THE HAUT-SAINT-LAURENT WILDERNESS AT THE TIME OF SETTLEMENT BASED ON SELLAR'S HISTORY

- PART II: FORESTS AND WETLANDS -

by

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> *His first task [the settler], after getting his shanty in habitable shape, was to make warfare on the trees. There, on every hand, they stood, walling him in, even shutting him out from sight of sun and star, of all sizes and kinds. Here was a monarch who reared his head far above his fellows and whose trunk a giant could not, with outstretched arms, span; there the sapling that a child could snap. Littered on the ground were the remains of old trees in every stage of decay, from the veteran overthrown by the last gale, carrying in its fall several of its neighbors, to the trunk half resolved into the soil that had for ages fed it.* **Sellar, 1888**

During the 1880's, Robert Sellar, owner and editor of **The Canadian Gleaner** (Huntingdon) interviewed some 300 of the remaining original settlers of the Haut-Saint-Laurent over a period of 8 years.[1] He recorded their priceless accounts in his **History of the County of Huntingdon and the Seigniories of Chateaugay and Beauharnois.**[2] This work constitutes a unique testimony, from first hand witnesses, of the passage from virgin land to settled territory. But, as pointed out by McGee, the geographical order championed by Sellar in his book makes it frustratingly difficult for someone interested in a particular theme of the settler's life and environment.[3] For example, the numerous direct allusions to the early wilderness are scattered across Sellar's 643 page book. Yet, these accounts are invaluable in reconstructing the composition and characteristics of the presettlement forest for scientific reasons.

In Part I of this article, we listed and classified all excerpts pertaining to wildlife in Sellar's History.[4] These accounts tell stories of fructuous hunting and fishing, of threatening bears and wolves, of skies darkened with millions of the – today extinct – passenger pigeons.

In part II, we focus on the forests and marshes that represent the landscape context in which the settlers' epic history unraveled. The reconstruction of the original natural landscape, by providing a baseline standard for evaluating present-day environments, is considered an essential component of conservation planning and ecosystem management.

For more than two decades, the authors of this article, as scientists, tried to reconstruct in the most detailed way the composition and characteristics of the original vegetation of the Haut-Saint-Laurent using various sources of information: old maps, archives, sales of wood reported in notary deeds and demographic study of an old-growth forest (see references). In this toolbox, Sellar's work represents a most valuable asset. Several passages in the book confirm or clarify change in forest patterns that were suspected from other sources, while others introduce details not available by any other means. Sellar could not be more visionary when, on reflecting on his book, he wrote in his diary:

> *The work, I know, will not be appreciated now, may fall still-born from the press, but a century hence it will be a treasure, and I like the idea of working not for the applause of my contemporaries, but of doing something that will gratify and instruct posterity.*[5]

Of course, one has to be cautious in interpreting accounts reported in Sellar's history. Indeed, Sellar's work being based on an oral-history approach, any single account could be exaggerated, incorrectly reported, plainly false, or reflects Sellar's own biases. Yet, it is the weight of similar or concordant accounts that give credibility on the conclusions that can be drawn from a particular subject.

We present an inventory of the most revealing passages pertaining to vegetation in Sellar's book. The page number (from the 1963 and 1975 reprints) is given for each excerpt. Additional information such as the identity of the settler quoted by Sellar, the year or the approximate location involved are also given

1. Hill, R., 1998, **Voice of the Vanishing Minority: Robert Sellar and the Huntingdon Gleaner: 1863-1919,** McGill-Queen's University Press, Montréal, 378 p.

2. Sellar, R., 1888, **History of the County of Huntingdon and the Seignories of Chateaugay and Beauharnois**, Huntingdon, 643 p.

3. McGee, R., 1987, **A Companion to Robert Sellar's History of the County of Huntingdon and the Seigniories of Chateaugay and Beauharnois**, The Innismacsaint Press. 64 p.

4. Brisson, J. and Bouchard, A., 2004, The Haut-Saint-Laurent wilderness at the time of settlement based on Sellar's History - Part I: Wildlife -, **Chateauguay Valley Historical Society Annual Journal**, Vol. 37, p. 25-31.

5. July 24th, 1881, as cited in Robert Hill, op. cit., p. 166.

(C. W. Jefferys)

when possible, and in this respect, R. McGee's "Companion" was helpful in locating the settler's origin. Details given between brackets within an excerpt are our own. We present and summarize each subject providing historical information based on other sources.

The Demise of the Giant Pines and Towering Oaks

In historic time, the very first human activity that made a significant impact on the Haut-Saint-Laurent landscape was the lumbering of its pines and oaks. Events on the other side of the Atlantic were responsible for a strong need (and high prices) for those trees. In the early 1800's, Napoleon, then Emperor of France, decreed an embargo against his British enemy, barring it from trading with its usual Baltic region partners. It left Britain no choice but to turn to its distant overseas colonies for supply, and Canadian forests could fill the high demand of the British navy for wood and masts.[6] White Pine *(Pinus strobus)*, this king of all trees for the formidable size it can reach, was once the richest, most desirable species in eastern Canada. It was shipped whole for masts, squared or cut into lumber and planks. As for oak, the exceptional quality of its wood made it a favorite for a great variety of uses, but it was first of all for staves that it was so much sought after, because

> *...in an age when the barrel was the equivalent of the modern tin can, the world demand for staves was large.*[7]

The exact oak species that was harvested in the Haut-Saint-Laurent is never mentioned in Sellar's, but there is no doubt which of the four oak species present in Quebec is involved. Red Oak *(Quercus rubra)* is the most common oak species in Quebec, but it was probably uncommon in the region, the species preferring the xeric higher slope and summits of the southern Laurentian, the Monteregian Hills and the Eastern Townships. The oak referred to in Sellar's is the second on the list - Bur Oak *(Quercus macrocarpa)*, a species that tolerates moist bottomlands and whose quality is equivalent to the precious White Oak *(Quercus alba)*.

The pre-settlement forest of the Haut-Saint-Laurent region hosted its share of exploitable timbers, and many early settlers were impressed by the size of some of its trees – or more often logs – as reported by Sellar:

> *The flats were covered with magnificent oaks, many trees yielding 18 3½ foot staves before a knot was reached. (1812, Williamstown, p.47).*

> *… they found a mast, which had got adrift from a raft, lying across the [Chateauguay] river, at least 100 feet wide, from bank to bank (1810, Ormstown, p.54-55)*

> *The magnificent timber that fringed the Salmon river was the great attraction, for oaks 5 feet across, and pines unequalled in quality elsewhere, grew upon the knolls that bordered it (Dundee, p.67).*

> *… [west of Hungry Bay] pines so straight and tall that they were made into masts, and sticks ranging from 80 to 120 feet long were hauled out to the [St. François] lake every winter (p.205).*

