur sources in the region. Like Mi’kmaq populations to the east, there were changes in Wolastoq movement as a result of their involvement in the fur trade. Samuel de Champlain’s early narrative on the populations of the Bay of Fundy coast suggested a cyclical pattern of movement from summer coastal habitations to winter inland hunting areas, while archaeological excavations have suggested that the opposite pattern existed in the Late

2 Snow discussed the centrality of river systems to the organization of “family hunting territories” in the Maritime provinces and Maine. According to Snow, the Wabanaki defined individual territories in terms of drainage areas “such that lakes and streams were at the nucleus rather than the periphery of each of them” (1968:1146-1147).
Prehistoric period (Hoffman 1955). Sanger (1987) attributes this difference to the intensification of the fur trade.

Though French colonists arrived in New Brunswick in the early 17th century, population growth remained slow. By 1671, some sixty years after first establishing a settlement at Port Royal, the number of Acadians living in the maritime provinces numbered below 500 (Wynn 2013:237). Acadians improved the farming potential of the coastline around the Bay of Fundy by diking the extensive marshes, and by 1741, the colonial population numbered about 10,000 (Wynn 2013:237). In 1755, however, “le grand dérangement” forced Acadians from their farms, and a stream of New England farmers and fishermen began to move northward. This movement was greatly accelerated during the American War of Independence, when some 35,000 Loyalist refugees arrived and began to seize land and resources. Settlement was densest around the waterways, which were used for transportation, and the timber was cleared from along rivers and along the coast for the construction of fields (Wynn 2013:239).

Although the fur trade and the establishment of European settlements changed how people moved around the province, by far the most dramatic landscape changes were wrought by the rise of the New Brunswick lumber industry. Early in the 19th century, French Emperor Bonaparte blockaded the Baltic states, prohibiting the export of timber, a strategic resource for the British navy. The British turned to their remaining North American colonies to fulfill their needs, and timber from New Brunswick and the St. Lawrence began to be in high demand. The timber industry was the first truly lucrative
enterprise for the colonists in New Brunswick which had long been on the periphery of the extensive fur trading system that favored the north and west (Jennings 2004:145).

One commentator praised the timber industry as a boon to the province, calling it:

“the chief source of money by means of which the country has been opened up and improved; by which the roads, bridges, and public buildings have been completed; its rivers and harbours made accessible; its natural resources discovered and made available; its Provincial Institutions kept up and its functionaries paid [qtd. in Wynn 2013:240].

Soon thereafter, local people began to notice the effects of the timber industry on the rivers. The fisheries of the province were negatively impacted by saw-mill construction on the major rivers. In his 1852 report on the sea and river fisheries of New Brunswick, government agent Moses Perley reported that on the Salmon River, near Quaco, where the last rapids descended into the ocean, there was “a solid dam from bank to bank upon which there are two double saw mills.” (qtd. in Wynn 2013:240). Another dam stood a quarter mile upstream. These dams obstructed the spawning runs of salmon and other fish species, disrupting what had been a major subsistence source and export product from the province. Deforestation in the uplands dramatically increased the rate that sediments flowed into the rivers and streams, and increased rainwater runoff, accelerating erosion and amplifying seasonal fluctuations of river flow. The sediments clogging rivers were joined by the refuse of the timber industry. Sawdust, unfit logs, bark, and other wood debris from timber processing were dumped into the rivers and harbors near the mills. The problem of debris became so acute that by the 1840s, commercial
interests feared that the St. John harbor was soon to be filled by an accumulation of sawdust. On smaller rivers and streams, edgings, laths, and other discarded wood littered the banks and riverbeds (Wynn 2013:241). Ganong began traversing the province to gather information about portage paths just as this boom in the lumber industry began to slow, and it is likely that some of his observations about the feasibility of traversing paths and his ability to locate paths was impacted by the effects of this industry.

To interpret the significance of the portage patterns observed by Ganong, it is first important to understand who was moving and when. The long duration of use means the portage paths Ganong observed may have represented a palimpsest of the accumulated actions of many different communities over time. In addition, Ganong made his observations about the historic waterways and portage paths of the province following a period of dramatic change in the river systems, and this likely influenced his observations. Further archaeological work is needed to clarify the chronologies of use for each of these paths, where possible, before we will be able to understand the temporal scale that these paths represent.
While the large temporal scales represented by Ganong’s portage path data represent one challenge to understanding movement through the province, another challenge is accounting for the effects of large, regional-scale processes like seasonal cycles. The province of New Brunswick differs from other areas in Eastern North America because of the availability and connectivity of navigable waterways. Several large rivers direct the flows from the major drainage basins of the province. The largest by far is the 418-mile (673 km) long St. John river, which, with its numerous tributaries, drains the entire northwestern, central, and south-central parts of the province. At the mouth of the river, next to the city of Saint John, the Bay of Fundy’s extreme high tides reverse the rapids, and raise the lower section of the river for up to 95 miles (150 km) inland. The St. Croix River parallels and drains the southwestern boundary of the province. The eastern part of the province is drained by the Restigouche and Nepisiguit Rivers in the north, the Miramichi in the north-central area, and the Petitcodiac in the southeast (Patterson online). Because the largest rivers in the province descend in roughly parallel lines, multiple lines of portage could be established, and with them, multiple alternate routes of travel through the province. As a result of the convenience of these waterways, long overland trails were never constructed in New Brunswick, unlike in areas further south, such as southern New England (Ganong 1899:234). The connectivity of sites in the province would vary considerably throughout the year based on the
seasonal fluctuation in river flow, as well as the geologic characteristics of the rivers themselves.

New Brunswick experiences four clearly distinguished seasons. Winters are snowy and summers are mild, while the fall and spring are marked by cold nights and warm days. At Fredericton, temperatures range from an extreme low of -35 degrees Fahrenheit (-37 C) to an extreme high of 99 degrees Fahrenheit (37 C). Temperatures are more moderate in the southern coastal areas. Normal annual rainfall is slightly above 30 inches (800 mm) and snowfall averages about 115 inches (2,900 mm); annual precipitation (which also accounts for snowmelt) is about 43 inches (1,100 mm) (Patterson 2015).

