

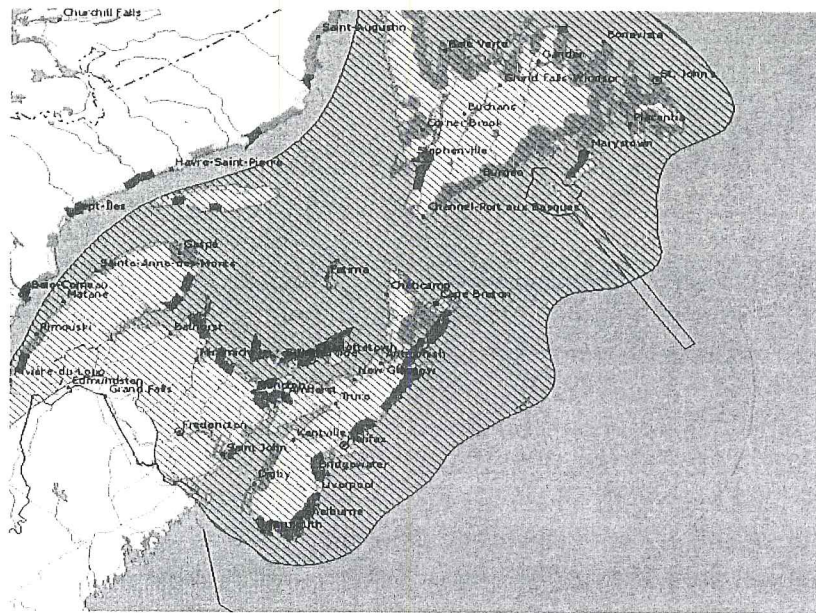
A.J.B. Johnston

**Land & Sea & Louisbourg:
5000 Years and Counting¹**

A challenge we face as mortals is to try and imagine the world beyond our own existence. That applies in both directions, forward and back. The short-term past and future—whether defined as last Friday or next Christmas or a childhood past or a retirement future—comes fairly easy to most of us. That's not to say that all our recollections or imaginings are accurate, but we are nonetheless comfortable taking a stab at it. The longer term, however, by which I mean over a span of centuries or millennia is quite another matter. As far as human history goes, unless you're a palaeo-anthropologist or a "longue durée" historian, the long look back through time can be daunting.² The longer the timeline, like an unwieldy baseball bat many times its normal length, the harder it is to make contact with the ball. Yet even the "longue durée" perspective is nothing compared with geological time, in which mountains rise and fall and tectonic plates glide across the earth's crust like slow-motion skaters on ice. Humanity barely registers on the geological scale. It's but the tips of the tips of our fingernails on the completely outstretched arms of a man. As for the future, well since it hasn't happened yet anything is possible, right? That may be true on humanity's cultural, political and social fronts but it is not the case with nature's long-term forces.

One natural force we must face up to sooner or later, a trend expected to continue for another few thousand years before the next Ice Age begins to set in, is the rise in world sea level. Before I say another word about that trend I should reassure readers that this paper *will* address aspects of human history in a few paragraphs. First, however, I feel obligated to say a bit more about the "nature" side of the equation. It's important to set the stage, so to speak, because humanity's history is but a small subset of a much larger story, that of the planet. Returning to the question of rising sea level, there are three factors that have contributed to and are continuing to contribute to the phenomenon in its most recent version. Up until about 10,000 years ago, and for

roughly 100,000 years previously, there were vast ice sheets several kilometres high across much of the northern hemisphere. When the glaciers melted, as they are continuing to do where they still exist, the melt-water they produced raised the level of the world's oceans, as it still is. A second factor is what is known as thermal expansion. The volume of the ocean expands (and therefore rises) as it gets warmer. Third, and this does not apply everywhere but it does throughout Atlantic Canada except for along the Labrador coast, there is crustal subsidence.³

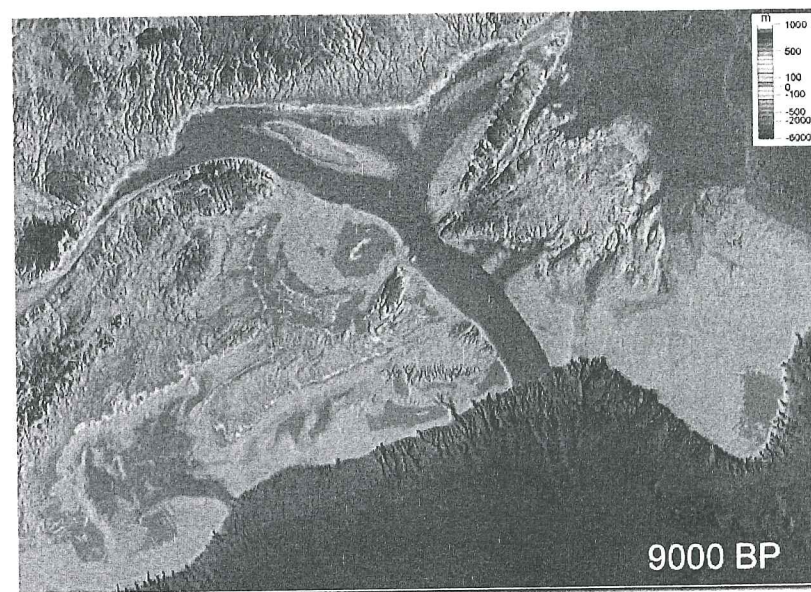


<http://atlas.nrcan.gc.ca/site/english/maps/climatechange/potentialimpacts/coastalsensitivitysealevelrise>

This map highlights those areas most vulnerable, marked in red, to sea-level rise. The entire area marked with cross-hatching is experiencing subsidence of different degrees.

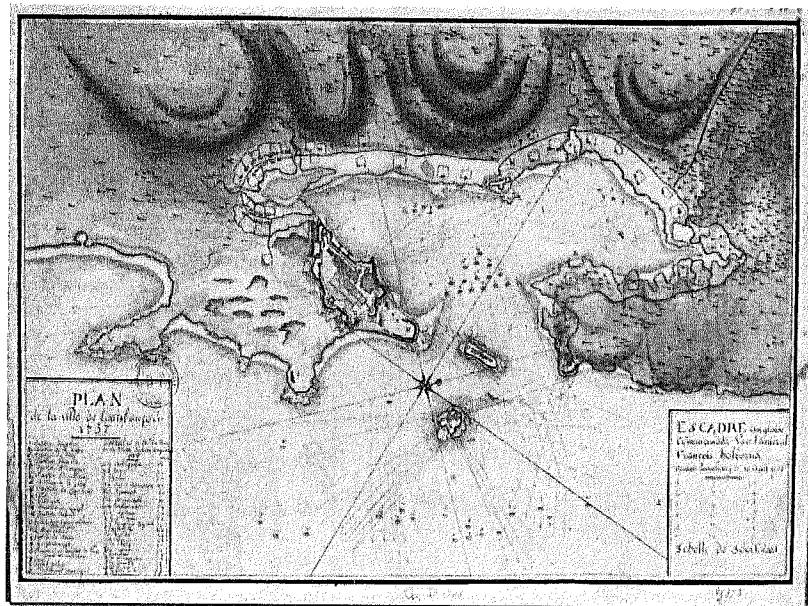
Crustal subsidence means that some coastal areas of the planet are submerging completely independently of sea level rise caused by the other two factors. We do not notice such subsidence on a daily or weekly basis but it is still occurring and it is far from negligible. Along the Atlantic coast of Nova Scotia measurements taken since 1920 have documented that there is an annual average

of regional crustal subsidence of 1.6mm/year. That's separate from the local sea level rise of 1.6mm/year.⁴ It makes for a double whammy, leading to a combined *annual* 3.2 mm relative increase in sea level. Multiply that figure by a decade or a century and you quickly grasp the issue. What humans have contributed to the process over the last couple of centuries is that we have essentially speeded up the clock. We've done that by burning steadily more fossil fuels, thereby accelerating the melting of the ancient ice sheets. The rising seas phenomenon, however, goes back long before any human-induced "greenhouse effect".



About 11,500 years ago, sea level off Nova Scotia's eastern shore was approximately 65 meters (213.25 feet) below where it stands today. The ocean rose in the millennia that followed because the earth's climate was generally warming (though there was a long period when it was not)⁵ and because there was the effect of crustal subsidence. Nonetheless, it took a long time to get to where we are today. Nine thousand years ago Halifax's Bedford Basin was still an inland lake, awaiting a further sea level rise and land submergence to connect it to the sea. Until about 7000 years ago there was still no Northumberland

Strait — meaning among other things that Prince Edward Island and the mainland of Canada were attached. The early Aboriginal population lived on this largely tundra-like landscape, moving on a seasonal basis between inland and coast. Evidence of their early coastal sites has mostly disappeared in the Maritimes, covered by sea water because of the ongoing rise in sea level combined with subsidence.⁶

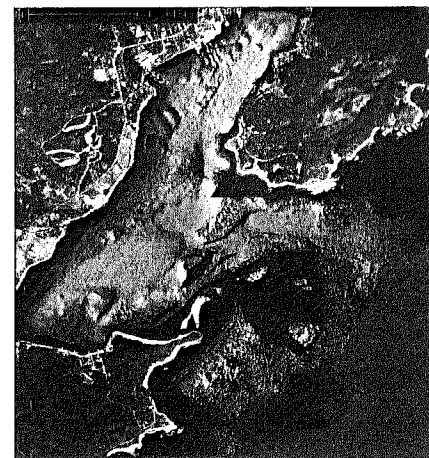


Louisbourg and its harbour as depicted in plan form by the French in 1757.