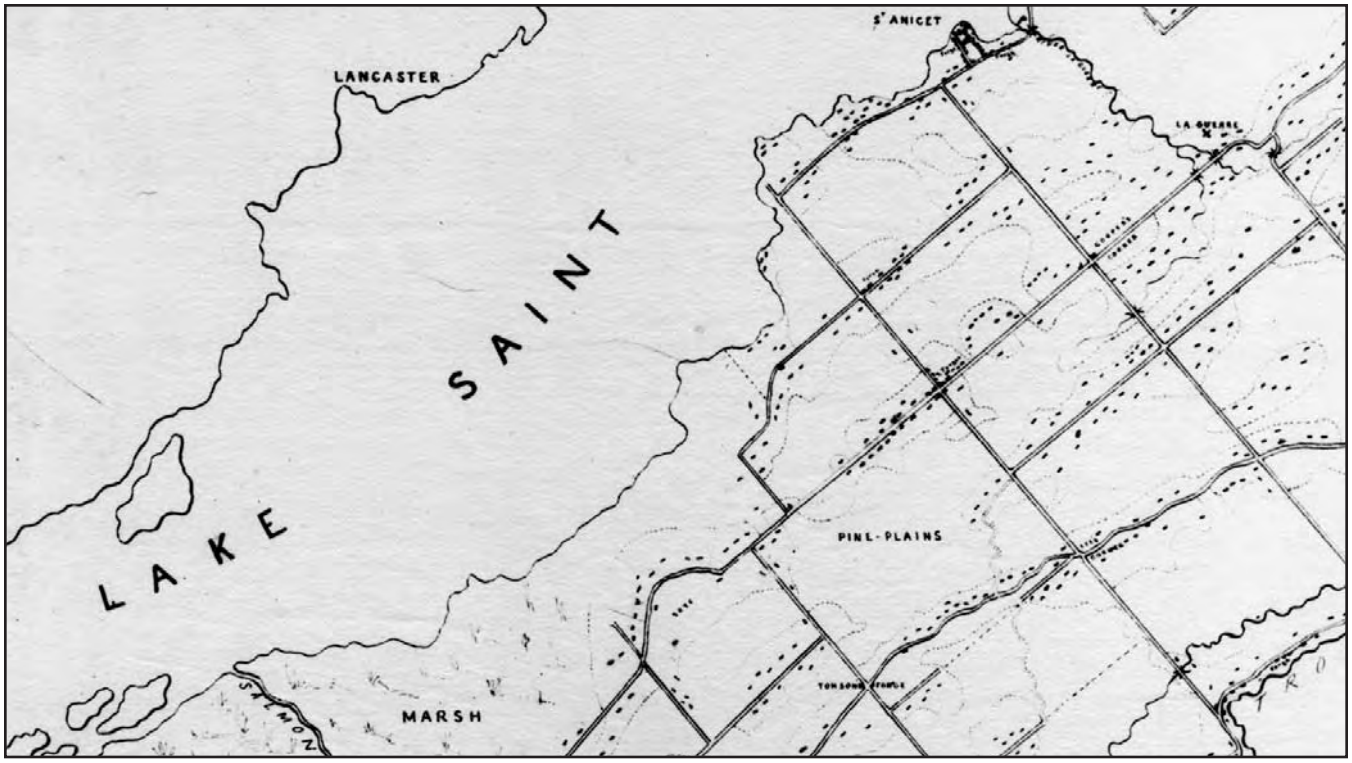
> *Of one white-pine mast, got out for McBain, a memorandum has been preserved. It was 84 feet long, 25 inches at the butt and 18 at the small end (Laguerre River, St. Anicet, p.227).*

> *There was splendid pine all over, and I have seen masts 110 feet long and trees that squared 32 inches (Patrick Curran, St. Anicet, p.236).*

> *…I remember one white pine log that was 4 feet across at the butt (Archibald Cameron, Bean river, Williamstown, p.266).*

6. Lower, A.R.M., 1973. **Great Britain Woodyard: British America and the Timber Trade 1763-1867**. McGill-Queen's University Press. Montreal, 271 p.

7. Ibid.



(National Archives of Canada, NMC VI/320-Huntingdon, 1863)

Of the size of the pine that grew, a canoe made by the Indians, 4 feet wide by nearly 60 long, is proof (along the English River, p.298).

Judge Brown, an American, contracted with the British government to get out masts, and I have seen them 90 feet long (John Hunter, Huntingdon, p.363).

The flats along the creek [Trout River] were covered with a splendid cut of bush, as you may suppose, when one pine made 6 logs of 12 feet (John March, Trout River, Godmanchester, p.435).

The flats along the upper waters of the English river were dotted with giant oaks, fellows the yielded logs 3 feet square, and from 30 to 40 long… (English River, p.522).

We believe that White Pine trees were originally scattered across the ridges and high land forests, mostly as small groves or isolated individuals towering over the surrounding hardwood trees. White Pine is a poor competitor in its young stages on fertile ground, and it never outnumbers the more aggressive hardwoods. However, it is a strong tolerant of dry and poor conditions, and across its range, White Pine may have dominated and formed real "pine forests" on sandy soils, where most other tree species fare poorly. The extensive pre-settlement pine forests on sandy banks along the Outaouais River are legendary (and gone).

In the Haut-Saint-Laurent, the only sandy area of significance is in Cazaville vicinity, and in pre-settlement time, it probably sustained a magnificent White Pine forest, with no equivalents anywhere today. Sandy land does not recover well from clearcutting, and in one account, Sellar reports how this area, formerly known as "Pine Plains", had been turned into a "desert sandy plain". Today, there are a few patches of young and submature forests around Cazaville but while they do harbor some pines, they are mostly converging toward a dominance of Red Maple *(Acer rubrum)*, accompanied by other broad-leaved species such as Grey Birch *(Betula populifolia)* and Large-toothed Aspen *(Populus grandidentata)*. The fact that these areas do not tend to recover to their initial pine forest composition is still not fully understood.

On the Pine Plains, especially, the timber was magnificent, and so abundant that it withstood the ravages of the axe for over 20 years, when it became the desert, sandy plain of to-day (Cazaville, p.205).

While there are a few references of early colonists lumbering pines and oaks, we learn from Sellar that most of this exploitation was done before settlement, by seasonal lumberers who would come to the region and pluck the forest of its finest trees. By the time settlement of the Haut-Saint-Laurent really got into full gear, in the 1820s, most of the best trees were already gone. Our own research based on

wood sales reported in notary deeds shows that there was still some exploitation until the early 1840s.[8]

… there was a small sawmill at the mouth of the St. Louis, which apparently as early as 1780 began changing the noble pine-trees that overhung its waters into boards… (mouth of the St. Louis River, Beauharnois, p.7).

Of these adventurers, … plunderers of the magnificent groves of oak that bordered the rivers, … no record is now to be recovered (p.14).

[Eustache] Dupuis, himself a lumberman, attacked the giant pines, that grew thick behind his humble shanty on the lakeshore… (ca. 1795, probably Pointe Dupuis, Cazaville, St. Anicet, p.15).

… they made enormous quantities of oak staves for shipment to the West Indies (Williamstown, p.47)

That year, lumbering had been made unusually active, there being a great demand for oak and masts for the royal navy... (1810, Ormstown, p.4).

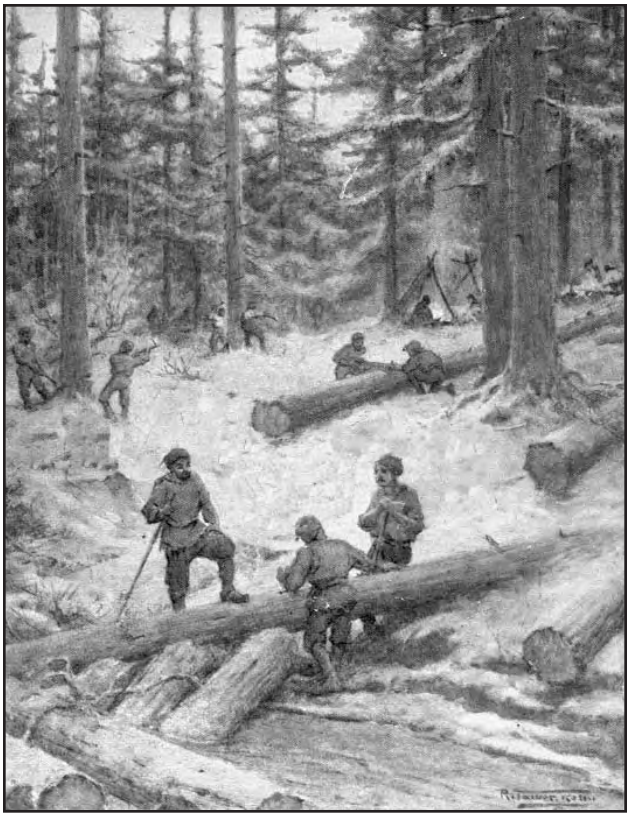
Several winters he [Macaulay] sent no fewer than 200 men into the woods, and when the ice broke, covered the Chateauguay [River] with rafts of the finest cut of oak and pine (Chateauguay River, p.158).

… and cutting and rafting of timber, a concern which has been carried on extensively for many years, and in consequence of which the timber of large size, principally oak and pine, has become rather scarce in the vicinity of the lake, rivers and creeks within this township (1820, from a report from Surveyor General Bouchette, shore of Lac St. François, west of Port Lewis, p.170-171).

He [Surveyor General Bouchette] found that lumberers had been so active along the banks of the Chateaugay that trees fit for export were scarce (1820, Chateauguay River, p.172).

Though the oak had disappeared, the ridges were still crowned by great pines, one of which, standing on its site, furnished [James] Curran with the 3 lower logs of his shanty (ca. 1821, Dundee, p.202).

The oak was all gone, but the pine was no more than touched (Duncan, also known as "Torramore", St. Anicet, p.217).



(The Americas, Blakie & Son)

On the flats along the [Laguerre] river he [McBain] cut a great quantity of oak and pine, immense lots of masts, oars, and flatted timber of all sorts (Laguerre River, St. Anicet, p.226).