This seasonal change results in river flow rates and flow volumes that are constantly in flux. Environmental scientists refer to these rates and volumes together as a “river flow paradigm,” and use a series of measures, called hydrological indices, to determine the characteristics of such a paradigm for a particular river basin. “In recent years, the natural flow paradigm has become the premise for the development of indices that characterize the magnitude, duration, frequency, timing, and variability of events in natural hydrological regimes” (Daigle et al. 2011:51-52). First presented by Poff et. al., the natural flow paradigm describes the flow characteristics of rivers prior to their obstruction by dams, factories, and other human interventions (1997:769). In New Brunswick, the flow paradigm fluctuates more than for any other province in the
Maritimes, and it is essential to understand this paradigm to grasp the impacts of seasonality on portage-river connectivity in the province.

Variations in natural flow regimes due to seasonality can be detected through comparison to a mean average flow and volume for the province. These averages are derived from the measurements obtained from gauged streams or those streams near hydrometric stations. There are currently 57 hydrometric/gauge stations deployed on New Brunswick rivers and streams, and data from these stations is routinely gathered and synthesized into regional reports by the New Brunswick Water Office (Natural Resources Canada 2013). Though characteristics of floods and low flows differ from one drainage basin to another and the results of a single station analysis are only applicable to nearby streams, environmental scientists have built regional models of average flows. Overall, there is a positive relationship between the size of a drainage basin, river depth, and rate of flow:

The mean annual flow by provinces varied between 0.536 m$^3$/s (Middle Branch Nashwaaksis Stream, 26.9 km$^2$) and 272 m$^3$/s (Saint John R. 14,700 km$^2$) in NB. ... A good agreement between the regression lines and observed data was observed throughout the study region, with over 95% of the variability explained... This means that small and large rivers behave similarly to precipitation and that the relationship is almost linear [Cassie and Robichaud 2009:11].

Around the province, as precipitation fluctuated with the seasons, rivers would respond in similar ways in terms of flow volumes and rates.

Compared to the average flow, New Brunswick experiences a cycle of seasonally-tied high and low flow events. Results from regression analyses of annual flow per
Figure 2: Routes that appear in red, above, would have become less accessible in the low water conditions during the dry season. See Table 1 for Ganong’s descriptions of route use frequency and seasonal fluctuation.
drainage area was about 22.1 L/s/km² for New Brunswick, and there were consistent flows throughout the province, with the exception of a few stations in southern New Brunswick that showed higher than average flows (i.e., the Lepreau River at 30.6 L/s/km² and Point Wolfe River at 38.9 L/s/km²). These higher flows are likely due to the higher precipitation and steeper terrain found in the southern part of the province (Cassie and Robichaud 2009:11). The lowest flows in New Brunswick appear in August (at 40% of the mean annual flow) and September (at 38% of the mean annual flow) during the late summer season. New Brunswick also experiences low flows in February (47% of mean annual flows) due to the lower winter air temperatures in the province (Cassie and Robichaud 2009:17). New Brunswick, unlike the other Canadian Maritime provinces, derives most of its riverine flow from precipitation, instead of groundwater and baseflow contribution. This accounts for the correlation of low flow periods with periods of low rainfall in the region.

During the winter months, New Brunswick rivers are typically frozen. Increase in river flow begins during the spring after about 50 thawing degree-days— at this time river flow tends to increase rapidly, and this “burst” of rapid flow is known as the “freshet” (Hare et al. 1997:8). The volume of water discharged during the freshet depends on several factors, including the water-equivalent of the winter snowpack, the rapidity of thaw, the capacity of the soil and vegetation to slow run-off, and the extent to which remaining river ice obstructs the flow of the current (Hare et al. 1997:8). Peak freshet flows represent truly enormous volumes of water discharge—in New Brunswick, during
the months of April and May, river flows average 310-360% of the mean annual flows (Cassie and Robichaud 2009:16). During a typical freshet at Mactaquac, on the St. John river, river flow briefly exceeds 5,000 m³/s, and average 24-hour values have been recorded up to (or exceeding) 10,000 m³/s. Such huge volumes are comparable with the mean annual discharge of the St. Lawrence into its estuary—for a brief period the St. John flows on the scale of the St. Lawrence, while for the rest of the year it is considerably slower (Hare et al. 1997:8).

The rate of river travel also depended on the characteristics of the river channel, the amount of descent of the river, whether it was broken by falls, and the directionality of river current. Thus, some rivers formed particularly reliable, stable routes of travel due to their smooth bedding characteristics, rate of descent, and lack of falls—this was the case with the St. John, as well as the Kennebecasis, Petitcodiac, Washademoak, Salmon River, Oromocto, Richibucto, Restigouche, and Lower Miramichi (Ganong 1899:235). Other rivers, like the south branch of the Tobique, the Nepisguit, Upsalquitch, and particularly the Little South West Miramichi, which descend through shallow valleys obstructed by glacial drift, had rocky streambeds, rough water, and many falls, and this rendered them less-preferable routes for travel (Ganong 1899:235). These rivers may have been ideal places to fish, however, due to the presence of falls, and so the Aroostook, Grand, and Salmon rivers would have made appealing sites for fishing camps and attracted travelers (Ganong 1899:220).
The environment therefore shaped movement around the province through the seasonal fluctuations in water flow, which at times dramatically increased and decreased the speed with which one could traverse the rivers. The presence or absence of falls, the rockiness of the riverbed, and the volume of river discharge would have been factors that affected the selection of a particular route for travel. When mapped, the variations due to seasonality and bedding characteristics become particularly apparent (see Figure 9).

Some of the most-used routes that have been noted in the historic record were those that were reliable, and remained navigable throughout most of the year. Though more data is needed about variations in river flow throughout the course of the rivers, and about how flow may have varied in the past, accounting for the effects of seasonality can provide a more nuanced understanding of how movement patterns changed through time.
Canoe Technology and Maneuvering: Complexity on the Scale of the Individual

Any analysis of trails and pathways through the province at a large scale must account for the complicated ways that sophisticated canoe technologies and maneuvering techniques influenced movement at the scale of the individual. Techniques and technologies were developed to mitigate the effects of the seasonal variation in river flow, and to facilitate movement in different riverine and coastal conditions. Canoe technologies have a deep history in the province—they were developed, refined, and adjusted to different conditions over a very long period of time. One of the key archaeological features that distinguishes the transition from the Archaic period to the Woodland period in New Brunswick is the abandonment of ground and polished stone gauge tools (occurring around 1500 CE). Archaeologists hypothesize that the switch from ground to percussion-flaked stone tools occurred in conjunction with the switch from dugout canoe use (which required ground stone axes and adzes for manufacture) to birch-bark canoes (Leonard 2005:19).