When we reach a mere 5000 years ago — a time when Stonehenge was first attracting interest from early Britons — we finally arrive at the subject of the paper, which is Louisbourg. Many historians have written about Louisbourg in terms of its 1713-1758 period of French colonial occupation. More often than not they have examined one or more of the French colonial settlement's three main roles: as a fishing port, as a centre for merchant trade and/or as a strategic stronghold.⁷ Central to all three roles — stated or implied — is that Louisbourg had an excellent harbour in the context of its era. It might be going too far to say that 18th-century Louisbourg *was* its harbour, but not by much. That's because the harbour was the *essence* of the place, not some

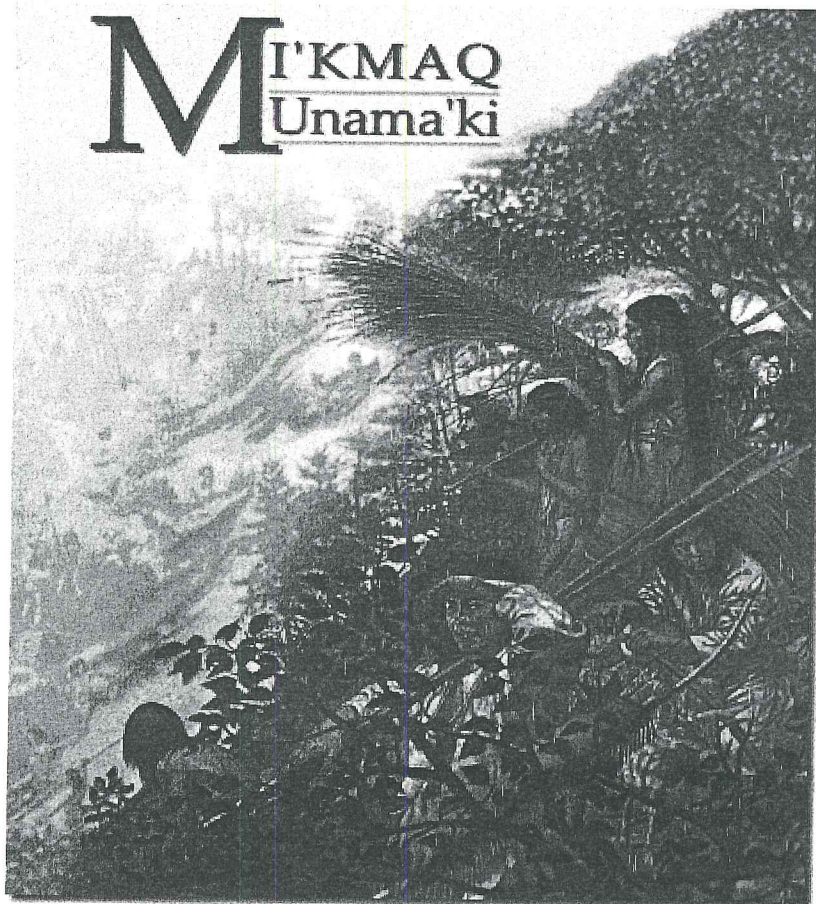
detail. That harbour was lined with fishing properties, which were a major engine of the economy. Its *intra muros* was home to many warehouses owned by merchants who traded to and from the harbour near and far, up and down the coast and across the ocean. That activity of Louisbourg as a trading and trans-shipment centre was another major engine of the economy. Meanwhile, the place's fortifications, artillery and garrison were all there to defend the harbour and its approaches, and of course its inhabitants. The harbour was located more or less on the same latitude as that of mid-western France, and positioned to take advantage of winds and currents. It was close to the bountiful cod fishing banks, and roughly in the centre of the other smaller ports that also participated in that fishery. It was well-situated for French strategic interests and investments in the Atlantic region, the West Indies and Canada. And then there was its shape: Louisbourg harbour was large enough to hold as many ships as could ever be sent there in the 18th century, yet it had a narrow entrance that could be closed off by cannon fire should batteries be erected in the right spots. In other words, for about thirty years, until war with Great Britain came along, Louisbourg was nearly ideal. That, however, all happened in the 18th century. What about the centuries before then?

It was the combination of coastal subsidence and rising sea level that created Louisbourg harbour about 5000 years ago. Once the salt water rose high enough to flood what until then had been an inland lake, a kidney-shaped harbour was slowly formed. The depth of that harbour five millennia ago was not as high as it would come to be in the 18th century, when the French made many maps of the feature, but it was on its way.⁸



A late 20th-century scientific look at Louisbourg harbour bottom, produced by the Geological Service of Canada

As the coast continued to submerge and the sea water continued to rise across the next few thousand years we have only fleeting glimpses of what was happening at Louisbourg. How frequently the Mi'kmaq might have been to that part of the Cape Breton coastline is unknown. The historical consensus is that in traditional times the Mi'kmaq of Unama'ki (the Mi'kmaq name for the district we call Cape Breton Island) were primarily focussed on the Bras d'or Lake. However, different bands certainly did travel to coastal areas in the summer months to harvest seasonal resources, and after the arrival of Europeans, to trade with those mariners.⁹ The St. Peter's area, rather than Louisbourg, was one such place of frequent contact.



A painting by the late Lewis Parker, reproduced courtesy of the Cape Breton University.

In the late 16th century, and perhaps earlier, the seasonal round of one Mi'kmaq band apparently included Louisbourg. We know this from a 1593 account of a voyage by the *Marigold*, captained by Richard Strong and sailing out of Falmouth, England. The ship came across the Atlantic to hunt walrus on the Magdalen Islands. (According to the writer of the account, the crew of a different ship had taken 1500 walrus, identified as "morse or sea-oxen", from those islands in 1591.) The *Marigold*, however, ended up sailing past the Magdalen Islands and on to Cape Breton, where they hauled in a great many lobsters at Cibou (Sydney) and saw a large number of seals closer to Louisbourg. Sailing into the anchorage we call Louisbourg but which was then was known to European mariners as "Port Inglese or the English Port"¹⁰, the English crew went ashore to obtain fresh water. I quote the description of what happened next in its entirety because of what it tells us about Louisbourg harbour at the time. The author reports that around the harbour there were raspberries, strawberries and sweet-smelling herbs, and that there were "goodly" oaks, fir trees of "great height" and "quickbeams" (a type of mountain ash). Even more important than the description of the flora is what the English writer tells us about who was at Louisbourg when the *Marigold* sailed in the anchorage. He describes the Mi'kmaq as having fish pens there and weirs as well. According to this account, initially the Mi'kmaq greeted the English newcomers in a friendly way, until the newcomers fired their muskets. At that point the Mi'kmaq took up staves to defend their lives and their use of the area.¹¹

... haveing neede of fresh water, we went againe on shore, and, passing somewhat more into the lande, wee founde certain round pondes artificially made by the Natives to keepe fish in, with certaine weares in them to take fish. To these pondes wee repayred to fill our caske with water. Wee had not bene long here, but there came one Native with blacke long hayre hanging about his shoulders, who called unto us, weaving his hands downwardes towards his bellie, using these wordes, "Calitogh, calitogh;" as wee drew towardes him one of our mens muskets unawares shot off; whereupon hee fell downe, and rising up suddenly

again hee cryed thrise with a loude voyce, " Chiogh, chiogh, chiogh;" Thereupon nine or tenne of his fellowes running right up over the bushes with great agilitie and swiftnesse came towardes us with white staves in their handes like half pikes, and their dogges of colour blacke, not so bigge as a greyhounde, followed them at the heeles; but wee retired unto our boate without any hurt at all received. Howbeit one of them brake a hogshead which wee had filled with fresh water, with a great branche of a tree which lay on the ground. Upon which occasion wee bestowed halfe a dozen muskets shotte upon them, which they avoyded by falling flatte to the earth, and afterwarde retired themselves to the woodes. One of the Natives, which seemed to be their captaine, wore a long mantle of beastes skinnies hanging on one of his shoulders. The rest were all naked except their privities, which were covered with a skinne tyed behinde. After they had escaped our shotte they made a great fire on the shore, belike to give their fellowes warning of us. ... The kinde of trees that wee noted to bee here, were goodly Okes, Firre trees of a great height, a kinde of tree called of us Quickbeame, and diverse other kindes to us unknowne, because wee stayed not long with diligence to observe them; and there is great shewe of rosen, pitch and tarre. Wee found in both the places where wee went on land abundance of Raspeses, Strawberries, Hurtes, and herbes of good smell, and divers good for the skuruie, and grass very ranke and of great length. Wee sawe five or six boates sayling to the southwardes of Cape Briton, which wee judged to bee Christians, which had some trade that way. Wee sawe also, while wee were on shore, the manner of their hanging up their fish and flesh with withes to dry in the ayre; they also lay them upon raftes and hurdles and make a smoake under them, or a softe fire, and so drie them as the Natives use to doe in Virginia.' Hence they sailed along the coast to the south-west as far as the latitude of 44 $\frac{1}{2}$ °, and in their course ' sawe exceeding great store of Seales and abundance of Porposes, whereof we killed eleven. We sawe Whales also of all sortes as well small as great; and here our men took many berded Codde with one teate underneath, which are like to the North East Cods, and better than

those of Newfoundland.' On September 28 they left the coast and steered for England, which they reached on December 22.¹²

In 1597, four years after the above description was penned, another English ship, the *Hopewell* under a Captain Charles Leigh sailing out of Gravesend, left an account of a voyage into Cape Breton waters. This time the writer makes only a passing mention of the English Port (Louisbourg) and no mention at all of Mi'kmaq being anywhere near the harbour. Perhaps the increasing European use of the anchorage during the summer months had convinced the Mi'kmaq to go elsewhere for whatever resources they had harvested at Louisbourg? That seems like a reasonable conclusion because Capt. Leigh's voyage makes it clear that in 1597 this part of the Cape Breton coastline was bustling with European ships and sailors. At the New Port (Baleine), just up the coast from Louisbourg, there was even an "Admiral". That was the title given to the first ship captain to arrive each season, whose duty and honour it was to regulate disputes and render justice among the different captains and crews who would be around the harbour that summer.¹³ The writer does not describe the Louisbourg landscape in any detail but he does state that there are other ships anchored there when the *Hopewell* sails into the anchorage. Louisbourg also seems to have its own "admiral", or perhaps the one based at New Port (Baleine) is the one being referenced.