… only the tracks made by the lumbermen, who had begun to get out square timber. Up to then they had only taken masts, and the woods were not plundered (Patrick Curran, Godmanchester, p.235).

For a long time lumbering gave employment during the winter, and great quantities of oak and pine were taken out (along the English River, p.298).

… with clumps of pine on the ridges (between Upper Ormstown Concession and the St. Lawrence River, p.344).

Alexander Mills, a carpenter by trade, carefully preserved the pine and oak on his lot for future use (Ormstown, p.355).

Macaulay of Glengarry was lumbering on a large scale, getting most of his pine on Trout river between Ford's rapids and Barlow's. Much was also taken from the ridge that extends from Biggar's to New Ireland. Oak was getting scarce, and was being split into staves for the West Indian market; they were

8. Simard, H. and Bouchard, A., 1996. "The precolonial 19th century forest of the Upper St. Lawrence Region of Quebec: a record of its exploitation and transformation through notary deeds of wood sales". **Canadian Journal of Forest Research**, 26: 1670-1676.

worth from $36 to $40 a thousand (John Hunter, p.363).

The point below the upper bridge had been covered by a grove of giant oaks and pines, which had been among the first to fall before the lumberman's axe, making a clearance when all around was bush (Huntingdon, p. 400).

Everywhere we saw pine stumps, showing where the lumberman had been (James McDonald, Godmanchester, p.424).

Lumbering had been actively pushed along the [Trout] river, so that all the pine, and most of the oak had gone before the Old Countrymen came in (along the Trout River, Godmanchester, p.433).

Although named Oak creek, the oak had disappeared before they came, having been plundered many years before (along Oak Creek, Elgin, p.438).

All the trees of value for export – the oak, pine, and white ash – had been taken before the settlers came... (p.449).

There was no pine on the Gore to speak of, but on the Outarde [river] there was a fine cut both of it and oak (Alexander Johnston, Hinchinbrooke, p.471).

The woods stood thick around us, although they had been plundered of the best pine and oak (1824, Mrs. Robson, along the Outarde River, Hinchinbrooke, p.475).

The timber that covered them was mixed with giant pine-roots left by the lumbermen... which gave the settlers much trouble to get rid of (between 1826 and 1830, around Norton Creek, p.524).

A Country of Marshes, Swamps, and Bogs

While the passage we chose as heading for this article presents an idealistic, stereotypical description of a upland virgin forest with giant trees, this type of account is the exception in Sellar. In fact, the reality for the first settlers, as repeated over and over by Sellar himself, is an entirely different story. Except for the Adirondack foothills in the southern part of the region and the ridges scattered across the area, a large portion of the Haut-Saint-Laurent is constituted of lowlands that were probably covered with impenetrable swamps and marshes.

Indeed, the wetness of the region, by hindering circulation and land exploitation, may have rebuffed many potential settlers. Early cultivation was mostly done in the drier – but stony – ridges. But as farming and the need for crops grew in importance, the better soil of the wet lowlands had to be exploited. One of the most important (and undoubtedly grueling) activities of the settlers, as recounted by Sellar, was to clear and drain the wetlands to make them fit for cultivation.

A rude road was made north of his house, winding on top of the low ridges to avoid the marshy land... (Hemmingford, p.18)

... the country between the Richelieu and Hemingford was not merely a wilderness, but streaked with wide swamps (Hemmingford, p.19).

... the intervening country was so wet that he could seldom reach it with a horse (near Covey Hill, p.27).

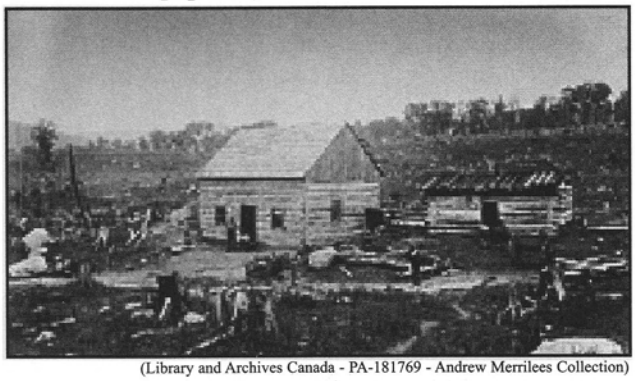
The track bushed from the mill to the Chateaugay [River] was difficult to struggle through, for the intervening country was then a swamp (on the English River, between Howick and the Chateauguay River, p.38).

... though the flat land was wet there were many creeks by which it could be drained... (1812, along the Bean River, Scotch Settlement, p.47).

... the country was in a state of nature, forest and swamp, the one so rugged and the other so deep... (between Hemmingford and St. Edward, p.167-168).

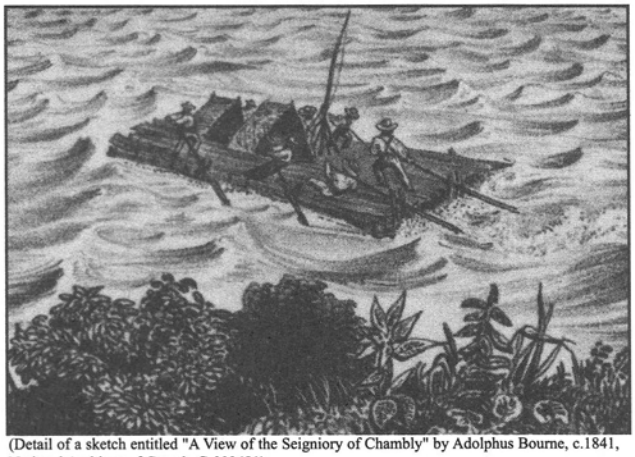
The swamps so difficult to span comprise the finest land in the province (ca. 1819, Hemmingford, p. 168)

... the eastern part composed of swells of land intermixed with considerable swamps, which however are not the least detrimental to the fertility of the soil (1820, from a report from Surveyor General Bouchette, Hemmingford [including Franklin and Havelock], p.173).



(Library and Archives Canada - PA-181769 - Andrew Merrilees Collection)

C. 1865 photograph entitled Clearing in "Ireland".



(Detail of a sketch entitled "A View of the Seigniory of Chambly" by Adolphus Bourne, c.1841, National Archives of Canada C-003481)

... while there was much good land it was broken by low ridges, and had great stretches of marsh both in front and rear (1820, east of Port Lewis [Dalhousie Settlement], p.178).

The clearances were confined for many years to the knolls, but gradually the swamps... were cleared and drained and fine farms formed (Dundee, p.199).

The level land between the knolls and ridges was swampy and unfit for cultivation (Dundee, p.202).

The numerous marshes prevented the construction of roads, and up to 1835 there was hardly one fit for wheels (along Lac St. François in Dundee and St. Anicet, p.203).

... the village of Dundee being separated from the rest by a swamp nearly one mile wide... (Dundee, p.204).

Owing to the country south of the lake being intersected by swamps the making of roads was beyond the ability of the settlers... (St. Anicet, p.218).

The country was so wet between our place and Breaky's that it was a day's journey for him to reach us... (John McPherson, near Laguerre River, St. Anicet, p.222).

... the labyrinth of swamp that surrounded it (Newfoundout Settlement, St. Anicet, p.230).

The record of the settlers in Newfoundout is simply a repetition of that of other portions of St. Anicet – a contest with low-lying ground, hard to clear and harder to drain, ... (Newfoundout Settlement, St. Anicet, p.230).

The wetness of the land was the great drawback (John Symons, between the Chateauguay and the St. Louis Rivers, p.324).

As the outlet of the lands west of it, which were all swampy at that time... (near La Grande Décharge [named Evident River at the time], a tributary of the Chateauguay River, p.337).

The land was so very wet that many, in despair of making anything out of it, left (ca. 1831, Duncan Cumming, near La Grande Décharge [named Evident River at the time], a tributary of the Chateauguay River, p.337).

... but the swamp that intervened between his lot and McNeil's, was not spanned until 1841, when it was taken up by French Canadians, and is now a fine flat of fertile land (Duncan Cumming, between the Chateauguay River and the St. Louis River, p.338).

The wetness of the land was our great vexation (Mrs. Robt. Barr, Ormstown, p.341).

... so wet that nothing would grow until it was ditched (ca. 1830, Ormstown, p.342).

The land was simmering in water and I had to walk mostly on logs (1832, James Whithall, Ormstown, p.343).

The black muck flats had no attraction for English-speaking farmers (Ormstown, p.344).

The lots between Dewittville and Huntingdon were slow in being settled, which was mainly owing to there having been granted to non-residents, though their wetness made them undesirable (Godmanchester, p.412).