By the time that Samuel Champlain sailed down the coast of Maine in 1603, the climate of New Brunswick resembled that of the modern southern New England states. His arrival coincided with the end of a period of warming known as the mid-Holocene climatic maximum (Leonard 2005:20). As he travelled southward, he noted that birch bark canoes were used in the what are now the Maritime provinces, while dugouts were still used in what is now Massachusetts (Leonard 2005:20). In Massachusetts, the warmer climate encouraged the growth of hickory, elm, and chestnut trees to proportions suitable
for dugout construction. As the climate slowly cooled in New Brunswick, these hardwood tree communities were replaced with communities of beech, hemlock, and paper birch (*Betula papyrifera* Marsh.), the latter the species used to construct birchbark canoes. While Archaic-period dugout canoes, with their steep sides and sturdy construction, had been well suited to the high winds and waves of coastal travel, they were too heavy and large to be carried across the portages needed for travel on the smaller inland rivers. The transition to birchbark in the Maritimes allowed easier portage and facilitated travel to inland areas to the south and west. (Leonard 2005:20). The last stages of this transition were still occurring at the time of European arrival.

Birchbark canoe construction is described in detail in *The Canoes and Skin Boats of North America*. Authors Edwin Tappan Adney and Howard Chapelle documented the production methods and construction designs of watercraft from indigenous groups across North America. Adney, on a hiatus from school at the Art Students’ League in New York in 1887, traveled to New Brunswick for a brief vacation, but became interested in the bark canoe work of a Maliseet man named Peter Joe (Raffan 1999:66). The following year, he returned to study the process of canoe building in greater depth, and collaborated with Joe to construct a birch canoe. The process of bark canoe construction become a passion of Adney’s, and for the rest of his life, he travelled around North America in the search for more watercraft information. Posthumously, his papers were compiled into *Canoes and Skin Boats* by Chapelle, then curator of transportation at the American Museum of History and Transportation. Because of his early involvement in canoe
building in New Brunswick, Adney provides extremely detailed descriptions of watercraft from this region.

Adney and Chapelle describe three general canoe forms used in the New Brunswick area. The craft typically used for hunting, known as a “woods canoe” or “portage canoe,” would have been used for travel on the very smallest rivers, ranged from 9 to 15 feet long, and had low sidewalls to avoid catching on low-hanging tree boughs (Adney and Chapelle 1964:58). The “big river” canoe was much larger, measuring between 15 and 20 feet long (Adney and Chapelle 1964:58). The very largest canoe was designed for travel along the coastline and for hunting seal and porpoise, and had high sidewalls to protect against the large swells on the ocean. These canoes could be from 18 to about 24 feet in length (Adney and Chapelle 1964:58).

Because canoe-builders had to balance opposing tensions in canoe form to achieve their desired handling and cargo capacity, there was considerable variation in the shape of canoes. While high prows at the bow and stern of the ship would protect against high waves in open water or rapids, they could become snagged on travel through low-hanging brush. Broad, gentle curves in the midsection, with a flat bottom, allowed large cargo weights to be carried without excessive draft, and provided a stable platform for standing, but slowed the movement of the craft (Raffan 1999:89). For racing canoes, a trim “V” shape amidship, coupled with a narrow profile overall, was preferred for fast movement and increased secondary stability as the canoe tipped in the water (Adney and Chapelle 1964:79). Curve on the longitudinal bottom axis of the canoe, or “rocker,”
especially when located at the bow or stern, could facilitate turning, but in heavily loaded boats could produce drag that would slow movement. In all canoes, however, the undifferentiated interior space allowed cargo (or in some cases ballast) to be loaded and redistributed to change the balance and performance of the canoes in the water. The variation in the size and shape of canoes, as well as the increased speed offered by some versions, complicates our understanding of the time it may have taken to traverse a route.

Figure 3: Cedar canoe splints or “shoes”— these were attached to the outside of the craft by tying cords over the gunwales and the top of the boat. [Adney and Chappelle 1964:80]

In times of low water, or in rough-water situations where damage might occur to the delicate birch bark on the bottom of the canoe, sets of thin strips of wood could be

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3 Cargo would be loaded at the bow when traveling against the current or wind, placed evenly throughout for fast travel on calm water, or loaded primarily in the stern when travelling with the wind and current to create a “weather vane” effect to assist steering (Raffan 89).
attached to the exterior of the craft (see Figure 2). These battens or “shoes,” were made of five or six thin splints of cedar that were bound around the exterior of the boat and tied at the thwarts (Adney and Chapelle 1964:79). This sheathing effectively protected the bottom of the boat from rocks and snags, particularly when the craft was dragged upstream, as Ganong describes: “If the water is too shallow in places for it [the canoe]

![Figure 4: Mi'kmaw canoe rigged for sailing- visible at one end of the boat is the flat platform that would have supported the mast. The mast was inserted through a hole drilled into this plank, and plugged into a support in the base of the craft. [Adney and Chappelle 1964:66]](image)

even to float, the Indian covers its bottom with ‘shoes’ or splints of cedar, and thus drags it over the wet stones” (1899:234). An additional technique used exclusively during the periods when the rivers were frozen was the practice of attaching small sleds to the bow and stern of the canoe. These sleds enabled the canoe to slide easily over the river ice without tipping (Jennings 2004:37). These modifications could significantly extend the
possible range of travel during the dry summer months or frozen winter season, despite
the reduction in river flow.

The range of travel was also increased by the practice of temporary canoe
construction. During long overland trips with occasional river passages, the large birch
canoes would be left at the last major river junction, and temporary canoes could be
constructed at the next river site from spruce bark or moose hide (Ganong 1899:212). The
choice of material for these temporary craft depended on the seasonality of the move.
Spruce bark canoes were easier to construct in warm weather. In warm temperatures the
bark could be removed without splitting, and without requiring additional heating by
torch or hot water (Adney and Chapelle 1964:215). In cooler weather, moose hides could
be substituted. Adney and Chapelle note that during the winter, Maliseet hunters would
leave two or three moose skins on stretchers during the season for use in building spring
canoes (Adney and Chapelle 1964:219). A passage from John Gyles’ 1736 memoirs
describes the construction of these temporary canoes:

> When the spring came and the rivers broke up, we moved back to the head of
> the St. John’s River, and there made canoes of moose hides, sewing three or four
together and pitching the seams with balsam mixed with charcoal. Then we went
down the river ... [to] the place where we left our birch canoes in the fall. [qtd. in
> Bourque, 278]

Unlike moose hide or birch bark, which allow some stretching and shaping, spruce bark’s
robust grain required that the form of the boat be produced through crimping of the
sidewalls, instead of by stretching and shaping. Though these crimps created necessary
rocker in the bottom of the boat, they produced bulges at the base of the waterline that created drag and significantly slowed the movement of the craft (Adney and Chapelle 1964:214). The size and shape of these temporary canoes, as well as the materials used in their construction, would affect the pace of the ensuing journey.