The fourth of July, in the morning we departed from Cibo [Sydney]. And the fifth we cast anker in a reasonable good harbour called New Port [Puerto Novo or Baleine] some eight leagues from Cibo, and within three leagues from the English Port [Louisbourg]. At this place, in pursuing certain shallops of a ship of Rochel [La Rochelle], one of them came aboard, who told us that the Biskainer [ship from the Bay of Biscay] whom we sought was in the English Port, with two Biskainers more and two ships of Rochel. Thereupon we sent one of our men in the Rochellers shallop to parle with the Admiral and others our friends in the English Port, requesting them ayd for the recovery of our things, which the other ship, called the *Santa Maria*,

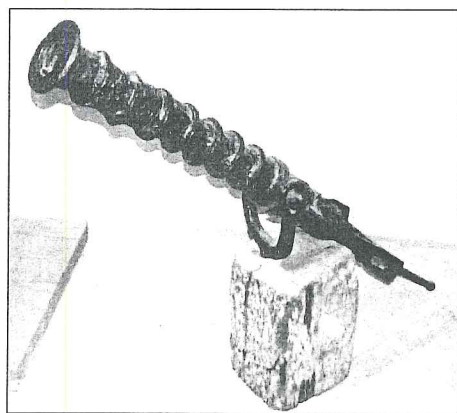
of St. Vincent (whereof was master Johannes de Harte, and pilot Adam de Lauandote), had robbed from the *Chancewell*. To which they answered, that if we would come in unto them in peace, they would assist us what they might. This answer we had the sixth day.

On the seventh, in the forenoon, we arrived in the English Port, and cast anker aloofe from the other ships; which done, I went aboard the Admiral to desire the performance of his promise ...¹⁴

The two descriptions from the 1590s paint scenes of considerable European activity along the northeast coast of Cape Breton during the summer season. It may not have remained consistently busy every summer over the next century, because it was nature of the early European fishing and trading ventures in the waters of Atlantic Canada to move around according to where the best harvest of cod was to be found and/or where the best trading with the Aboriginal peoples could be carried out. For a long time, permanent establishments were not wanted. They were thought to be costly, vulnerable and unnecessary. The short-lived Portuguese colony on Cape Breton Island back in the 1520s was fleeting exception to the general rule at the time.¹⁵

There is an intriguing artefact in the Fortress of Louisbourg archaeological collection that presumably comes from this early phase of European use of the anchorage at Louisbourg.

It's a swivel gun found along the north shore of the harbour. Whether it was put there on purpose or by accident, as part of a sea battle or because it was past usefulness, the artillery piece was brought up in the 1840s. One story has it being found in the mud; another has it pulled up by a ship's anchor. Donated to Parks Canada in 1936, for what then was



A swivel gun in the Fortress of Louisbourg National Historic Site archaeological collection

the brand-new museum, the swivel gun has dated to between the 1550s and the late 1600s.¹⁶

One renowned student of the early colonial period, French historian Charles de la Morandière, concluded that for a while there was a decline in the fish stocks in the waters off Cape Breton Island, which led to reduction in the number of French fishers in Cape Breton waters. Those disappointed fishers relocated back to the banks off Newfoundland.¹⁷ Downturn though there was for French fishers, northeastern Cape Breton still continued to attract ships from other different European nations. Writing in the early 1600s Samuel de Champlain provides evidence as to Louisbourg's continuing use as a fishing base for Europeans. Champlain did not investigate Cape Breton Island in any detail as he travelled around the waters of today's Nova Scotia, New Brunswick, Maine and Massachusetts, but he was nonetheless someone who kept his ears open. He heard enough about "port aux Anglois" (Louisbourg) to name it as one of two anchorages said to be especially busy fishing harbours. Niganis (Ingonish) was the other.¹⁸ Another port that attracted attention was Baleine, just up the coast from Louisbourg. In 1629 a Scottish settlement under Lord Ochiltree erected what was intended to be a year-round post. As things turned out, a French sea captain named Charles Daniel, based at Sainte-Anne, took exception to there being a Scottish fort in what he regarded as *his* region. Daniel captured the fort at Baleine and levelled it.¹⁹ Later in the 17th century, Nicolas Denys provided a short description of Louisbourg harbour in his book on the fishery. Denys had certainly visited what he called Havre L'Anglois (Louisbourg) in the 1650s and 1660s. It was only a day's sail from the year-round colony he led down the Cape Breton coast, at Saint-Pierre (St. Peter's).²⁰ Denys' eyewitness description of Louisbourg reads as follows:

Thence to Havre L'Anglois is reckoned ten leagues. All the coast is nothing but rocks, and at the entrance to the harbour is found an island which must be kept on the left. Ships being once inside are in safety. The anchorage there is good. All the lands around it are nothing but banks of rather high rocks. At their feet is a little pond where are caught great numbers of Eels.

The fishery for Cod is very good there. The men of Olonne came here in old times to winter in order to be first upon the Grand Banc for the fishery of green Cod, and to be first back to France, because the fish is sold much better when first brought in. Three leagues therefrom is found the Port de la Baleine, which is another good harbour but difficult of entrance because of the quantity of rocks which are met there.²¹

This description clarifies a detail mentioned in the 1593 account about the Mi'kmaq fishing in ponds at Louisbourg. Given what Denys has to say, it is likely that the Mi'kmaq were harvesting eels, as the European mariners did a half-century later. Eels were an important part of the Mi'kmaw diet. The ponds described by both Denys and the 1593 writer could have been any of several *barachois* ponds that show up on French maps generated after 1713. According to Margaret Fortier's in-depth study of the cultural landscape of the 18th-century French settlement, "the terrain surrounding Louisbourg harbour was drained by numerous streams which emptied into three sizeable *barachois* and a smaller inlet described on plans as an *etang*."²²

Also of interest in the Denys account is the detail about the "men of Olonne" over-wintering at Louisbourg so they could take advantage the following spring of the best prices in France for green cod harvested in Cape Breton. Denys would have known what he was writing about; he literally wrote the book on the 17th-century cod fisheries. Thus, in this fleeting mention we learn that men from Les Sables d'Olonne, one of the largest of French cod-fishing ports at the time, a town situated slightly to the north of La Rochelle, must have constructed shelters (and presumably wharves and other rudimentary structures associated with the green fishery) at Louisbourg at some point in time prior to the 1650s. When Denys writes "in old times" does he mean the early 1600s or the late 1500s? Whatever the period — and who knows for how long they might have kept up the practice — the first temporary French occupation of Louisbourg (then known as Havre à l'Anglois / English Port) appears to have been by fishers from Les Sables d'Olonne. That Denys says they used the green fishery method, not the dry fishery approach, is a little

surprising. The French author of an anonymous memoir would write in 1706 that "from time immemorial, vessels have carried on the dry fishery on the coasts of Cape Breton."²³ Perhaps "time immemorial" to that writer meant only decades and that Nicolas Denys was writing of a still earlier time.

Before leaving this pre-1713 section it is important to note the general rise in sea level at Louisbourg and elsewhere on the coastline of Atlantic Canada was almost certainly slowing down at time of the European colonial activity discussed above. That's because between the 14th and 19th centuries there was a long-lasting period of colder temperatures in the northern hemisphere. That is, the mean temperatures were colder for that half millennium than they had been before and after that period. The era is known to climate scientists as the "Little Ice Age." Water bodies like the Bedford Basin at Halifax and even the Thames River in London, England would occasionally freeze over.²⁴ Those lower temperatures would have slowed the melting of retreating ice sheets and the phenomenon of thermal expansion. However, the cooler air and water would not have had an effect on the phenomenon of subsidence, so Louisbourg harbour and other coastal areas would still have been experiencing a gradual rise in sea level, but at a rate slower than it had been before and after the Little Ice Age.

The long era of private fishing and trading ventures sailing out of French, English, Portuguese, Spanish and Basque ports and into Cape Breton's waters and anchorages, without any kind of effective "state" control and order came to an end in 1713. The Treaty of Utrecht of 1713, among many other things, accorded France sovereignty over Cape Breton Island and Ile Saint-Jean (Prince Edward Island). Henceforth, until 1745, and again from 1749 to 1758, France would try and exert exclusive authority over the harbours, coastlines and interiors of the two islands. At the same time, on those two islands and elsewhere in the Maritimes, there was a parallel world of Mi'kmaw use and governance, quite apart from that which was exerted or aspired to by French or British officials. Only occasionally did the two governance regimes overlap.²⁵

France's overseas interests in 1713 came under the jurisdiction of the minister of the Marine. He held responsibility

for both any overseas colonies and for the French navy, an interconnected relationship if ever there was one. Hopes were high about the potential for a colony on Cape Breton Island. The authors of two memoirs prepared in 1706 had written glowingly about the island. One author offered this rousing vision of what a colony on Cape Breton could mean to France.

The proposed settlement brings together all the fisheries under French control, absolutely excludes the English from the same, defends the colonies of Canada, Newfoundland and Acadia from all their efforts, prevents them from making themselves the masters of all these great countries and thus of all the fisheries, ruins the colony of Boston by excluding them from the same without making war on them, it is the refuge of disabled vessels which frequent these seas..., it becomes the rendezvous and storehouse of vessels from the Indies, the Islands of America and New Spain, it increases the number of seamen, facilitates the Canada trade ... it augments His Majesty's domination and the commerce of his subjects..., this is enough to show that this settlement has, in a word, become of indispensable necessity, and that it is time to set ourselves effectively to the task.²⁶

Interestingly, the harbour recommended for development in 1706 was not Havre à l'Anglois / English Harbour; it was Baie des Espagnols, today's Sydney harbour. Though a small number of French colonists would settle at Baie des Espagnols during Louisbourg's heyday, it would not be developed in any kind of significant way until 1785. That was when large numbers of Loyalists arrived and named it Sydney.