Where they settled the land was good and dry, but on every side they were surrounded by marsh and soon found the mistake they had made in choosing so inaccessible a spot (Godmanchester, p.413).

All the road to Pollica's in the village [of Huntingdon ?] was a swamp, and we had to walk on logs (Robert Cowan, Godmanchester, p.416).

... the land was so flat and so drowned by the water that drained from the ridges behind, that it was impossible to grow crops to any advantage until it was ditched as well as cleared of bush (along the Chateauguay River, Godmanchester, p.423).

... we lived on the river-bank, our clearances

were on the ridge, for the flat land was so wet as to be useless (James McDonald, along the Chateauguay River, Godmanchester, p.425).

The marshy land along the banks of the creek took much labor to reclaim, and for years the settlers worked in the wet, finding difficulty in burning their plan heaps and cutting ditches with incredible labor (along Oak Creek, Elgin, p.438).

... my land was so low and wet, and it was long before I could get it sufficiently drained to make crop certain (ca. 1828, Elias Wallis, Elgin, p.440).

Owing to its wetness, the northern end of Elgin settled slowly (Elgin, p.441).

... for the land was wet, save the strips they cleared on the river-bank (between Dewittville and Huntingdon, along the Chateauguay River, Hinchinbrooke, p.468).

... the flat south of the Outarde [River] was a dreadful swamp... (Robert Kelly, Hinchinbrooke, p.477).

Except in summer, it was a marsh, and during that season, on Sunday afternoon the lads and lasses of Huntingdon roamed the expanses, known as Coohoava's swamp, as far as 26, picking blueberries... (between Huntingdon and Athelstan, Hinchinbrooke, p.478).

Once the land was ditched, it was seen there was no more fertile flat in the district (Hinchinbrooke, p.479).

... so choked by fallen trees that it was converted into a big swamp (The Lost Nation, between Huntingdon and Athelstan, Hinchinbrooke, p.483).

... long stretches of swampy land had to be traversed (on the way to Montreal, p.520).

The work on the flats was heavy, logs having to be hauled to cross-way the swampy portions, which were numerous (Russeltown ? p.526).

... the path to his shanty being a track that followed the ridge, in order to avoid the swamp (1821, John McFee, Hemmingford, p.543).

... the land not being inviting, consisting in great part of stony ridges with marshy intervals (Sherrington, p.548).

It is often believed that peat bogs are an exclusive feature of the boreal landscape. Yet, in pre-colonial times, there were several large peat bogs, with their singular type of vegetation and fauna, in the St-Lawrence Valley around Montreal. Most of these have vanished at the expense of agriculture or housing development. The "Large Tea Field' and "Small Tea Field", two neighboring bogs located north of Huntingdon, are all that is left of this unique ecosystem in the western part of the Haut-Saint-Laurent. [9] They were once much larger than they are now, the eastern limit of the Large Tea Field reaching the Village of Ste. Barbe. From the start of the colony, as recounted by Sellar, parts of the peat bogs were burned and cultivated. It is unknown how large exactly were these bogs initially, but a map of the region drawn in 1863 – well after the period covered by Sellar – showed both Tea Fields to cover a total area of approximately 5075 hectares.[10] The most recent estimate shows that they had been reduced to 1156 hectares.[11]

After taking off the scrub bush that covered it, sawing what was large enough and selling the remainder as cordwood, he [Mr. Demers] conceived the idea of disposing of it for cultivation. The proposal seemed preposterous. The land is lower than the St. Lawrence and subject to frequent overflow, and where it is not covered with peat has a thick layer of black muck over the clay. ...

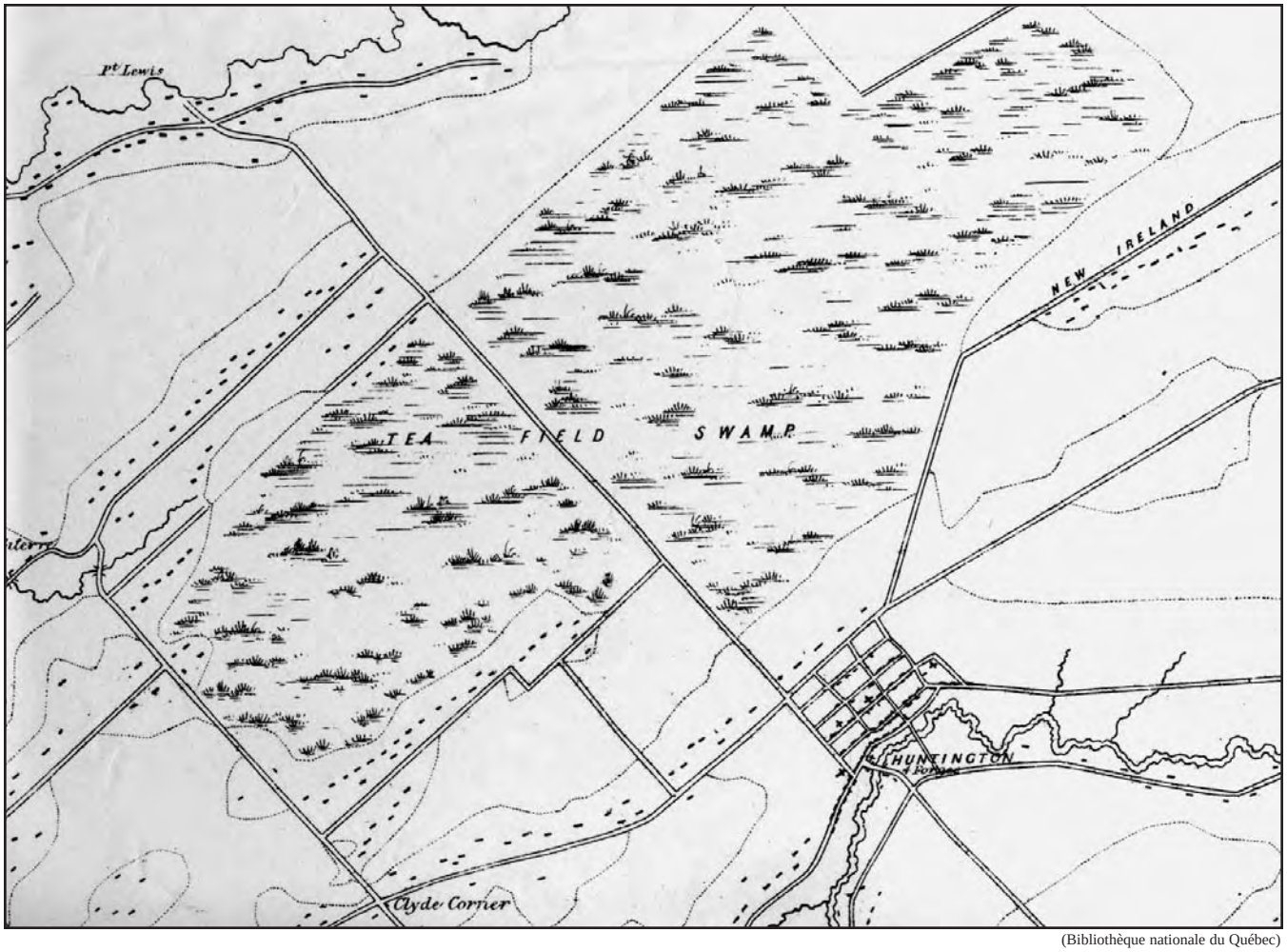
9. Bouchard, A. and Jean, M., 2001. Historique d'un paysage de tourbières profondément transformé par l'homme. Pages 389-398 and 604-605 in S. Payette and L. Rochefort (eds.). **Écologie des tourbières du Québec-Labrador**. Presses de l'Université Laval, Québec. 621 p.

10. Ibid

11. Marineau, K. 2004. **Tourbières d'intérêt pour la conservation: Small Tea Field et Large Tea Field, Saint-Anicet et Sainte-Barbe (M.R.C. du Haut-Saint-Laurent).** Report, done in collaboration with the ministère de l'Environnement, Direction du patrimoine écologique et du développement durable, Québec. 27 pages.

(McCord Museum, Montreal1-80961)

Blocking, hacking and hewing a square log, 1873



(Bibliothèque nationale du Québec)

This detail of an 1864 Frontier of Canada East map shows the extent of the Tea Field in the last century when it ran from approximately the current Smellie Sideroad to near the Village of St. Stanislas-de-Kostka.