There is also evidence that some New Brunswick canoes may have utilized sail power to navigate through coastal areas and larger rivers. Adney and Chappelle mention that larger canoes could be outfitted with a dory-type spritsail made of canvas, but moose hides and small trees were also used in canoes to catch a favorable wind and speed travel (1964:277). While the use of canvas sails likely post-dates European arrival, the practice of propping up a bush in the bow of the boat is probably much older—Adney relates that an old Nova Scotia expression “carrying too much bush,” meaning over-canvassing a
boat, is “thought by some to have originated from an Indian practice observed there by
the first settlers” (1964:65). Adney and Chapelle suggest that the use of sails in canoes
became well-established in some areas by 1685 (1964:10). The diagrams Adney and
Chapelle provide of large canoes rigged for canvas sails indicate that the mast could be
removed from its housing, which would have enabled these large boats to be portaged
more easily (Jennings 2004:29). The use of wind-catching technology like sails or bushes
would have increased the speed with which one could traverse the large rivers and coastal
routes.

Finally, all the technology used in the boat itself was ultimately supplemented and
modified by the techniques used to maneuver the craft around the coastlines and up and
down the rivers. A suite of paddling strokes were used to turn and propel the canoe in
different directions, and these strokes were modified depending on the type of canoe,
load, and river flow. Travel upstream against the river current was difficult, and there
were many places where the current was too swift to overcome by paddling. When the
river bottom was shallow and firm, paddlers could stand in the rear of the canoe and push
it upstream with poles up to 3 m long. In places where the shoreline was clear, canoes
could be “tracked” or “lined”, a process in which one traveller would pull the canoe
upstream with a rope while walking along the banks of the river, while the other
remained on board, steering the canoe to keep it away from shore (Morse 1979: 3-5). In
situations where the current wasn’t so strong as to exhaust the paddlers immediately, the
rapids could be traversed by paddling quickly and forcefully from eddy to eddy—these
eddy pools were places where the current swirled in place, and a canoe could rest briefly
without much exertion from the paddlers (Jacobson 2007:86). A person’s skill with
paddling, poling, and other maneuvering techniques could significantly speed a journey,
or even enable someone to navigate rapids that would otherwise have required a portage.

The use of technology and technique changed the way that people moved around
the province in significant ways. Canoe designs were engineered to perform well under
different conditions of travel, and this engineering reflected a deep understanding of the
effects of current and wave dynamics on the mechanics of movement. The performance
of different canoes could be modified through the use of piloting techniques or cargo
distribution, changing the way that the canoe would handle, or the speed at which the
canoe could move. These techniques and technologies could significantly extend range of
travel and overcome difficulties caused by seasonal fluctuations in temperature and flow.
To model movement and connectivity throughout the province, archaeologists need to
develop a thorough understanding of the kinds of technologies and techniques that were
used to facilitate travel, as well as when and how they were employed.
Conclusion: Where can we go with portage paths?

In 1893, Garrick Mallery published *Picture-writing of the American Indians* in the tenth annual report of the Bureau of Ethnology. Mallery was primarily interested in different forms of Native American Sign language, an interest that stemmed from his posting at Fort Rice in Dakota Territory during his career with the U.S. Signal Corps (Fletcher 1895:6). It wasn’t long before he developed a parallel interest in written forms of communication, and began collecting examples and transcriptions of pictographs on rocks, animal skins, and bark. He came to understand that gesture-speech and cognate pictographs formed a complete system, informed by mythology and history—a system that had a complementary relationship to spoken language (Fletcher 1895:6).

Figure 6: “Tribal Emblems” from Mallery 1893: a) Passamaquoddy: two individuals with paddles in a canoe, and a pollock; b) Maliseet: two individuals with poles in a canoe, and a muskrat; c) Mi’kmaq individuals with paddles appear inside the distinctive Mi’kmaq canoe with peaked mid-ship gunnels, and a moose; d) Penobscot: two individuals, one with paddle and one with pole, and an otter. [Mallery 1893:379]

Mallery’s work followed a comparative approach to the analysis of figures, and contained several examples of work from northeastern North America. He included one
illustration drawn by an unnamed Passamaquoddy individual from Maine, near the border with New Brunswick. In the image (Figure 5) are what Mallery called the “tribal emblems” of four groups—the Passamaquoddy, “Maresquite or Amalecite” (Wolastoqiyik), Mi’kmaq, and Penobscot. The variation in the depicted use of poles and paddles, Mallery says, “is said to have originated in the differing character of the waters, shoal or deep, sluggish or rapid, of the regions of the four bodies of Indians whose totems are indicated… thus requiring the use of pole and paddle, respectively, in a greater or less degree” (Mallery 1893:378). That the canoe technology used in the different regions could function as a shorthand for identifying communities speaks to both the specialized character of regional canoe technologies, as well as the general awareness of such technologies in the communities of the northeast, beyond the local areas where each form was made.

Mallery also describes the birch bark letters, or wikhe’gan (in Passamaquoddy), that were produced as notices of departure and direction—these letters could be sent to the intended recipient, or left in a conspicuous place to be found (Mallery 1893:334). The wikhe’gan in Figure 6 was given to Mallery in 1888 by Gabriel Aqcuin, a Wolastoq man from Fredericton, New Brunswick. Mallery reports Aquin’s description of the circumstances and meaning of the image as follows:

One time while I was away my friend had gone down the river by himself and had not left any wikhe’gan for me. I had planned to go off and left for him this wikhe’gan, to tell where I would be and how long gone. The wigwam at the lower left hand corner showed the one used by us, with the river near it. The six notches over the door of the wigwam meant that I would be gone six days. The canoe and
the man nearest to the wigwam referred to my friend, who had gone in the opposite direction to that I intended to travel. Next to it I was represented in my own canoe, with rain falling, to show the day I started, which was very rainy. Then the canoe carried by me by a trail through woods shows the ‘carry’ to Nictaux lake, beside which is a very big mountain. I stayed at that lake for six days, counting the outgoing and returning.” [quoted in Mallery 1893:335]

Mallery includes a detailed description from Acquin about the route he took for the entirety of his hunting trip. Such records are valuable not only because they provide an understanding of how people were making trips through the province, but also because they illuminate how people were understanding and communicating their movement with each other.