As for Louisbourg, its harbour began to be transformed when a French settlement party landed there on 2 September 1713. The initial contingent came aboard the *Semslack* sailing from Placentia, Newfoundland. The same Treaty of Utrecht had transferred that former French colony to the king of Great Britain. The *Semslack* cruised Cape Breton Island, soon to be renamed Ile Royale, examining its various anchorages looking for the harbour that was "the most suitable for establishing the fort and the most convenient for fishing and commerce."²⁷ The commander of

the expedition, future Ile Royale governor Saint-Ovide, recorded that the island's population at the time was 25 or 30 families of Mi'kmaq and one Frenchman. To that total, once the settlers on the *Semslack* disembarked, were added the 116 men, 10 women, and 23 children and 100 soldiers.²⁸ That initial civilian population of about 150 soon doubled to more than 300 when during October and November 1713 another 31 fishing crews (totalling 155 men) from Placentia arrived.²⁹

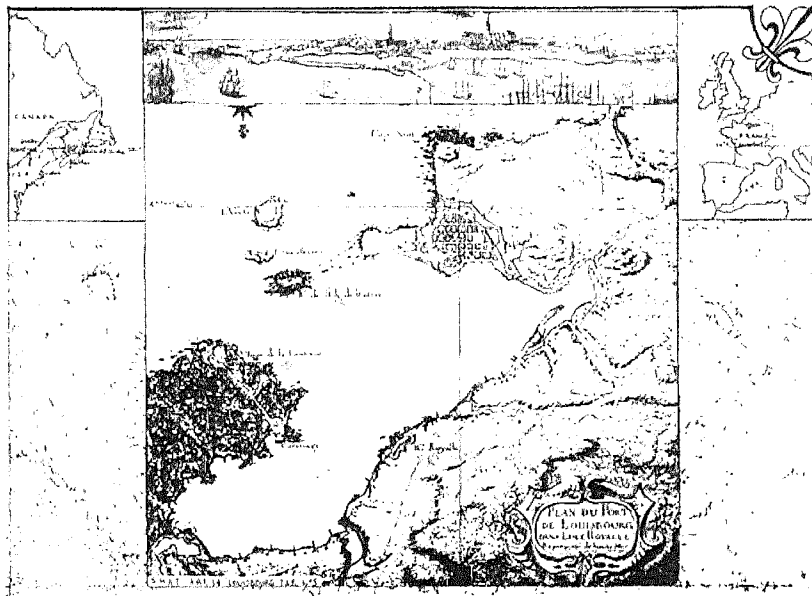


Louisbourg shortly after its founding. The engineer who painted this view shows how quickly the forest is receding.

There was certainly no unanimity on the choice of English Harbour as the main settlement of the new colony. Some favoured Sainte-Anne; others Saint-Pierre. Either would have been much less costly to fortify than Havre à l'Anglois. However, the English Harbour, soon to be renamed Louisbourg, was the fishing population's choice. In 1716, Ile Royale attracted 25 fishing ships from France; the following year 51 ships manned by 1399 men came to fish in the waters of the island, with Louisbourg the busiest base.³⁰

It took a few years but by 1717 the French authorities recognized that the administrative centre of the new colony had to

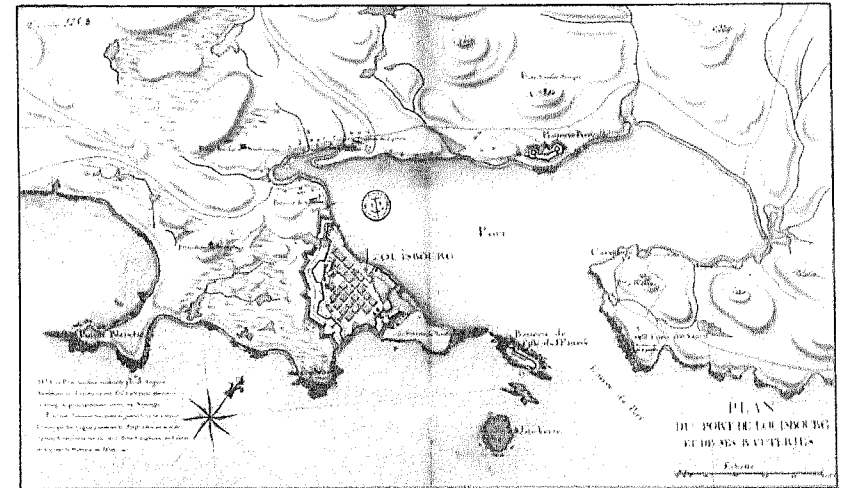
be where the population was concentrated. It was more complicated and costly to erect fortifications at Louisbourg, a low-lying peninsula overlooked by several hills, but Louisbourg was the harbour best suited and best situated for the fishery and for trade and trans-shipment. With multiple fishing properties around its interior and many warehouses in town, the anchorage was right from the start on its way to becoming an important seaport.



Restoration architect Yvon LeBlanc created this composite view. The image at the top is Louisbourg as depicted in 1731; the main image in the centre is a 1744 plan of the entire harbour; while the insets on the left and the right show Louisbourg's and France's Atlantic settings, more or less on the same latitude.

Louisbourg's population grew steadily. By 1720 there were over 600 fulltime residents and in 1737 there were nearly 1500 on the civil side of the equation and about 700 soldiers in the garrison, plus large numbers of mariners who came and went during the busy shipping season. The year round population on the eve of the first siege in 1745 is thought to have been between 2500 and 3000. In latter 1750s, after Louisbourg had been lost to the New Englanders and returned to France by treaty in 1748, Louisbourg's garrison increased fivefold and its civilian popula-

tion reached over 3000. There were close to 10 000 soldiers, sailors and civilians in and around the town in 1758.³¹ This dramatic population growth had an equally dramatic impact on the local environment.



Louisbourg at its height

Right from the moment of the arrival of the *Semslack* on 2 September 1713, and increasing in the months and years that followed, there were people who had to be fed, housed, kept warm and protected from possible military attacks. Those needs meant all available land and sea resources were exploited, with wood and food being at the top of the list. Meeting those two primary needs, and there were other needs of course but we only have time in this paper to address those two, led to drastic changes in the environment at Louisbourg.

Let's look first at the impact on the forest. Wood was required at Louisbourg not only for construction (in building houses, warehouses, sheds, fences, palisades, and fish flakes to name the most obvious) but also for heating and for cooking. Firewood was a year-round requirement; partly because of the often chilly climate at Louisbourg — colder then than now because of the "Little Ice Age" — and because fireplace cooking was the only cooking there was. The result was that whatever forest cover there was along the harbour in 1713 it quickly began to recede. It would move back



This depiction of a British siege battery position in 1758 makes it clear just how denuded the Louisbourg area was of its original forest at that time.

steadily farther and farther back in the years that followed. However many of the “goodly” oaks, fir trees of “great height” and “quick-beams” were still there as they had been in the 1590s, were soon gone. To reinforce that point, we quote the governor and commissaire-ordonnateur of Ile Royale, who wrote in 1727 that the need for wood “is here equal to the need for bread.”³² As for the local climate and its weather, there are many quotable quotes. Thomas Pichon observed: “There are, so to speak, only two seasons, winter and autumn.” The British engineer John Henry Bastide wrote: “you never Saw Such a Country. No Bright Sun, this month past, and what Sal-lade I have had is from ye Heat of ye Dung not of the Sun.” And finally, British Governor Charles Knowles went so far as to describe Louisbourg as “the worst spot on the Globe ...I have struggled hard to weather the Winter, which I’ve done thank God, tho was not above three times out of my room for 5 months.”³³ Knowles spent nearly two years at Louisbourg, and it’s safe to say that he hated the spot. Here is an extract from one of his letters, after he had endured a long and terrible winter.

Words are wanting to represent the severity of the weather. Causes great suffering and misery among the troops. Many have froze to death, and the sentries, though relieved every half hour frequently lose their toes and fingers, some have lost their limbs by mortification in a few hours. The houses and quarters in general are bad and do not help keep out snow and cold. Both officers and men have little comfort even within doors. No sense in exercising to keep warm, as the snow can reach levels of 10, 12, 16 feet in depth. When it stops snowing, the island is covered in a sheet of ice. Nothing is more common than for one guard to dig the other out of the guard room before they can relieve them. The drift snow sometimes covers houses entirely. On fortifications: very poor condition. The summer, where most repairs were to be done, saw only 5 fair days together without some alteration. For every 5, we had 12-14 days of drizzle, rain, and fog. The men die faster than they can be recruited (to form new regiments) We cannot bury our dead but are forced to let them lay in the snow till the thaws come.³⁴

Reading Knowles’ letter makes it easy to understand just how profound the need for firewood was in 18th-century Louisbourg.

As the forest near Louisbourg receded, which it did quickly, the inhabitants had to locate other stands of useable wood. Historian Margaret Fortier describes the need for wood as “almost insatiable”. Ash, beech, birch, maple and oak were among the hardwood trees they sought. They found some along the shores of the Bras d’Or Lake and in the valley of the Rivière aux Habitants (River Inhabitants). According to one eyewitness, the Port Dauphin (Englishtown) area alone supplied Louisbourg with a thousand cords of firewood each year. Enough hardwood and useable pine were found in various parts of the island that the French built several sawmills. Understandably, the farther the wood had to travel, whether cordwood for burning or timber for construction, the more expensive it was.³⁵ In the second period of French occupation, 1749-1758, the minister of the Marine in France instructed to Louisbourg administration “to investigate the use of coal as an alternative source of heat in order to reduce the colony’s dependence on wood.”³⁶

Turning to food, there was fish and shellfish in abundance, but man cannot, or at least usually chooses not to, live by fish and shellfish alone. Fishing began as quickly as it could in the fall of 1713.³⁷ Catches were as good as they had ever been in Placentia, Newfoundland. One English observer reported that he saw “forty vessels loading, and six sail of men-of-warr in its [Louisbourg] harbour, commodious enough for five hundred sail of shippes.”³⁸ Beyond fish, the French desperately wanted bread. That meant imports of flour, not just in the early years but throughout Louisbourg’s history. That’s because the soil and climate of Cape Breton did not make the growing of wheat or other grains a successful undertaking. Various attempts were made with different crops, sometimes with success, sometimes not. Of all their efforts, kitchen gardens brought the best results. The *jardins potagers* featured a mix of herbs and vegetables. Dozens of such gardens were established within the walls of Louisbourg in the yards behind most houses. Several of the engineering plans of the town depict the full extent of the individual gardens. On one plan from the 1730s, it appears that more than half of the developed lots within the *intra muros* was given over to cultivation of vegetables and herbs.³⁹ Backyards were also places where people kept chickens, pigs, goats and other domesticated animals.