They [settlers on Teafield] managed to raise crops by burning the surface of the muck and sowing in the ashes. If they got a good burn and the season was dry, they raised fair crops of oats and barley; if conditions were unfavorable they decamped, so that for many years the population on the swamp lots was a changeable one (Tea Field, Ste. Barbe, p.190).

The Old Countrymen on the lakeshore viewed the unexpected incursion in their rear with astonishment, and [falsely] believed it was only a matter of a few years when the poor people would be starved out, and Teafield, excepting the patches of good land, which rise above its dreary expanse like islands, would relapse into desolation (Tea Field, Ste. Barbe, p.191).

The church was got cheap [from an adjoining parish], was removed in section and re-erected on a knoll [where Ste. Barbe now stands] at the eastern extremity of the swamp (Tea Field, Ste.Barbe, p.191).

While the flat wet lands represent an important component of the original landscape of the Haut-Saint-Laurent in terms of surface area, this is the portion of territory we know the least in terms of pre-colonial vegetation composition. Like elsewhere in the Saint-Laurent Valley, wetlands have been extensively drained and modified, and virtually all the vast clay plain has been long replaced by cultivated land, leaving little indices of its original vegetation. Sellar's few references to tree species composition of the wetlands are thus particularly informative and valuable. However, one has to keep in mind that these accounts may be strongly biased toward those tree species that were of any importance to the settlers. There are some other indications that, in fact, most of the wet plain in the Haut-Saint-Laurent may have been colonized by trees of small stature and bushes rather than mature exploitable forests.[12]

Black Ash *(Fraxinus nigra)* and White Elm *(Ulmus americana)*, two species that prefer wet but rich soils, are repeatedly mentioned in Sellar's.

12. Brisson, J. and Bouchard, A., 2003. Human activities caused major changes in tree species composition in southern Quebec, Canada. **Ecoscience**, 10: 236-246.

These species were highly valuable to the settlers, ashes from burning their wood being sold for potash-making. Black Ash, a somewhat small tree species, is still common today in the remaining wet forests and depressions of the Haut-Saint-Laurent. White Elm, which may attain the largest size of any deciduous tree (save maybe Eastern Cottonwood), has been severely affected by the "Dutch Elm disease", an exotic fungal disease accidentally introduced in America in the last century.

The numerous references to Eastern White Cedar *(Thuya occidentalis)* and Tamarack *(Larix laricina)* in Sellar's suggest that these conifer species probably colonized large portions of the original peatlands of the Haut-Saint-Laurent. Today, those peatlands have been dramatically reduced and modified, but cedar remains an important component of the landscape, notably because it has the ability to colonize abandoned pastures.[13] As for Tamarack, the references in Sellar's are the best if not the only indications of its past abundance. Today, the swamps at the edge of the Lac St-François Natural Wildlife Reserve remain the only extensive Tamarack grove of the Haut-Saint-Laurent.[14]

There are a few references to "spruce" in Sellar's, but it is unclear whether the word is used as a vernacular name for another conifer species, such as Tamarack, or if it is a real reference to a spruce species *(genus Picea)*. Strong indications of the presence of Black Spruce *(Picea mariana)* in the pre-colonial peat bogs in the region include historical reports, [15] abundant pollen grains buried in the peat of the Tea Fields [16] and a few references of spruce logs trade reported in the early notary deeds.[17] After two hundreds years of cutting, peat drainage and fires, there are no Black Spruce left in the Haut-Saint-Laurent peat bogs today.[18]

One may find it surprising that there is no reference to Red Maple *(Acer rubrum)* in Sellar's, when we know how omnipresent is this species in today's swamps and humid forests of the Haut-Saint-Laurent. Is this omission simply an indication of its little value in the eye of the settlers or was this species truly much less common at the time?

... except the swamps, which are cedar and spruce (1793-1794, Joseph Killburn, surveyor, Hemmingford, p.11).

... the trees on the south side [of the Chateauguay River] were mainly tamarac and soft wood...(along the Chateauguay River, between its confluence with the English River and Ormstown, p.37).

The face of the country is uneven, composed of large swells (ridges) of high land intermixed with cedar and tamarack swamps (1820, from a report from Surveyor General Bouchette, Hinchinbrooke, p.172).

... it was hard to keep up a blaze with swamp-elm and green basswood (1820, east of Port Lewis [Dalhousie settlement], p.180).

... the swamps, which were covered with a splendid growth of black ash... (Dundee, p.199).

Lumbering was in full blast and the finest cedars I ever saw were taken out of the Beaver, as we called the swamp east of Dupuis' corners, many being 2½ feet thick at the butt and straight as an arrow (Duncan "Torramore", St. Anicet, p.217).

Back from the river, on the east side, the bush improved, hemlock being replaced by a splendid growth of elm, black ash, and hardwood (along the English River, p.298).

... the bush was mostly tamarac and the land was swimming in water. When you left the knolls you had to step from log to log. A good deal of the land had been burned over, and some of it was covered with bushes, which we called alderland, and a good part with brule grass... (1826, Mrs. David McClenaghan, along the English River, Williamstown, p.301).

Night came on as I got a sight of a clump of green spruces, which stood where the Ormstown concession now is (1827, John Symons, Ormstown, p.322).

...where the land was wet, the fallen trunks were matted by a thick growth of alder-bushes (near La Grande Décharge [named

13. de Blois, S. and Bouchard, A., 1995. Dynamics of Thuja occidentalis in an agricultural landscape of southern Quebec. **Journal of Vegetation Science**, 6: 531-542.

14. Jean, M. and Bouchard, A., 1991. Temporal changes in wetland landscapes of a section of the St. Lawrence River, Canada. **Environmental Management,** 2: 241-250.

15. Anrep, A. 1917. **Recherches sur les tourbières et l'industrie de la tourbe au Canada, 1911-1912**. Ministère des Mines, Ottawa. Publ. 267.

16. Laframboise, M., 1987. Origine et évolution de deux terres noires de la MRC du Haut-Saint-Laurent. **Mémoire de M. Sc.,** Département de géographie, Université de Montréal, Montréal, Québec. Directeurs: Paul Comtois et Pierre J.H. Richard. 94 pages.

17. (Simard and Bouchard, 1994).

18. Jean, M., and Bouchard, A., 1987. La végétation de deux tourbières de la municipalité régionale de comté du Haut-Saint-Laurent (Québec). **Canadian Journal of Botany**, 65: 1969-1988.

Evident River at the time], a tributary of the Chateauguay River, p.337).

Between the upper Ormstown concession and the St. Lawrence there were no settlements, the country being a tamarack swale… (Ormstown, p.344).

Much of the tamarac,… was cut into railway ties and sent to England (before 1860, Ormstown, p.345).

The country was heavily timbered, particularly south of us, where there was great black ash and elm (John Woodrow, along the Outarde River, Jamestown, p.350).

He found the site of the village brule, covered with scrub timber, cedars, and raspberry bushes, and very wet (Huntingdon, p.370).

… finding it wet and covered by thick underbush (between Dewittville and Huntingdon, Godmanchester, p.412).

One elm near the house was 7 feet across, and took nigh an acre of timber to burn it (1829, William Cunningham, Godmanchester, p.419).

Above that point, the timber was large elms and black ash (James McDonald, [along the Chateauguay River ?], Godmanchester, p.424).

… and the flats being cedar-swamps (along the Trout River, Elgin, p.440).

Where the land was low,– swales was the local term– the trees formed thickets that were impassable, and in the swamps cedars shut out the day (p.449).

A fine cut of black ash and elm was their support for many years,… (subsequent to 1830, Hinchinbrooke, p.490).

… the cedar-swamp that lay west of Burnbrae was cross-wayed (about 1835, Hinchinbrooke, p.494).

On these flats grew a heavy growth of black-ash and elm (north of Covey Hill, near St. Chrysostome and Russeltown Flats, p.515).

Precolonial Forests of the Dry Upperlands

Not all the Haut-Saint-Laurent region was wetlands. All morainic ridges were well drained and covered with fine hardwood. Sugar Maple *(Acer saccharum)* was then, as today, an important component of the forest. We found from other sources that Beech *(Fagus grandifolia)* was also very abundant in precolonial times, a fact supported by the numerous references to the species in Sellar's.[19] Maple has been remarkably able to recover from past cuttings and disturbances. As for Beech, it has been largely decimated from the Haut-Saint-Laurent landscape and, apart from scattered trees here and there, only in a few forests – the best of which is the old-growth Muir's Wood Ecological Reserve near Huntingdon – do we find remnants of its past glory.