In New Brunswick, as well as in northern New England, petroglyphs were often located at the borders of lakes and rivers, and along shorelines. In northern Maine, these petroglyphs typically consisted of incised images located on rock faces that extended out into bodies of water (Lenick 2002:41). At Machias Bay, for example, there are several well-documented petroglyph sites—Mallery describes these sites as follows: “All these petroglyphs were without doubt of Abnaki origin, either of the Penobscot or the
Passamaquoddy divisions of that body of Indians. The rocks lay on the common line of water communication between those divisions and were convenient of halting places” (Mallery 1893:83). The rock images suggest that these halting points became areas of significance for communication of both spiritual and secular messages.

These birchbark records and petroglyphs suggest the anthropological fruitfulness of pushing beyond the analysis of paths and trails as static, representative entities. It is clear that individuals had an understanding of the riverine systems of the province at large scales, and perhaps even of the technologies used in different areas to account for differences in river characteristics. I have shown here that, in the case of New Brunswick, considerable variability existed in the accessibility of routes due to seasonal fluctuations, and the use of canoe technology and maneuvering techniques. Any traveller would have had to balance knowledge of regional-scale seasonal effects with the bodily-scale techniques and technologies of canoe travel when making decisions about how and when to travel. As archaeologists, we mirror this process when we attempt to untangle the complex relationships between temporal and spatial scale, the patterns visible in the archaeological record, and processes in the dynamic system that created these patterns. By grappling with these difficult questions, we can come to a richer understanding of the dynamics of movement around the province of New Brunswick.
Figure 8: Map of the Province of New Brunswick in the Prehistoric (Indian) Period, by William F. Ganong. Ganong has here indicated the divisions of indigenous territories with dashed outlines. [Ganong 1899:212]
Figure 9: New Brunswick River Routes and Portage Paths. Portage path data was taken from Ganong's monograph, compiled into a spreadsheet (see Table 1), and then mapped, where possible, using ArcGIS 10.0. All final map versions were created using Adobe Illustrator 18.1.1.
<table>
<thead>
<tr>
<th>Ganong's #</th>
<th>Route Name</th>
<th>Portage #</th>
<th>Portage associated with route</th>
<th>Description of portage</th>
<th>Additional Details</th>
<th>Page #</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Along the St. John</td>
<td>1</td>
<td>Grand Falls</td>
<td>Old portage across the neck on the west side, course now mostly obliterated by the buildings of the</td>
<td>The most important route by far. This river was, and is, an ideal stream for canoe navigation, and</td>
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<td>town of Cobscook</td>
<td>communication with every other river system in this and the neighboring provinces, and is easy to</td>
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<td>travel, most of course water never too low to travel; few falls</td>
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<td>Upper Keyport on Grand Lake to</td>
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<td>Portage (Kingtong) Creek to</td>
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<td>Portage (Kingtong) Creek to</td>
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<td>traveling with teams on the ice from St. John to Fredericton, marked on the Morris map of 1765, and</td>
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<td>road is on R. Campbell's of 1768</td>
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<td>Falls portage</td>
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<td>Falls portage</td>
<td>at mouth, path across the narrowest part of the neck from Marble Cove to nearly opposite Navy</td>
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<td>Island—shown on Champlain's harbor map of 1604 and Bruno's map of 1761</td>
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<td>Mill Cove to Marsh Creek</td>
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<td>Drury Cove - Marsh Creek</td>
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<td>Drury cove on the Kennetbecasis is marked &quot;Portage&quot; which no doubt marks a much-used portage to</td>
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<td>Marsh Creek, and a route thence to Courtenay Bay</td>
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<td>St-John to Passamaquoddy</td>
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<td>Point Lepreau</td>
<td>a path from Indian Cove just to the west of the point, where there is still a camping ground,</td>
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<td>across to the beach half-way between Duck Cove and the Point</td>
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<td>9</td>
<td>Lepreau Basin - Mosse Creek</td>
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<td>from near the bridge on LB, over to the head of Upper Harbor, a distance of less than two miles</td>
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<td>10</td>
<td>South Oromocto- Lepreau</td>
<td>10</td>
<td>Tomowa or Cranberry Lake to</td>
<td>3 miles long—Mons map of 1794, shown in Field-book of the Hedden and Campbell survey of 1796-97</td>
<td>No doubt an unimportant route, used only by hunting parties, never as a through route. The south</td>
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<td>branch of Oromocto is hard to navigate because of low water, and the</td>
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<td>Oromocto- Magaguadavic</td>
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<td>Stones Brook near Southern end</td>
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<td>Magaguadavic- St. Crox</td>
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<td>starts from Cranberry brook on Lake Magaguadavic and probably ran to the Second Lake of the little</td>
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<td>extremity of Lake Utopia—</td>
<td>now in the library of the Maine Historical Society) survey of Passamaquoddy in 1764—portage</td>
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<td>described by John Mitchell</td>
<td>marked on the Hedden and Campbell map of 1797 and on several plans. One can easily see</td>
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<td>in his Mo. Field Book, now in</td>
<td>where it started near the end of the row and went over the lowest part of the ridge, entirely in</td>
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<td>the library of the Maine</td>
<td>what is now open fields</td>
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<td>15</td>
<td>Falls at St. George</td>
<td>15</td>
<td>falls at St. George</td>
<td>short distance to the eastward across the narrowest part of the neck—marked on the</td>
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<td>Hedden-Campbell map and mentioned by Captain Owen in his journal of 1771, though</td>
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<td>he gives it far too great a distance from the falls.</td>
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<td>16</td>
<td>Error?? Magaguadavic— Piskahagan</td>
<td>16</td>
<td>Gagoggan calls foul, says</td>
<td>Gagoggan calls foul, says should go to Oromocto, but the</td>
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<td>should go to Oromcto</td>
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<tr>
<td>17</td>
<td>Mud Lake—R. Peknyans</td>
<td>17</td>
<td>Mud Lake—R. Peknyans</td>
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<td>probably not much used</td>
<td>242</td>
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<td>18</td>
<td>Little Magaguadavic Lake - Lake George</td>
<td>18</td>
<td>Little Magaguadavic Lake -</td>
<td>plan of 1827—&quot;Indian road to Lake George 3 miles&quot; which must mean 6 miles, also mentioned</td>
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<td>242</td>
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<tr>
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<td></td>
<td>Lake George</td>
<td>by Ward (63)</td>
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<td>19</td>
<td>Eel River—Chaplinetcook</td>
<td>19</td>
<td>in journal of Colonel John</td>
<td>in journal of Colonel John Alan, passed over it in 1777, from Scopple to Machias, also shown on</td>
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<td>242</td>
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<td></td>
<td>Alan, passed over it in 1777,</td>
<td>Alan's map of 1780, on Bouchette, 1815, on an Indian map of 1798 (Maine Hot Society) John</td>
<td>One of the most used and important of all the ancient Indian routes of</td>
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<td>from Scopple to Machias, also</td>
<td>Gilson brought to New Brunswick in 1689 by this route, Bangor Historical Magazine account, 1882</td>
<td>travel in this part of America, for it not only formed the chief route from the St. John to</td>
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<td>shown on Alan's map of 1780,</td>
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<td>Passamaquoddy, but as well was part of the great route to the</td>