If one were inclined to venture outside the town, past the clear-cut zone and into the forest, Ile Royale did have a wide range of animals and game birds that could be hunted (bear, beaver, caribou, deer, hare, grouse and others). Historian Margaret Fortier writes that “in 1729 De Lapérelle remarked that hunting in the immediate environs of Louisbourg was not good.” That makes sense: the forest stood a long ways off. Along the shoreline, however, just beyond the town walls one could hunt a range of sea birds (ducks, geese, gulls, passenger pigeon and others). Fortier found that “a great many birds regularly stopped at White Point during their annual migration. At their arrival in the spring ... there was a carnage so prodigious that up to 1,000 shots would be fired in a single day. This hunt ... was of great benefit to the inhabitants who were generally low on meat by this time of year. The birds were welcome despite the fact that they were aquatic and tasted of oil from the fish and seaweed they con-

sumed.”⁴⁰ On that same theme of making the most of all available food sources, there was a regulation at Louisbourg that stipulated that cod’s heads were not be thrown into the harbour during the gutting and cleaning process on ashore, but rather set aside for the poor of the town and soldiers in the garrison. The soldiers and the poor would come out to the fishing properties along the inner harbour and collect the fish heads to be used in soups or to make stock.⁴¹ In addition to helping out the lower levels of society, the measure must have helped reduce, if only by a bit, the unsightly and foul-smelling waste products of the fishing industry around the harbour at Louisbourg.

Because we tend to prefer simple explanations to more layered ones when looking back into the past, there is sometimes an inclination to regard our ancestors as much less environmentally aware than we are today. The reality, however, is that with our widening footprint and modern technologies — compare draggers and factory trawlers in the fishery to earlier hand lines and much smaller nets⁴² — we are often having a much greater impact on the natural world than our predecessors ever did. Some are already calling the period we live in the *anthropocene*, because of the irreversible impacts humans are having on the planet.⁴³ Looking back specifically at French colonial Louisbourg, there is an intriguing example of what in today’s language we would call species at risk legislation. The species in question was the partridge (*perdrix*), also known as the grouse. Over the 24-year period from 1728 to 1752, there were four separate occasions when local royal officials issued ordinances to protect the grouse population on the island.⁴⁴ The regulations specified the season when the species could be hunted and laid out the penalties that would be imposed on those who violated the rules. The legislation itself does not explain why the measures were introduced. Was it as a result of a public outcry demanding conservation measures; or as a top-down protective measure trying to rein in excessive hunting; or because the Mi’kmaq population on the island had noticed a drastic drop in the number of grouse as the French population had grown and called for the Louisbourg administration to take corrective action? Whatever the context, the end result was that a conservation measure was

introduced at Louisbourg on four occasions by four different sets of royal officials.

Meanwhile, unnoticed by the inhabitants of the busy seaport over the 45-year span of French colonial Louisbourg, its shoreline was subsiding imperceptibly in relation to a rising sea level. Such change would not be noticed, or at least not measured, for another two and a half centuries.



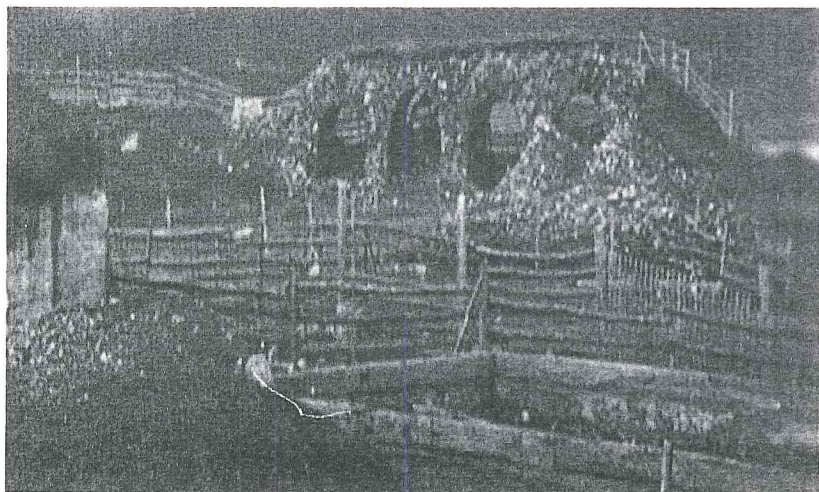
This is a detail of a larger painting by the late Lewis Parker. It depicts Brigadier General James Wolfe, with the telescope, at Lighthouse Point during an early stage in the 1758 siege. Reproduced courtesy of the Cape Breton University.

The 1758 siege at Louisbourg resulted in the immediate end of French regime on Cape Breton Island, bringing about a mass population removal and the virtual abandonment of several harbours where the French had settled. Slowly but surely nature would take over in those locations, with new growth in trees and bushes reclaiming areas that for forty or so years had been denuded. At the most populous centre, Louisbourg became Louisburg. A British administration and garrison, along with a new

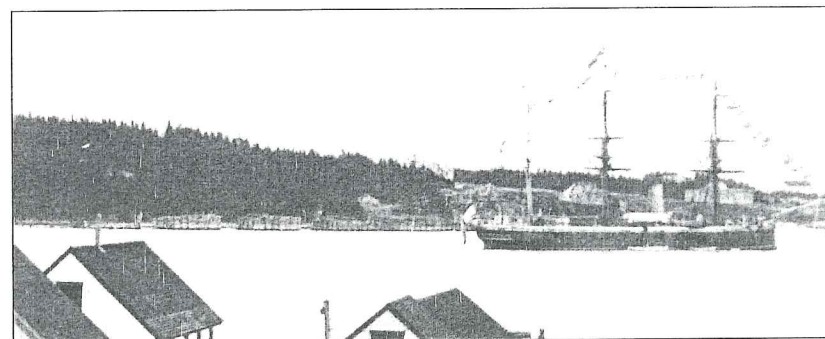
settler population, would occupy the place for another ten years. Yet with each passing year the town looked less and less like the one the French had lived in over the span of four decades. The British had Halifax, founded in 1749, and did not require a second stronghold or administrative centre. When the garrison withdrew completely in 1768 more than half of the 500 inhabitants living in Louisburg the year before departed when the soldiers left. The onetime populous, prosperous and strategically significant French seaport was a “decayed city... going to ruin.”⁴⁵

Generally speaking, the British victory put a halt on the development of most of Cape Breton Island for nearly thirty years. Where the French had expended much effort and money, especially at Louisbourg but to a lesser extent in some of the smaller harbours, the island’s population and economy plummeted when the British took over. They adopted a deliberate policy of discouraging settlement. What Cape Breton had going for it— in the words of British engineer Samuel Holland: an “advantageous Situation for Commerce & Fishing — was of little or no interest to British colonial officials in the 1760s and 1770s. Holland wrote that there was “little Encouragement” for developing Louisburg or anywhere else on Cape Breton. The disincentives to settling and developing the island included a refusal to register any land grants there; a denial of any representation in the colonial assembly in Halifax; no courts of local justice; the coal resources in the Sydney area were reserved exclusively for military purposes; and timber was handled in the same way. As a result, as historian D.C. Harvey pointed out, Cape Breton Island reached 1784 “practically unencumbered by any title to land and was a *tabula rasa* on which the Imperial Government could write its decrees for the future.”⁴⁶ It would not be until the 1780s, when Loyalists arrived at Sydney and Acadians at Chéticamp, that there would be another significant uptick in the population of Cape Breton Island. Further increases awaited the arrival of large numbers of Scottish and Irish settlers in the 19th century. At some Cape Breton harbours, Louisbourg included, it was a far cry from what it had been during the French regime. Many anchorages, with Louisbourg at the top of the list, would never again be as populated as they were in the 1740s and 1750s.

That being said, Louisbourg did not become a ghost town. The low-lying peninsula where the French population had once been concentrated — the *intra muros* of the fortified town — became home to a dozen or so families of Irish, Scottish and English descent. A few families had a direct link with the British capture of the French stronghold in 1758. For well over a century wooden homes were scattered here and there among the ruins of the bygone French era, while an even greater number of families settled along the north side of Louisbourg harbour, higher up on the shoreline from where the original French fishing properties had been.⁴⁷ A separate community sprang up at Kennington Cove. The twin icons of the French era that preceded the new reality were what was left of two arches of the King's Bastion casemates. They were painted or photographed by many. For decades the families of 19th and early 20th-century Louisbourg were left alone to lead their lives where and how they chose. The town's population was on the upswing, especially after Louisbourg became the winter exportation port for Cape Breton coal. The Sydney & Louisbourg Railway connected the town to the coal fields and brought passengers. It was a definite boom time. Once again, it must be underlined, the prosperity was linked to the harbour. This was the case whether it was the renewed and ongoing fishery or the coal export business that blossomed in the late 19th century. An industrial-era infrastructure rose around the harbour and extended into it the form of a massive pier.⁴⁸



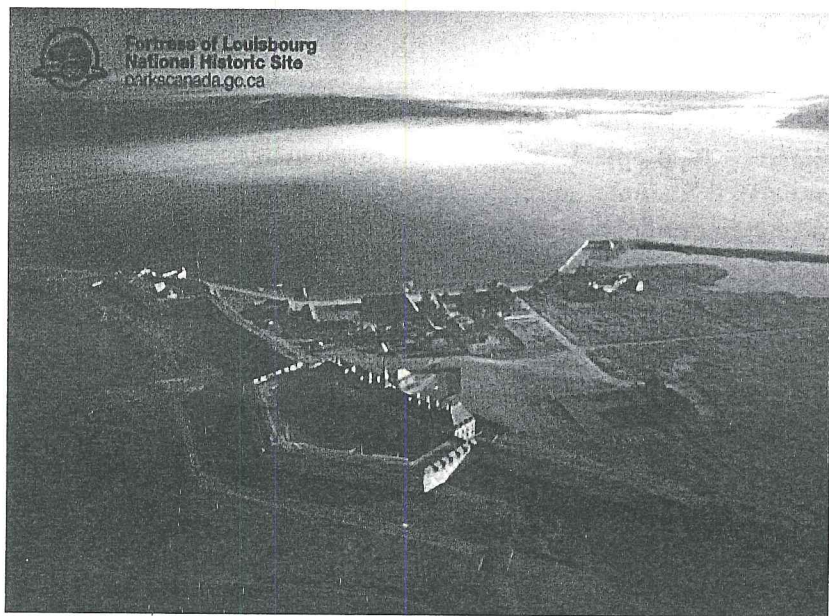
The ruins of the arches of the King's Bastion Barracks, circa 1900.