In Sellar's, "birch" probably refers to Yellow Birch *(Betula alleghaniensis)* another tree species whose abundance, like Beech, has been severely reduced.[20] Other tree species of mesic forests mentioned by Sellar include Basswood *(Tilia americana)*, Hickory (most likely Bitternut Hickory – *Carya cordiformis)*, White Ash (*Fraxinus americana)*, and Butternut *(Juglans cinerea)*.

While we report in this section the references to Hemlock *(Tsuga canadensis)*, they may have originated from more humid sites since this species has a wide range of tolerance toward soil conditions. "Poplar" *(Populus sp.)*, a second-growth tree typical of young disturbed forests, is mentioned in Sellar's, but it is unknown whether it refers to Large-toothed Poplar *(Populus grandidentata)* (very likely), Trembling Aspen *(Populus tremuloides)* (possible), or Eastern Cottonwood *(Populus deltoides)* (unlikely).

The land is very good, and fit for the cultivation of any kind of grain peculiar to this country. Timbered chiefly with birch, basswood, maple, hemlock, some pine, butternut and elm,… (Joseph Kilburn, Surveyor. (1793-1794, Hemmingford, p.11).

The place is now desolate, a few poplar-trees and the remains of an old wall (Hemmingford, p. 18)

… by the roadside, where some poplars still grow, on the farm he had occupied, west of Baker's… (probably along the Chateauguay River near its confluence with the English River, p.34)

… the road is very good, traversing large swells of fine land timbered with maple, though in some part rather stony… (1820, from a report from Surveyor General

19. Bouchard, A., Dyrda, S., Bergeron, Y. and Meilleur, A., 1989. The use of notary deeds to estimate the changes in the composition of 19th century forests, in Haut-Saint-Laurent, Québec. **Canadian Journal of Forest Research**, 19: 1146-1150.

20. Brisson, J. and Bouchard, A., 2003. Human activities caused major changes in tree species composition in southern Quebec, Canada. **Ecoscience** 10: 236-246.

(McCord Museum, Montreal-VIEW-2981)

Timber crib on the Ottawa River, c. 1890

Bouchette, between Laguerre River and Trout River, p.171).

The general quality of the soil is good, although rather light and in many parts stony. The timber is of superior quality, namely beech, maple, elm, basswood and pine (September 5th, 1820, from a report from Surveyor General Bouchette, Hinchinbrooke, p.172).

Mr. Bouchette reported that the "general quality of the soil in the [Hemmingford] township is very similar to that of Hinchinbrook, but rather more broken and stony; it is chiefly timbered with beech, birch, maple, elm, pine, and basswood (1820, from a report from Surveyor General Bouchette, Hemmingford [including Franklin and Havelock], p.173).

On the ridges very good crops were raised (Dundee, p.203).

The numerous marshes prevented the construction of roads, and up to 1835 there was hardly one fit for wheels (along Lac St. François in Dundee and St. Anicet, p.203).

The clearances were confined to the ridges and knolls that so abound in Dundee, and on these crops of potatoes and corn were raised (Dundee, p.205).

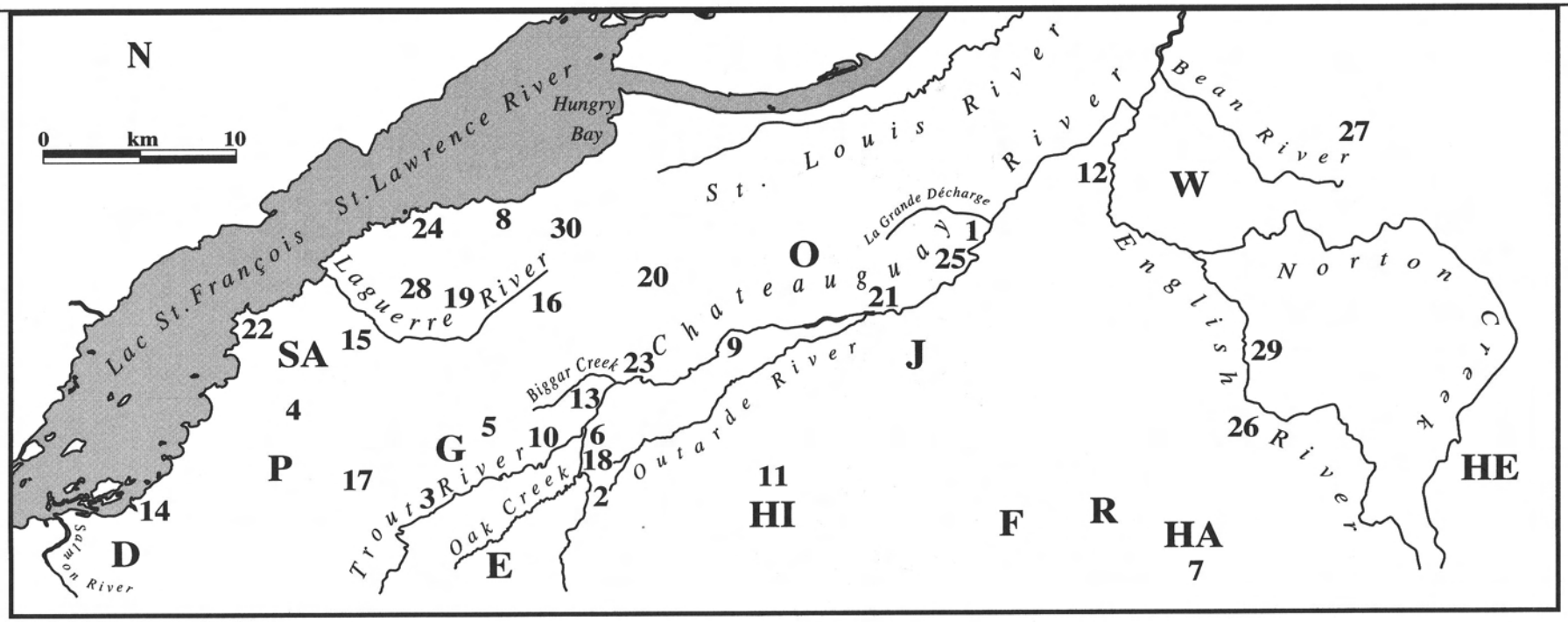
Because it was so easy to chop and split, we preferred basswood for firewood, leaving the beech and maple, and had poor fires in consequence (John McPherson, near Laguerre River, St. Anicet, p.221-222).

The land looked well, being covered by a fine growth of hardwood, the name Beechridge being given to it from the number of large beech trees (Archibald Cameron, Williamstown, p.268).

The bush being almost entirely hemlock… (1822, William McKell, along the English River, p.296).

… on the Scotch concession on account of the fine bush upon it, hickory being especially plentiful (1823, William Miller, along the English River, Williamstown, p.299).

… for the hemlock that abounded on this concession was second-growth, … (ca. 1837, between the Chateauguay River and St. Louis River, p.327).



LEGEND

Local sites

1. Allan's Corners
2. Athelstan
3. Barlow
4. Cazaville
5. Clyde Corners
6. Coohoava's swamp
7. Covey Hill
8. Dalhousie settlement
9. Dewittville
10. Ford's rapids
11. (The) Gore
12. Howick
13. Huntingdon
14. Lac St-François Natural Wildlife Reserve
15. Laguerre hamlet
16. Large Teafield
17. Lee's Corner
18. (The) Lost Nation
19. Newfoundout settlement
20. New Ireland (New Erin)
21. Ormstown
22. Pointe Dupuis
23. Pollica
24. Port Lewis
25. Round Point
26. Russeltown Flats
27. Scotch settlement
28. Small Teafield
29. St.Chrysostome
30. Ste. Barbe

TOWNSHIPS, CONCESSIONS AND OTHER PLACES

D DUNDEE
E ELGIN
F FRANKLIN
G GODMANCHESTER
HA HAVELOCK
HE HEMMINGFORD
HI HINCHINBROOK
J JAMESTOWN
O ORMSTOWN
P "PINE PLAINS"
R RUSSELTOWN
SA ST. ANICET
W WILLIAMSTOWN

Map by Marc Delage

On the lots secured by Rice, was a ridge covered with a fine maple bush, to which, up to a late date, the Indians came every spring to make sugar (Ormstown, p.342).

Much white ash was split for ship's oars (John Hunter, Huntingdon, p.363).

We did not think much of the land from Huntingdon to Murray bridge, it being covered largely by hemlocks … The ridges were heavily timbered with maple (James McDonald, [along the Chateauguay River ?], Godmanchester, p.424).