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<td>on Bouchette, 1815, on an</td>
<td></td>
<td>Penobscot</td>
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</tbody>
</table>
Garong's # | Route Name | Portage # | Portages associated with route | Description of portage | Additional Details | Page #
---|---|---|---|---|---|---
26 | Meductic Portage around falls | 20 | | Started at meductic flat and went through the Guly a short distance below Meductic Fort and Village, and ran to near Benton in a course not very different from the present highway, generally somewhat north of it. An old plan of it is given herewith—portage also mentioned by John Gyles | 243
21 | North Lake—First Eel River Lake | 21 | | The portage, about three miles long, runs somewhat to the south and not far from the course of the present highway across to North Lake. Gorges solid granite rocks worn by feet | 243
22 | Grand to Chestwick | 22 | | avoiding the falls—runs from Mud Lake, below Forest City, across the neck—mentioned by Allan | 243
23 | Scoodie Lakes to Machias | 23 | | ran from near eastern end of the lower Scoodie Lake to Passadumkeag Lake at the head of the Machias—route mentioned by Allan, traversed it with much difficulty in 1777, on his map of 1786, and on Kider's map in his "Revolutionary Operations" and is shown on Colby's Atlas of Washington Country | St. Croix rather difficult of navigation to the bay broken by falls and rapids interspersed between considerable deadwaters
24 | Coticeock Bay to Machias | 24 | | route through the lakes in the township of Wibbing—clearly shown on the Francis Joseph map of 1788 herewith given | 244
5 | Passamaquoddy- Penobscot | 3A | | | Part of a greatly-used route from the St. John to the Penobscot via the Eel River: The Passamaquoddy is easy of navigation in summer for a canoe. 244-245
26 | Basshegian Lake to Pleasant Lake | 26 | | of the Scoodie chain— it is also on Alan's map of 1786 | 245
3B | Passadumkeag | 27 | | In Foederinton haugh and Mudge's Report (21) this portage is said to form part of the Indian route from Quebec to Passamaquoddy, passing up the Chaudiere and the Penobscot and down this river to the Passamaquoddy and they state this route was known to Temple in 1668, clearly shown on Wilkinson's map of 1858. It appeared on Allan's map of 1786, on Bonker's of 1815, and others. I have no reference to its use but no doubt such may be found in works on Maine | 245
4 | St. John- Penobscot | 28 | | | Route from Q uebec to Passam aquoddy, passing the St. John and Penobscot, all of which are so fully treated by Hubbard, and so much out of the geographical limits of the present paper that no further reference is needed to them here. A modern route of an unusual kind is a canal between Trent Lake on the Allagash and Westbrook Pond on the Penobscot | 245
246
4B | Aroostook East Branch | 29 | | | The Aroostook is very easy of navigation: | 245
4C | Allagash-Chesuncook | 30 | | | A much travelled and often-described route: replied on Wilkinson, and marked and described by Hubbard. It formed also a part of a route from the St. John to the Kennebec. There are other routes between the Allagash and Penobscot, all of which are so fully treated by Hubbard, and so much out of the geographical limits of the present paper that no further reference is needed to them here. A modern route of an unusual kind is a canal between Trent Lake on the Allagash and Westbrook Pond on the Penobscot | 245
4D | Baker Lake North- East Branch Penobscot | 31 | | | Along the Sea-coast | 246
5A | Along the Sea-coast | 32 | | | To avoid Cape Enrage, there was a portage from Salisbury Bay into Germantown Lake, and thence down to the Steepp River. The course of the portage, as given to me by a resident, was from Wailerle north by the route followed by the highway and present railroad to the lake. | 246
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<tr>
<th>Page</th>
<th>Portage Route</th>
<th>Description of portage</th>
<th>Additional Details</th>
</tr>
</thead>
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<td>246</td>
<td>Verte to Baie Verte</td>
<td>The navigation of the Penobscot River, which it reached about five miles below Petitcodiac station, is fairly easy of navigation to the Petitcodiac stateion. It was hence about 12 miles above Nevers Brook, to the main Petitcodiac, which is not navigable, the portage path crossed from the Washadem oak, about two miles northeast of Coles Island straight through to Cumberland Bay at the head of the Bay of Fundy. It was thought this region the New Englanders went to attach Ford Cumberland in 1776 and perhaps a portage path then out on the road made from St. John's river to Chepody by the rebel army from New England.</td>
<td></td>
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<tr>
<td>247</td>
<td>Washadem oak to Petitcodiac</td>
<td>Since the ninth river, the continuation of the Petitoisac, is navigable, the portage path crossed from the Washadem oak, about two miles above Nevens Brook, to the main Petitoisac, which is not navigable below Petitcodiac station. It was about 12 miles long, one of the longest of the important portages in the Province. Its route, as given by a resident, is shown on the accompanying map no. 7.</td>
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<tr>
<td>248</td>
<td>Salmon River to Richibuto</td>
<td>The common route was from Baie Verte to Portage Hill by a path and thence to Pont a Bnot by canoe, thence to Fort Beausjour by road, and at the bridge, all testimony agrees, the portage path to Baie Verte started, going over the hill still called Portage Hill. After the road to Baie Verte was built by the French, it was used as a road. As to the present course of the ancient Indian trail, however, I have not been able to gather satisfactory evidence. On this point tradition is altogether untrustworthy, as the path must have been cleared for nearly a hundred and fifty years, and can so easily be confounded with the old French road. On the one hand, from a study of the topography of the region we would expect it to follow the valley of the Missisquoi to its very head, and thence to cross the low ridge to the head of the Vert River. This would enable the Indians to use both streams to some extent at high water, and would make the shortest and apparently the easiest path.</td>
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<tr>
<td>249</td>
<td>Missisquoi-Baie Verte</td>
<td>The common route was from Baie Verte to Portage Hill by a path and thence to Pont a Bnot by canoe, thence to Fort Beausjour by road, and at the bridge, all testimony agrees, the portage path to Baie Verte started, going over the hill still called Portage Hill. After the road to Baie Verte was built by the French, it was used as a road. As to the present course of the ancient Indian trail, however, I have not been able to gather satisfactory evidence. On this point tradition is altogether untrustworthy, as the path must have been cleared for nearly a hundred and fifty years, and can so easily be confounded with the old French road. On the one hand, from a study of the topography of the region we would expect it to follow the valley of the Missisquoi to its very head, and thence to cross the low ridge to the head of the Vert River. This would enable the Indians to use both streams to some extent at high water, and would make the shortest and apparently the easiest path.</td>
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<td>Ganeog's #</td>
<td>Route Name</td>
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<td>Portages associated with route</td>
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<tr>
<td>7B</td>
<td>Memramcook-Scadouc</td>
<td>39</td>
<td>Hackmack Lake- Tonnah</td>
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<td>40</td>
<td>Tantamar- Abonneghan</td>
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<tr>
<td>7C</td>
<td>Petitcodiac-Shediac</td>
<td>31</td>
<td>Memramcook-Scadouc</td>
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<td>41</td>
<td>Scadouc- Shediac</td>
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<td>7D</td>
<td>Shemogue- Baie Verte</td>
<td>43</td>
<td>Eastminster- Tormentine</td>
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<td>44</td>
<td>Shemogue- Baie Verte</td>
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<td>8A</td>
<td>Gaspereau- Cains River</td>
<td>45</td>
<td>Gaspereau- Cains River</td>
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<td></td>
<td></td>
<td>46</td>
<td>Cains River- Barnabys River</td>
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<td>8B</td>
<td>Nashwaak- South-west Miramichi</td>
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<td>Nashwaak- South-west Miramichi</td>
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<td>48</td>
<td>Napoutagan- Miramichi Lake</td>
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<td>49</td>
<td>Nashwaak- Keswick</td>
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<td>50</td>
<td>Besaquemec- Naceicas</td>
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<tr>
<td>Route Name</td>
<td>Portage #</td>
<td>Description of portage</td>
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<tr>
<td>Shikatehawk-Miramichi</td>
<td>51</td>