A great coal pier was constructed to extend into Louisbourg harbour in the late 19th century, when Louisburg (no "o" at that time) was the winter export port for Cape Breton coal.

The situation on the low-lying peninsula was the first to change, and that change came about because of something new on the Canadian cultural front. In 1919 the federal government of Canada established an arms-length advisory body called the Historic Sites and Monuments Board of Canada [HSMBC]. The HSMBC's role was to advise the government as to whether or not certain persons, places or events in Canadian history should be considered of "national significance". Previously, history was left up to private individuals and organizations. Under the new scheme of things, the federal state wanted to put up plaques and even sometimes acquire land to create federal "historic sites". Early on, Louisbourg — meaning French-era Louisbourg — was identified as a strong candidate. During the 1920s, with an eye to establishing an official national historic site, the government expropriated all the private properties on the peninsula at Louisbourg, creating a national historic site administered by Parks Canada. From the 1930s to the 1950s, that historic site consisted of stabilized ruins and a museum. Then in the 1960s there came a second round of expropriations connected to the idea of enlarging the national historic site. This time it was the properties along the north shore — what had come to be called "Old Town" — and down at Kennington Cove that were acquired by the federal government. These additional land acquisitions were part of an ambitious new vision of what the Fortress of Louisbourg National Historic Site could be. Initiated by the government of the Right Hon. John G. Diefenbaker, Parks Canada em-

barked on a programme of rebuilding that would eventually lead to fully one-quarter of the original French fortifications and one-fifth of the original French townsite being reconstructed. To achieve that end, so the thinking went at the time, required a large visitor centre, an administration compound, a bus system to transport visitors and a buffer zone that had no modern “intrusions” like houses, churches or other buildings.⁴⁹ Accordingly, many structures of the Louisbourg that evolved during the 19th and early 20th century were removed, or burned. By the 1970s, phoenix-like, a convincing representation of a significant portion of the original French fortified town had been rebuilt. The tag line associated with the interpretive offer was an enticing “Relive a moment in time.” History, on the surface at least, as represented by buildings, furnishing and people in appropriate costumes, appeared to have come full circle. Louisbourg, now known as the Fortress of Louisbourg, was back.



The reconstructed Fortress is one-fifth the original town in terms of buildings; one-quarter in terms of fortifications rebuilt.

Of course, the 18th-century town wasn't really back. It couldn't be. A facsimile is not the original, no matter how convincing, except perhaps with art forgery when curators cannot

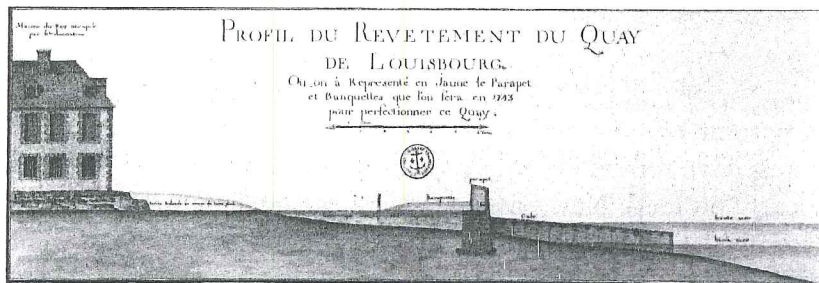
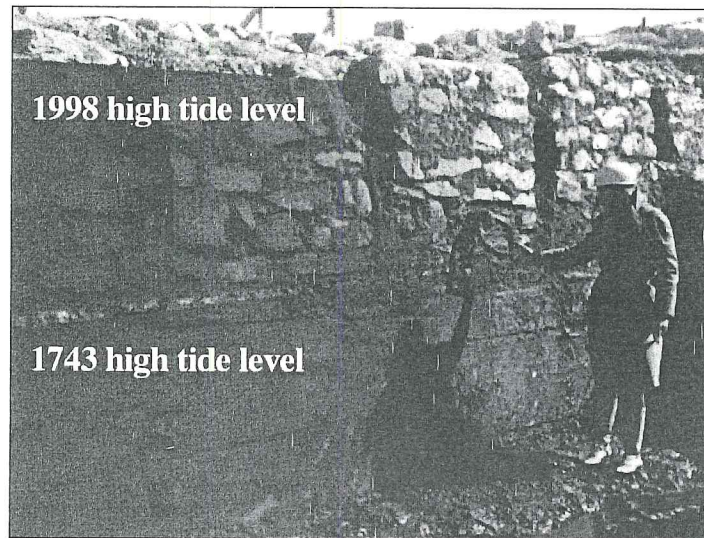
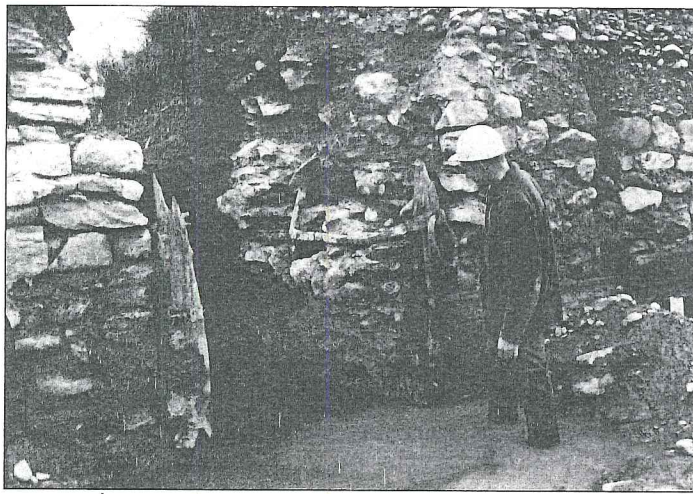
detect the trickery. In Louisbourg's case there are a number of “differences” between the original town and its reconstruction, beginning with the unseen use of concrete inside various fortification walls and ending with the fact that the people of today wearing the clothing of their 18th-century namesakes are generally taller, longer lived and smell better than the original occupants of the place.

And then there was the ocean. It too had changed.

When Parks Canada archaeologists and engineers tackled the reconstruction of the Louisbourg waterfront in the 1960s they used a large coffer dam to keep the sea water of the harbour at bay. This allowed the archaeologists to investigate the physical remains of the original French infrastructure. They came across the old timbers and stones, and also the original iron mooring rings. The odd thing was, someone noticed, the French mooring rings were surprisingly low. The tidal amplitude at Louisbourg is only about 1.7 m. Nonetheless, at today's high tide, the rings wouldn't be much good; they'd be at the water line or under water. What was going on?

The answer, of course, is that the combined effect of two and half centuries of crustal subsidence and sea level rise had lifted mean sea level nearly a metre above where it had been for French mariners. The initial calculation carried out in 1998 by the Geological Survey of Canada was that mean high tide at Louisbourg had risen .85 metres (or 85 cm) over the span of 250 years. Subsequent analysis placed the figure at .90 metres.⁵⁰ And counting.

Once scientists started looking for the evidence of that sea level rise at Louisbourg they found such evidence in many locations, not just with the mooring rings. Archaeologist Rebecca Duggan summarizes the most telling evidence in a recent paper. She presents numerous examples that demonstrate conclusively how some harbour and/or immediate coastal locations at Louisbourg have retreated (or been eroded) between 15 to 18 metres (nearly 60 feet). New baselines were established in 1995 to determine the ongoing nature of the threat. Since then the retreat of the coastline has averaged 0.17 metres a year. Naturally, the more exposed areas and/or those with soft sediment, erode faster than



This French plan drawn in 1743 shows the difference between high and low tide as it was back then. The sea level is now nearly a metre higher.

areas of hard rock. If that is not enough of a wake-up call, then consider this: the Intergovernmental Panel on Climate Change predicts that the next 100 years will likely witness a further 73 cm rise in sea level, which is almost as much as occurred in the past 255 years (the 85 cm figure mentioned above). In a book on climate change in the Maritimes, meteorologist Richard Zurawski offers two sets of predictions for impacts 10, 25, 50, 100, 1000 and 15,000 years into the future. One set is described as the “Good”; the other as the “Bad and Ugly”. Under the “Good” scenario, Zurawski suggests that by 2033 “ocean levels around the world will have risen between 30 and 60 centimetres.” Part of the rise will be due to a melting of ice sheets in the Arctic and Antarctic. As of 2033, writes Zurawski with dramatic flair, “almost 500 cubic kilometres of water are pouring annually into the North Atlantic.”⁵¹ And that’s the “good” scenario.

If the sea were always calm, a slowly increasing water level might be a manageable evolution. One could theoretically construct a protective cordon to hold back the gently lapping water. But the north Atlantic is far from always calm and the waves often come ashore in anything but a lapping manner. From time to time there are major storm events, and it is during those events that the greatest damage occurs to shorelines and to build-



(Courtesy of Parks Canada)

ings that find themselves too close to the water's edge. The reality at Louisbourg over the past 30 plus years has been that during certain storms, especially nor'easters, there can be substantial damage. Significant damage has already occurred to elements of the reconstructed Fortress of Louisbourg (particularly along the waterfront), to archaeological sites along the exposed shoreline and to barrier beaches.⁵² If anything, the frequency and severity of storm events is increasing not decreasing as time goes by.