Even in potash-making, the ridges were superior to the river-flats, for their maple was almost equal to the elm of the swales (along the Trout River, Godmanchester, p.432).

In the magnificent growth of elm and hard maple along Oak creek… (ca. 1823, along Oak Creek, Elgin, p.437).

The helve, or handle, he shaped out of the hickory trees in his bush (p.450).

… the land was poor, from its being covered with soft wood, mostly second-growth poplar and hemlock, with some pine (between Huntingdon and Athelstan, Hinchinbrooke, p.478).

Why the Beechridge got its name is hard to say, as spruce was the predominant tree (1818, Willis C. Roberts, Williamstown, p.516).

The bush in those days differed from the present, in being so free of underbrush that in an hour's travel the axe would not have to be used once. Winding out and in between the forest monarchs, the settlers drove their ox-sleds in every direction, as fearless of losing themselves as the Arab in his native deserts (between St. Chrysostome area and Laprairie, p.520).

The hill was covered with beautiful timber, mostly maple, with some birch, there being very little black ash or elm (Robert Stevenson, Covey Hill, p.535).

The land was covered with as handsome a bush as could be imagined, the trees being large and set so wide apart that you could drive a yoke of oxen, there being no underbrush and few fallen logs. There were many butternut trees, some of them 3 feet across and giving 3 logs without a branch… (1831, Benjamin Johnston, Covey Hill, p.537).

On the 2nd range there was a good deal of hemlock, which caused it to be shunned, for the settlers thought land poor where it grew (1831, Benjamin Johnston, Covey Hill, p.538).

My lot was finely covered with maple and elm… (ca. 1831, William Barr, Hemmingford, p.551).

In the fall they [pigs turned loose in the bush] came out fat, fed mostly on beech-mast (ca. 1835, William Barr, Hemmingford, p.552).

Clear-cutting, Potash-making, Land Cultivation, and other Agents of Changes

Lumbering for pines and oaks may have been the first assault on the pre-colonial forest, but as trees of exploitable size became scarce, other species once thought to have no commercial value came into use, notably sugar maple and other hardwoods. Moreover, tree burning for potash-making rapidly became a major lucrative activity of the early settlers. Potash was one of the most important industrial chemicals, being used as a fertilizer, in the production of soap, glass and ceramic goods, and making colors fast in printed cotton materials. Several hardwoods were used for making potash although elm and black ash were preferred. As mentioned previously, the ridges were also cleared and cultivated, stoniness being then less of an obstacle than excessive wetness. Today, numerous stony walls delimiting different lots are reminders of past cultivation on stony soils.

The mainstay of the settlers was potash, and, as the price rose as high as $60 a barrel, and two men could fill a barrel in a month, the making of it yielded good wages. It was hauled on ox-sleds to Montreal by way of St-Remi, … (Hemmingford, p.19).

Their choice of lots was guided by the splendid timber for ashes that covered them, … (1804, Franklin, p.28).

The magnificent growth of hardwood that clad the pleasant slopes was looked upon not merely as valuable for potash but as an indication of the richness of the soil, … (Franklin, p.28).

The magnificent growth of hardwood the settlers coined into cash, by making potash, … (Franklin, p.30)

The land, as it became cleared by the making of ashes, was planted with corn and potatoes… (Franklin, p.30).

(C. W. Jefferys)

Making potash was an arduous and time-consuming task for the pioneers

… the land was better, elm and hardwood abounded for making potash (along the Chateauguay River, p.31).

During winter they lumbered or made cordwood, so that every settler, when the ice broke up, had a raft of either square timber or cordwood to take to Montreal, and the rest of the year they spent in clearing and cultivating the land and in making potash (along the Chateauguay River, p.32).

… and a good deal of money was made by the sale of square timber, masts, cordwood, and potash, … (along the Chateauguay River, p.40).

… [The Scotch] plodded on, day after day, laboriously clearing the land of its trees and bringing it into cultivation (along the Chateauguay river, p.41)

Below Round Point little potash was made, the bush not suiting, but above there was much fine elm, which induced many to settle (along the Chateauguay River, upstream Allan's Corners, p.45)

The timber along the Chateauguay [River] and its tributaries was sold to Macaulay, a Glengarry lumberman, who was given ten years to remove it (along the Chateauguay River, p.157).

About the time lumbering revived it became obvious that the making of potash could be carried on more profitably to all concerned as a separate business than by the farmers individually, so asheries were started (along the Chateauguay River, p.158)

Every day saw the bush driven farther back, for, despite heat and mosquitoes, the settlers did not relax their exertions in chopping. The trees that were suitable they burned, and converted into ashes, which they paddled in canoes up to the newly-opened store of Alex. Ogilvie on the Laguerre [River], and sold them for 12½ c a bushel, which was a perfect godsend. An honest penny was also earned by making cordwood, which was sent on rafts to Montreal (probably 1821, near Port Lewis and Newfoundout, St. Anicet, p.184).

The main dependence of the settlers, however, was potash-making and lumbering. In winter the woods were dotted with lumbering shanties and an immense quantity of timber was taken out (Dundee, p.205).

None of them paid attention to farming, their dependence being placed upon lumbering, so that their clearances were simply patches for corn and potatoes (along Lac St. François lakeshore, St. Anicet, p.216).

We all went into lumbering, which was an injury to us... We rafted a good deal of cordwood to Montreal, and I have stayed there a fortnight with a raft before I got it all sold. The price ranged from $2.50 to $4 per cord for maple, according to the supply (Duncan aka "Torramore", St. Anicet, p.217).

All winter the locality presented a busy scene, teams hauling timber and cordwood to the river bank… The trade in ashes was large and remunerative, as may be judged when Ogilvie averaged 250 barrels each season, and pearled 50 barrels. McBain did as large a business in ashes, although he directed his attention mainly to lumbering (Laguerre hamlet, St. Anicet, p.226).

An interesting subject connected with the early days is the prices the settlers got for lumber and newer, timber. Up to 1835, when the supply began to be exhausted, the great article of export was timber. What was most sought for was masts and oars, and as the woods became plundered of these, square timber grew in importance (St. Anicet, p. 226).

The average price settlers received for delivering pine at the stump was $20, and rock elm $25, paid in goods. It was worth as much more if delivered on the rafting-ground. White-ash oars, from 15 to 19 feet long, 4½ inches square at one end and 2 at the other, and 6 inches wide at the blade, averaged 80 cents a pair. Cordwood was almost given away. The most of the maple on the Scotchridge was sold standing at 12½ cents a cord to French Canadians, who cut and rafted it to the city, and as late as 1834 it was only worth 15c. Delivered at Laguerre it was worth $1 a cord. Ashes seldom went below 12½ c the bushel (around Laguerre hamlet, St. Anicet, p.227).

They had no intention of staying, but just came to make potash and do something at lumbering. They went through the woods plundering the best of timber (1822, Patrick Curran, between Lee's Corner and Clyde Corners, Godmanchester, p.235).

Lumbering reached its height in 1825, after which it began to decline (Chateauguay, p.251).

I remember once my father, standing in the middle of our lot asking me, "Will we ever get cleared this far back?" To-day there is not even firewood on that very lot (John Woodrow, along the Outarde River, Jamestown, p.350).

The population of the village up to 1830 was fluctuating, partly owing to lumbering being its main dependence... In 1829 Bouchette found its population to be only 125, which was less than it had been, owing to depression in lumbering (Huntingdon, p.391-392).

The bush was favorable for potash-making... (Godmanchester, p.413).

... the attraction being the splendid growth of timber for ashes (Godmanchester, p.416).

... by painful labor, the trees were transmuted into potash with which both food and clothing were bought (ca. 1823, along Oak Creek, Elgin, p.437).

The land being wet, they made their living by

potash, which they found to be hard work in summer (1822, Elgin, p.441).

... those [trees] left were available only for potash, and had it not been so much of the timber was fit for making that alkali their hardships would have been intensified (p.449).

The narratives of settlers given, have shown the great importance to them of the money potash brought, and it was exceedingly fortunate that the district had sufficiently advanced in husbandry before it was discovered by Leblanc that potash could be made more cheaply from salt than wood-ashes. Had potash then been worth no more than it is to-day, large sections of this district must have remained unsettled (p.451).