<td>The portage involved a long portage, some fifteen miles. Its course as given by a resident is as follows: from the St. John River it followed the valley of the Little Shikatehawk, an un navigable stream, to about the present Gordonville, whence it followed about the course of the present highway road, which crosses it several times, through Glassville, Highland and Argyle to Foreston. 15 miles from the mouth of the Little Shikatehawk. This was, and is, the shortest and easiest route between the two rivers.</td>
<td>From Foreston on the South Branch of the Miramichi is navigable to the main river, about fifteen miles.</td>
</tr>
<tr>
<td>Eel River-Portage River</td>
<td>52</td>
<td>The same resident tells me there is an old portage road from the Eel to the Falls on the North Branch Miramichi, 17 miles above the Falls. I have no information as to whether was an ancient indian route through here, but it is extremely probably there was a route used by hunting parties.</td>
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<tr>
<td>Shikatehawk-Miramichi</td>
<td>53</td>
<td>Same Resident — from the head of the Deadwater on the Miramichi to the Wapskehegan are numerous portage roads used by lumbermen. I have no information as to whether was an ancient indian route through here, but it is extremely probably there was a route used by hunting parties</td>
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</tr>
<tr>
<td>Long Lake (Tobique)-Little Southwest Miramichi Lake</td>
<td>54</td>
<td>This was a little-used portage of some eight miles, fully described by Hind, in his Geologic Report (152). Both lakes are very difficult to reach, however, on account of the very numerous falls and rapids on the streams leading from them, and hence this was probably never a through route, but only a hunter's route: indeed it is called by the Indians &quot;the hunter's portage&quot;.</td>
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<tr>
<td>Long Lake-Other Lakes</td>
<td>55</td>
<td>Long Lake is but one of several at the head of the southern branch of Tobique, all of which are connected with one another by portages shown fully on the map of the Geologic Survey, and described by Hind and, in part, by Gordon.</td>
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<tr>
<td>Along the Sea-coast</td>
<td>56</td>
<td>This no doubt was much used, especially by those going toward Miscou and Shippegan, who probably used the Eel River—Portage river route to avoid Point Escuminac, which is liable to very heavy winds from the North. Those going to Miramichi River would no doubt take the Portage River—Bay du vin route.</td>
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<tr>
<td>Bay du vin-Portage River</td>
<td>57</td>
<td>According to tradition this was a very important route in early times for both Indians and French. The route ran up the Bay du Vin River three miles, turned up Guillem's brook four miles, which throuth the traveler to within two or three hundred yards of the Two Mile Brook, emptying into Grand or Eel River, up Grand River two miles to Juniper Brook up Juniper Brook to the lakes at its head, among these lakes to others on North Branch of Portage River and down this to Kouchibouguac Bay. The country through which the route passes is a great level peat plain, with many small lakes, and the streams have little fall. Midway of the route is a pine grove, called &quot;Coffee Island&quot;, a favourite camping place for travellers. This route has been used by the Indians within memory of Mr. Lewis, and tradition says it was the regular route for the French from Miramichi to Beausporte.</td>
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<tr>
<td>Eel River-Portage River</td>
<td>58</td>
<td>Another Portage River empties into Miramichi waters east of Grand or Eel river, and heads in lakes near others on Eel River, emptying into Northumberland Basin. This probably formed a minor portage route, especially for those going directly North or South along the coast and keeping inside the islands, enabling them to avoid the winds of Cape Escuminac.</td>
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<tr>
<td>Portage River-Portage River</td>
<td>59</td>
<td>Possibly a route ran between the two Portage Rivers.</td>
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<tr>
<td>St. John-Neepiguit</td>
<td>60</td>
<td>The portage between the lakes is an easily travelled path somewhat over two and a half miles long — it is still used and no doubt is very old. It is probably this route that Father Bernadin was travelling from Neepiguit to the St. John when he perished of hunger and fatigue in 1621 (LeClerq, Nouvelle Relation, 211).</td>
<td>The Neepiguit, however, as its Indian name Win-peg-i-wik signifies, is a &quot;hard river&quot;, telling a thousand feet in seventy miles, and much broken by falls and rapids. Hence as a through route this was probably less used than the much easier Restigouche.</td>
</tr>
<tr>
<td>Nictor Lake-Neepiguit Lake</td>
<td>61</td>
<td>The portage to the lakes is an easily travelled path somewhat over two and a half miles long — it is still used and no doubt is very old. It is probably this route that Father Bernadin was travelling from Neepiguit to the St. John when he perished of hunger and fatigue in 1621 (LeClerq, Nouvelle Relation, 211).</td>
<td>The Neepiguit, however, as its Indian name Win-peg-i-wik signifies, is a &quot;hard river&quot;, telling a thousand feet in seventy miles, and much broken by falls and rapids. Hence as a through route this was probably less used than the much easier Restigouche.</td>
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<tr>
<td>Nepisiguit Indian Falls</td>
<td>62</td>
<td>On the north or left bank</td>
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<tr>
<td>Nepisiguit Narrows</td>
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<td>On the north or left bank</td>
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<tr>
<td>Nepisiguit Grand Falls</td>
<td>64</td>
<td>On the north or left bank</td>
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<td>Ganong's #</td>
<td>Route Name</td>
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<td>64</td>
<td>Along the Sea-coast</td>
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<td>65</td>
<td>Pokemouche- Tteadie Lagoon</td>
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<td>66</td>
<td>Traede to Tabusmitac</td>
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<td>Tabusmitac to Miramichi</td>
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<td>Upper Pokemouche to Gaspesian creek</td>
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<td>Portage Cove - Alemek Bay</td>
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<td>Portage River-Gordon Brook</td>
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<td>71</td>
<td>Fabonien Falls to Denys's Fort</td>
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<td>Nepisugit (Emerys Gulch) to North West Miramichi</td>
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<td>Main South Branch Nepisugit- Sevogle</td>
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<td>St. John- Restigouche</td>
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<td>74</td>
<td>Grand River- Wagan</td>
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<tr>
<td>Caron's #</td>
<td>Route Name</td>
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<td>Portages associated with route</td>
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<td>Green River-Kedgwick</td>
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<td>Green River-Kedgwick</td>
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<td>13</td>
<td>Nepisiguit-Restigouche</td>
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<td>Nepisiguit-Upsalquitch</td>
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<td>Nepisiguit-Upsalquitch</td>
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<td>Upsalquitch-Jacquet River</td>
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<td>Along the Sea-coast</td>
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<td>Forty-mile Brook and Tattagouch Lake</td>
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<td>Matapedia-Metis</td>
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<td>Kedgwick (Quatawnkedgwick) - Rimouski</td>
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<td>Route #</td>
<td>Route Name</td>
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<td>Portages associated with route</td>
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<td>15E</td>
<td>Ashberish- Trois Pistoles</td>
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<td>Ashberish- Trois Pistoles- Not on current map- outside bounds of province</td>
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<td>16G</td>
<td>Temiscouta- Riviere du Loup</td>
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<td>Temiscouta- Riviere du Loup- Not on current map- outside bounds of province</td>
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<tr>
<td>15D</td>
<td>St. Francis- Riviere du Loup</td>
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<td>Lake Pohenegamook to LaFourche branch- outside bounds of province, at border between QC, Maine, and N.B.</td>
</tr>
<tr>
<td>15E</td>
<td>Black River- Ouelle</td>
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<td>Black River- Ouelle- outside boundaries of province</td>
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<td>16F</td>
<td>North-West Branch Riviere du Sud</td>
<td>90</td>
<td>North-West Branch Riviere du Sud- outside boundaries of province</td>
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Bibliography