Parks Canada has added a concrete wall and armour stone at what were thought to be the most important or most vulnerable seaward locations. Should the agency put walls or giant stones to hold back the sea surges and protect the national treasure that is Louisbourg? As a parenthetical observation, Louisbourg is not the only historic site facing such challenges. There are other sites along other coasts suffering similarly crustal subsidence and rising sea level.⁵³ In a world of limited financial resources, is the protection of one particular national historic site a higher value than conserving some others? An even more difficult question might be: is it more important to use extraordinary measures to conserve a threatened historic site or to use the same kind of resources to protect other harbours and communities in the Maritimes from the effects of the storm events in the context of steadily rising sea level? A recent article by the Canadian Press quoted a study that estimated climate change was going to cost Canada \$5 billion a year by 2020, rising to \$43 billion a year by the 2050s. The authors of the report predict that of that overall total changes in sea level and accompanying flooding will cost between \$1 billion and \$8 billion/year within 40 years, with Prince Edward Island most at risk.⁵⁴ There will not likely be enough dollars to go round. Priorities will have to be identified, pitting one project against many others. Understandably, few politicians are rushing into the arena on this matter. There are no easy answers, or at least no inexpensive, easy answers.

Looking globally, we realize that the situation at Louisbourg is far from unique. The planet has many historic sites that for one reason or another have been abandoned and/or altered by climate change. Sometimes it's an invasive jungle that took over; with others, once-thriving centres now lie in deserts that no longer

support life. Our climate and our world have always been in flux. An example that is closer to what may be Louisbourg's fate may be found in Egypt. What was ancient Alexandria at the time of Queen Cleopatra now finds itself about 6 m under water.⁵⁵

To get a handle on the particular challenge at Louisbourg, Parks Canada engaged a geo-engineering company to assess the changing situation along the historic shoreline at Louisbourg, from Kennington Cove south of the harbour entrance to Gun Landing Cove north of the harbour entrance.⁵⁶ The report, submitted in March 2010, makes for sober reading. It contains observations such as: "Because of the progressive nature of erosion over the 50 to 100 year time scale the coastline cannot be assumed to be static. Erosion will alter its shape and potentially open pathways for water to enter and flood the back country during surges." Those surges are by far the most destructive forces. At times, only the old French earthworks, heaps of ruins, have protected the reconstructed town from getting soaked as waves surged across Rochefort Point. After a lengthy analysis, the geo-engineering report offers eight thought-provoking conclusions.

1. The shoreline will migrate landward by several tens of meters in some areas. Many of these areas are rich in archaeological resources;
2. Large areas of the park are susceptible to flooding and these areas will increase as sea level continues to rise;
3. Roadways into the park are at risk and road surfaces may need to be raised. In the case of Barachois causeway this water quality effects upstream in the semi-impounded Barachois Pond will need to be considered as part of roadway upgrading;
4. Without protection efforts areas around the park facilities and Rochefort Point will be flooded regularly;
5. Grand Etang Barrier Beach is at risk of being breached. Beach protection by artificial nourishment should be investigated. Successful nourishment and beach protection will involve much larger material than has been used in the past and may also require a groin at the western end of the beach to contain nourishment material;

6. Sea level rise and erosion will damage many archaeological sites in the area between Black Rock Point and Rochefort Point;
7. The coastal roadway west of Blackrock Point is at risk of loss due to erosion; and
8. In general, data and modelling suggests that erosional transgression beyond the coastline resulting from sea level rise alone will amount to about 30 m in most areas of the park. In a few areas a larger transgression is predicted while in areas of rock cliff less erosion will occur.

So where do those who love Louisbourg and want to protect it go from here? Parks Canada archaeologist Rebecca Duggan likens the way ahead for her discipline as one of cultural “triage” in which a mix of approaches and tools are used.⁵⁷ Sometimes a particular site may warrant heroic measures to conserve it; in other spots it may have to be rescue archaeology after a storm event.

This much is certain: none of the challenges of damaging sea surges and ongoing sea rise and subsidence are going to go away. Rather, they are going to worsen as time marches on. The peninsula that was the heart of bygone French Louisbourg is low-lying and mostly flat. Eventually — whether that longer term is 50 years from now, a century from now or a millennium from now — significant portions of the Fortress of Louisbourg reconstruction and its archaeological heritage are not going to be as they are now. There will be more and more erosion and some areas will be submerged. The harbour, and the ocean that feeds it, will win out, as it always has and always will.

To end on a positive note, this raises the prospect of an entirely new marketing angle for the intriguing place for the next decade and more: *Explore Louisbourg ... while there's still time.*

¹ The author would like to thank many people for their help in putting together this paper and its accompanying visual presentation. At the top of the list are Bob Taylor of the Geological Survey of Canada and Parks Canada archaeologist Rebecca Duggan. The information and images they supplied were an enormous help. Others who assisted in one way or another were Fortress of Louisbourg staff: Sandy Balcom, Chip Bird, Kenneth Donovan, Heather Gillis, Anne Marie Lane Jonah, Heidi Moses, Maria O’Hearn, and LeeAnne Reeves.

² I am refraining from listing all the names and publications of the many eminent French “longue durée” historians. Information on the first historians to advance that concept, Marc Bloch and Lucien Febvre, and on the subsequent generations who have followed in their footsteps is readily available. For a rapid introduction to the topic one could check out what Wikipedia has on the subject of “Longue durée.”

³ J. Shaw, R.B. Taylor, D.L. Forbes, M.-H. Ruz, and S. Solomon, “Sensitivity of the Coasts of Canada to Sea-level Rise,” (Ottawa: Geological Survey of Canada Bulletin 505, 1998).

⁴ Email communication from Dr. Bob Taylor of the Geological Survey of Canada, 27 September 2011.

⁵ At various times in the history of the Earth the seas have gone up and gone down. Atlantic Geoscience Society, *The Last Billion Years, A Geological History of the Maritime Province of Canada* (Halifax: Nimbus Publishing, 2001), p. 191. The authors point to “raised beaches” — left behind from when sea level was much higher — in a number of locations. The example provided in the book listed above is found at Cape Chignecto, Nova Scotia, where the sand and gravel beach is today stranded 38 metres above current sea level.

⁶ *The Last Billion Years*, pp. 192-193.

⁷ Focussing specifically on papers read at FCHS conferences over the years B.A. Balcom, T.A. Crowley, Ken Donovan, Anne Marie Jonah, Peter Moogk and I, and likely others, have touched on different aspects of Louisbourg’s history.

⁸ R.B. Taylor, H. Josenhans, B.A. Balcom, and A.J.B. Johnston, “Louisbourg Harbour through Time,” (Ottawa: Geological Survey of Canada Open File Report 3896, 2000).

⁹ There are a number of publications on the Mi’kmaq of Nova Scotia, including Cape Breton Island. Stephen A. Davis, *Micmac* (Halifax: Four East, 1991) and Ruth Whitehead and Harold McGee, *The Micmac: How Their Ancestors Lived Over Five Hundred Years Ago* (Halifax: Nimbus, c. 1983) are two studies. An article that focuses on a particular Cape Breton angle is B.A. (Sandy) Balcom and A.J.B. Johnston, “**Error! Main Document Only.** Missions to the Mi’kmaq: Malagawatch and Chapel Island in the 18th Century,” *Journal of the Royal Nova Scotia Historical Society*, Vol. 9 (2006), pp. 115-140.

¹⁰ Richard Brown, *A History of the Island of Cape Breton with some account of the Discovery and Settlement of Canada, Nova Scotia and Newfoundland* (London, 1869; reprint Belleville: Mika Publishing Company, 1979), p. 47. The earlier place-names for Louisbourg are used in the account of the 1597 voyage of Capt. Leigh.

¹¹ I have made two small modifications to the following quoted extract from the original document. First, I have inserted “u” and “v” where they should be in various spellings. At the time, there was no distinction between the two letters so they were used interchangeably. The second modification is that I replaced “Savage” by “Native” because of modern sensibilities.

¹² Brown, *A History of the Island of Cape Breton*, pp. 40-42. A succinct summary of this voyage and the man who wrote the account is found in the entry for “Richard Fisher”, written by David B. Quinn, available in either Vol. 1 of the *Dictionary of Canadian Biography* published by the University of Toronto Press or in its online version at www.biographi.ca. After the account of the Marigold’s adventures at Louisbourg Richard Brown adds the following comment: “The place where the ‘Marigold’s’ boat’s crew landed to obtain fresh water was evidently the point of land upon which Louisbourg was afterwards built, the distance from the Cape being exactly four leagues.”

¹³ For a study of how the admiral “system” worked in Newfoundland, see Jerry Bannister, *The Rule of the Admirals: Law, Custom and Naval Government in Newfoundland, 1699-1832* (Toronto: Osgoode Society for Canadian Legal History, 2003).

¹⁴ Brown, *A History of the Island of Cape Breton*, pp. 42-47. More on this voyage and two of its participants can be found in the biographies of “Charles Leigh” and “George Johnson” prepared by David B. Quinn for Vol. 1 of the *Dictionary of Canadian Biography*. Those biographies are also available online at www.biographi.ca.

¹⁵ Emily Burton, “Portuguese Settlement in Northeastern North America: The 1520s Fagundes Experiment,” *The Nashwaak Review*, Vol. 20/21 (Spring/Summer 2009), pp. 413-446.

¹⁶ Email communication from Heidi Moses, Archaeology Collections Manager at the Fortress of Louisbourg, 7 October 2011. The name of the expert in the United Kingdom who dated the piece was Robert Smith, Head of Conservation at the Royal Armouries. The artefact number for the swivel gun in the Louisbourg collection is 1B6A13-1.

¹⁷ Charles de la Morandière, *Histoire de la pêche française de la morue dans l’Amérique septentrionale* (Paris: Maisonneuve et Larose, 1957), tome 1, p. 346. Charles de la Morandière, *The French Cod Fishery in Newfoundland* (St. John’s, NL: Centre for Newfoundland Studies, 2005). Greatly abridged and translated by Aspi Balsara, p. 44.