Not all changes to the forest are necessarily brought by human activity. Lightning-caused fires, especially during unusual summer droughts, may have been part of the natural dynamics of the Deciduous forest of North America, although much less so than in the Boreal forest. The exceptional 1825 drought, probably combined with an increase in overall forest flammability due to lumbering activity (such as the accumulation of woody debris), created the perfect conditions for fires in much of the eastern provinces. While it is probable that the 1825 Miramichi fires (named after the Miramichi region, in New Brunswick, where devastation by fire was severe) may have been more often lighted by human carelessness, its effects on the natural forest landscape of the Haut-Saint-Laurent do not differ from pre-colonial natural fires.

But fire is not the only natural cause of forest rejuvenation. There is also, in Sellar's, one lively account of a natural destructive windthrow or tornado, reminding us that the pre-settlement landscape was not an homogenuous mantel of old-growth vegetation, but rather a very dynamic mosaic constantly modified under the natural disturbance regime, with patches of various sizes, shapes and ages.

... a memorable year from a cyclone visiting the settlement. It was June... Sweet observed a fearful looking cloud suddenly loom up in the north-west and move in their direction with incredible speed... the first blast lifted off the roof, when they rushed out and flung themselves on the ground, amid the roar of the storm and the crashing of falling trees. The blast soon passed to the south-east, and the men looked with awe on the distruction it had wrought. For about 1½ miles in width it had mown a clear track through the forest, the trees being levelled (1805, Hemmingford, p.22).

The fire of 1825 did not do much damage to the growing timber. It ran over about 30 acres on Castagenet's lot and burned deep

("Hauling Timber" watercolour by J. H. de Rinzy/National Archives of Canada C-011200)

holes in the swamps, which are still to be seen, and our creek went dry (Patrick Curran, St. Anicet, p.236).

… in 1825, when the Huckleberry rock was swept bare by fire, these trees were destroyed (Covey Hill, p.26).

The fires of 1825 left Dundee untouched, and, alone in the county, it has never suffered to any extent from burned soil (Dundee, p.199).

The great fires of 1825 did not damage west of the plank-road (Duncan aka "Torramore", St. Anicet, p.218).

… the year [1825] of the Miramichi fire… There was fire here and there around, which, besides destroying much timber, burned holes in the soil and obstructed passage in the bush by toppling over large trees (William Miller, along the English River, Williamstown, p.300).

The great fire of 1825 had swept over the section, leaving a wide track of blasted forest, the great pines standing, white and naked like a forest of masts as far as the eye could reach… (near La Grande Décharge [named Evident River at the time], a tributary of the Chateauguay River, p.337).

The fall we came was that of the Miramichi fires. The largest fire was behind the village and along the creek from lot 17, making a great slash. A year or two afterwards the fire again ran, and burned the fallen timber and the black muck down to the clay (Alexander Lunan, Godmanchester, p.421).

Up to that time [the year of the Miramichi fires] there was no slash or brule in the woods (James Hamilton, along the Chateauguay River, Hinchinbrooke, p.467).

On the Outarde [River] the fire raged fiercely, and felled so many trees… (1825, Alexander Johnston, Hinchinbrooke, p.470).

The flat west of the Outarde [River] bridge had been terribly swept by fire during 1825, the outlets so choked by fallen trees that it was converted into a deep swamp. When it did come to be reclaimed, the roots of the great cedars were found under the second-growth timber (The Lost Nation, between Huntingdon and Athelstan, Hinchinbrooke, p.483).

Low ground was badly burned [from the Miramichi fires], and long tracks of blackened trees channelled the forest (W. C. Roberts, Covey Hill, p.531).

And now what ?

The picture drawn from Sellar's accounts of the original natural setting of the Haut-Saint-Laurent is

one of a beautiful, mysterious, diverse yet sometimes hostile environment that needed to be conquered and exploited. Over time, its trees, soil and water were the riches that allowed its human population to establish, develop and prosper up to the dynamic community of today.

There is little left of the original nature encountered by the first newcomers in the area, and what is left has endured profound changes. There are only a handful of government protected sites in the area: Lac St. François National Wildlife Area, Muir's Forest Ecological Reserve, and the Pin-Rigide Ecological Reserve. On private lands, the permanent protection of the soon-to-be-named "Réserve naturelle de la Montée Quesnel", in St. Anicet, is noteworthy. Other natural jewels, such as what is left of the Tea Fields, remain unprotected – and threatened.

As a reminder of the original wilderness beauty and as a tribute to the first settlers, it is our responsibility to protect and restore with the best of our knowledge the remaining wetlands and mature forests of the Haut-Saint-Laurent. The benefit of protecting these lands may not be immediatly appreciated now, especially when confronted with the costs of setting them aside. But, just like Sellar himself foresaw the value of his book for us today, future generations who will inherit these natural treasures will be much grateful for our visionary actions.

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- References -

Anrep, A. 1917. **Recherches sur les tourbières et l'industrie de la tourbe au Canada, 1911-1912**. Ministère des Mines, Ottawa. Publ. 267.

Bouchard, A. and Domon, G., 1997. The transformation of the natural landscapes of the Haut-Saint-Laurent (Québec) and their implications on future resource management. **Landscape and Urban Planning**, 37: 99-107.

Bouchard, A., Dyrda, S., Bergeron, Y. and Meilleur, A., 1989. The use of notary deeds to estimate the changes in the composition of 19th century forests, in Haut-Saint-Laurent, Québec. **Canadian Journal of Forest Research**, 19: 1146-1150.

Bouchard, A. and Jean, M., 2001. Historique d'un paysage de tourbières profondément transformé par l'homme. Pages 389-398 and 604-605 in S. Payette and L. Rochefort (eds.). **Écologie des tourbières du Québec-Labrador**. Presses de l'Université Laval, Québec. 621 p.

Brisson, J. and Bouchard, A., 2003. Human activities caused major changes in tree species composition in southern Quebec, Canada. **Ecoscience**, 10: 236-246.

Brisson, J. and Bouchard, A., 2004. The Haut-Saint-Laurent wilderness at the time of settlement based on Sellar's History. **Chateauguay Valley Historical Society annual Journal**, p. 25-31.

Brisson, J., Bergeron, Y. and Bouchard, A., 1992. The history and tree stratum of an old-growth forest of Haut-Saint-Laurent Region, Quebec. **Natural Areas Journal**, 12(1): 3-9.

de Blois, S. and Bouchard, A., 1995. Dynamics of Thuja occidentalis in an agricultural landscape of southern Quebec. **Journal of Vegetation Science**, 6: 531-542.

Jean, M., and Bouchard, A., 1987. La végétation de deux tourbières de la municipalité régionale de comté du Haut-Saint-Laurent (Québec). **Canadian Journal of Botany**, 65: 1969-1988.

Jean, M. and Bouchard, A., 1991. Temporal changes in wetland landscapes of a section of the St. Lawrence River, Canada. **Environmental Management**, 2: 241-250.

Hill, R., 1998. **Voice of the Vanishing Minority: Robert Sellar and the Huntingdon Gleaner: 1863-1919**. McGill-Queen's University Press, Montréal, 378 p.

Laframboise, M., 1987. Origine et évolution de deux terres noires de la MRC du Haut-Saint-Laurent. **Mémoire de M. Sc.**, Département de géographie, Université de Montréal, Montréal, Québec. Directeurs: Paul Comtois et Pierre J.H. Richard. 94 pages.

Lower, A.R.M., 1973. **Great Britain Woodyard: British America and the Timber Trade 1763-1867.** McGill-Queen's University Press. Montreal, 271 p.

Marineau, K. 2004. **Tourbières d'intérêt pour la conservation: Small Tea Field et Large Tea Field, Saint-Anicet et Sainte-Barbe (M.R.C. du Haut-Saint-Laurent)**. Report, done in collaboration with the ministère de l'Environnement, Direction du patrimoine écologique et du développement durable, québec. 27 pages.

McGee, R., 1987. **A Companion to Robert Sellar's History of the County of Huntingdon and the Seigniories of Chateaugay and Beauharnois**. The Innismacsaint Press, 64 p.

McKibbin, R. R., and P. C. Stobbe. 1936. **Les sols organiques du sud-ouest du Québec.** Agriculture Canada, Ottawa. Bull. 5.

Sellar, R., 1888. **The History of the County of Huntingdon and of the Seigniories of Beauharnois and Chateauguay**. Huntingdon Gleaner (reedited 1975), Québec, 643 p.

Simard, H. and Bouchard, A., 1996. The precolonial 19th century forest of the Upper St. Lawrence Region of Quebec: a record of its exploitation and transformation through notary deeds of wood sales. **Canadian Journal of Forest Research**, 26: 1670-1676.