Adney, Edwin Tappan and Howard I. Chapelle

Bourdieu, Pierre.

Burley, David V.

Cassie, D. and S. Robichaud.

Cresswell, Tim.

Daigle, Anik, André St-Hilaire, Dan Beveridge, Daniel Caissie, and Loubna Benyahya.

Deal, Michael

Deetz, James

Earle, Timothy
Edgeworth, Matt.

Fletcher, Robert.

Ganong, William F.
1899 *A Monograph of Historic Sites in the Province of New Brunswick.* Ottawa: J. Hope.

Giddens, Anthony

Gwyn, Julian.

Hannam, Kevin, Mimi Sheller, and John Urry.

Hare, F. Kenneth, R.B.B. Dickison, and Sayed Ismail.
1997 *Variations of Climate and Streamflow over the Saint John Basin Since 1872.* The 9th Workshop on River Ice: Fredericton N.B.

Harris, Trevor M.

Hoffman, B.G.
1955 *Historical Ethnography of the Micmacs of the 16th and 17th centuries.* Ph.D. dissertation, University of California, Berkeley.

Ingold, Tim
Jacobson, Cliff  

Jennings, John  

Lenik, Edward J.  

Leonard, Kevin.  

Linebaugh, Donald W and Gary G. Robinson, eds.  
1994 Spatial Patterning in Historical Archaeology: Selected Studies of Settlement. Williamsburg, Virginia: King and Queen Press.

Lock, Gary  

Lock, Gary and Brian Molyneaux  

Mallery, Garrick  

Morse, Eric W.  

Natural Resources Canada.  

Orcutt, Jacob M.  

Patterson, Stephen E.  

Raffan, James  

Rivers of New Brunswick.  

Rockefeller, Stuart Alexander  

Sanger, D.  

Snead, James E., Clark L. Erikson, and J. Andrew Darling.  

Snow, Dean  

South, Stanley  
Tilley, Christopher T.

Trigger, Bruce G.

Trombold, Charles D.

Willey, Gordon R.

Winson, Anthony

Wynn, Graeme