¹⁸ Samuel de Champlain, *Voyages du Sieur Champlain*, (Toronto: Champlain Society, 1922-1936), pp. 417-418.

¹⁹ I provide a short summary of the Ochiltree initiative in *Control and Order at French Colonial Louisbourg, 1713-1758* (East Lansing: Michigan State University Press, 2001), pp. 4-5.

²⁰ There is a brief account of Denys’ colony at Saint-Pierre in A.J.B. Johnston, *Storied Shores: St. Peter’s, Isle Madame and Chapel Island in the 17th and 18th Centuries* (Sydney: University College of Cape Breton Press).

²¹ Nicolas Denys, *The Description and Natural History of the Coasts of North America (Acadia)* (Toronto: Champlain Society, 1908); edited by William F. Ganong, p. 181.

²² Margaret Fortier, “The Cultural Landscape of 18th-Century Louisbourg,” Parks Canada Microfiche Report Series No. 83 (1983). This report is now available at http://fortress.cbu.ca/search/MicroRS83_1.html. The electronic version is not paginated; the quoted section comes from “Part One - Louisbourg - The Land and its Utilization - Louisbourg Topography - Harbour Area”.

²³ The original quote is: “de tems immémorial, les vaisseaux ont fait la pesche sèche sur les côtes du Cap Breton”, as cited in J.S. McLennan, *Louisbourg from its Foundation to its Fall*, (London: Macmillan, 1918), p. 23.

²⁴ *The Last Billion Years*, pp. 193-194; Ian Currie, *Frost, Freezes and Fairs: Chronicles of the Frozen Thames and Harsh Winters in Britain from 1000 A.D* (Coulsdon, Surrey: Frosted Earth, 1996).

²⁵ David L. Schmidt and B.A. Balcom, “The *Règlements* of 1739: A Note on Micmac Law and Literacy,” *Acadiensis*, Vol. XXIII, No. 1 (Autumn 1993), pp. 110-27.

²⁶ The document from which this extract comes is found in Archives Nationales (France), Colonies, Série C11C, vol. 8, fols. 10-39, “Memoire a Monseigneur le Comte de Pontchartrain sur l’Etablissement d’une Colonie dans l’Isle du Cap Breton,” 30 novembre 1706. The other 1706 memoir is by Antoine-Denis Raudot, and is found in AN, C11C, Vol. 8, fols. 40-51v, 7 août 1706. See also Christopher Moore, “The Maritime Economy of Isle Royale,” *Canada, An Historical Magazine* Vol. 1, No. 4 (June 1974), pp. 33-34.

²⁷ AN, Col, B, Vol. 35, fol. 230, Pontchartrain à Vaudreuil, 24 février 1713.

²⁸ McLennan, *Louisbourg from its Foundation*, pp. 11-12.

²⁹ AN, Col, B, vol. 36, fols. 14v-15, Ministre à Laudreau, 17 janvier 1714; *ibid.*, fol. 45v, Ministre à Gagneulx, 30 janvier 1714.

³⁰ Bruce Fry summarizes the arguments over the choice of a capital for Ile Royale in ‘An appearance of strength’: *The Fortifications of Louisbourg*, vol. 1, (Ottawa: Parks Canada, 1984), pp. 53-55. As for the growth in the number of fishers coming across to Ile Royale after 1713, see Charles de la Morandière, *The Cod Fishery of Newfoundland*, p. 48. The ports of origin for the 51 ships were as follows: 19 from Basque ports; 9 from Saint-Malo; 3 from Granville; 4 from Nantes; 4 from Bordeaux; 3 from La Rochelle; 3 from the Antilles; 3 from Canada, 1 from Rochefort and 1 from Louisbourg itself.

³¹ There is a detailed discussion of Louisbourg’s population in Johnston, *Control and Order*, pp. 34-46.

³² AN, Col, C11B, vol. 9, fol. 40, St-Ovide and Mezy, 15 décembre 1727.

³³ Thomas Pichon, *Lettres et mémoires pour servir à l’histoire naturelle, civile et politique du Cap Breton, depuis son établissement jusqu’à la reprise de cette isle par les Anglois en 1758* (La Haye: P. Gosse, 1760); Bastide is

quoted in John Fortier, *Fortress of Louisbourg*, (Toronto: Oxford University Press, 1979), 66; Knowles is quoted in Kenneth Donovan, "The De La Plagne Exhibit," (Historical Memoranda Series, 1978) ms., Archives of the Fortress of Louisbourg.

³⁴ Emily MacLeod, "Understanding Coastal Heritage Sites at the Fortress of Louisbourg National Historic Sites" August 2010. The quote is on page 60 of her report, and it dates to January 20, 1746, referenced as C.O.5, vol.32. f.192-195.

³⁵ P.A. Bentley and E.C. Smith, "The Forests of Cape Breton in the Seventeenth and Eighteenth Centuries," *Proceedings of the Nova Scotian Institute of Science*, Vol. XXIV (1954-55) Part 1, pp. 1-15.

³⁶ Fortier, "The Cultural Landscape...", section on wood. The 1749 instruction to investigate coal as a cost-saving alternative to wood is located in AN, Colonies, B, vol. 89, fol. 328, 28 mars 1749.

³⁷ The best study of the French fishery at Louisbourg remains B.A. Balcom, *The Cod Fishery of Isle Royale, 1713-1758* (Ottawa: Parks Canada, 1984).

³⁸ Quoted in McLennan, *Louisbourg from its Foundation*, p. 21.

³⁹ The plan in question is ND-24 in the AFL system, and Fig. 9 in the *APT* issue on Louisbourg. See also Anne O'Neill, "The Gardens of 18th-Century Louisbourg," *Journal of Garden History*, Vol. 3, No. 3, pp. 176-78.

⁴⁰ For a summary of the natural resources on Ile Royale see Fortier, "The Cultural Landscape of 18th-Century Louisbourg." Also of interest would be Dilys Francis, "The Mines and Quarries of Cape Breton Island During the French Period, 1713-1760," (1965), ms., AFL; and A.J.B. Johnston, "The Early Days of the Lobster Fishery in Atlantic Canada," *Material History Bulletin*, No. 33 (Spring 1991), pp. 56-60.

⁴¹ Hope Dunton with A.J.B. Johnston, *From the Hearth: Recipes from the World of 18th-Century Louisbourg* (Sydney: UCCB Press, 1986), p. 32.

⁴² Charles de la Morandière, *The French Cod Fishery in Newfoundland*, p. 98, writes that in the mid-20th century 29 trawlers with 1600 men could bring in as much cod as their ancestors did 200 years earlier with 350 ships and 12,000 men.

⁴³ The *National Geographic* issue of March 2011 has a feature story on this topic.

⁴⁴ AN, Colonies, C11B, vol. 10, fols. 56-56v, 5 avril 1728; AN, Colonies, C11B, vol. 24, fols. 319-319v, 9 avril 1740; AN, Outre Mer, G2, vol. 200, dossier 211, sans pagination, 7 janvier 1752; AN, Outre Mer, G2, vol. 200, dossier 211, 21 avril 1752.

⁴⁵ For more on this transitional period see A.J.B. Johnston, "Commemorating Louisbourg, c.1767," *Acadiensis*, Vol. 13, No. 2 (Spring 1984), pp. 147-49; Johnston, "Preserving History: The Commemoration of 18th-Century Louisbourg, 1895-1940," *Acadiensis*, Vol. 12, No. 2 (Spring 1983), pp. 53-80.

⁴⁶ D.C. Harvey, ed., *Holland's Description of Cape Breton Island and Other Documents*. (Halifax: Public Archives of Nova Scotia, 1935), p. 60. Further on, Holland offers that at Louisbourg there is "scarce any Resemblance re-

mains of its former State; the Demolition of its Fortifications, & the little Encouragement it has met with; have concurred in reducing its Buildings, Fisheries, & Trade, to a very low Degree. It is difficult on a slight Inspection to believe that there were 300 Shallops, & as many decked Vessels for the banks, once employed in the Fishery...", p. 80. Harvey's comment is on p. 31.

⁴⁷ Jenna Currie, "Outside the Walls: The *Habitant Pêcheur* of Louisbourg's North Shore", paper for Prof. Andrew Parnaby's class at Cape Breton University, April 2011.

⁴⁸ Elaine Sawlor, *Beyond the Fog: Louisbourg after the Final Siege, 1758-1968* (Sydney: City Printers, 2008); Brian Campbell with A.J.B. Johnston, *Tracks Across the Landscape: A Commemorative History of the S&L Railway* (Sydney: UCCB Press, 1995).

⁴⁹ Terry MacLean, *Louisbourg Heritage: From Ruins to Reconstruction* (Sydney: UCCB Press, 1995).

⁵⁰ Rebecca Duggan, "Coastal Heritage Conservation: Planning It Out", conference paper, 2011.

⁵¹ Richard Zurawski, *The Maritime Book of Climate Change* (Lawrencetown Beach, NS: Pottersfield Press, 2008).; see especially pp. 155-179, Chapter 6 - "The Future of Weather and Climate for the Maritimes".

⁵² R.B. Taylor, "Coastal Stability and Flooding at Grand Étang, Fortress of Louisbourg, Nova Scotia," Geological Survey of Canada, Open File 2548, (1992).

⁵³ Fort Gaspereaux in New Brunswick is one such site; York Factory on the shore of Hudson Bay is another.

⁵⁴ *Chronicle-Herald*, 30 Sept. 2011, CP story by Heather Scoffield, "Report: Climate costs to soar," p. A10.

⁵⁵ *National Geographic*, July 2011, p. 46. The figure quoted in the article was "about 20 feet".

⁵⁶ CBCL Limited, "Geo-Engineering Research for Fortress of Louisbourg Coastal Conservation Plan Project, Final Report," March 2010.

⁵⁷ Rebecca Duggan, "Coastal Heritage Conservation: Planning It Out", paper, 2011