

Against the Tides

Reshaping Landscape and Community in Canada's Maritime Marshlands

RONALD RUDIN

FOREWORD BY GRAEME WYNN



Contents

List of Illustrations / ix

Foreword: Poets among the Engineers / xi
by Graeme Wynn

Preface: In Search of the MMRA / xxv

A Note on Sources / xxxii

Prologue: Whose Knowledge? Which Nature? / 3

PART I: SECOND NATURE

1 Out to Sea / 25

2 Reconstruction / 72

PART 2: THIRD NATURE

3 Dam Projects / 117

4 Legacies / 170

Epilogue: Meet the Grand Pre Marsh Body / 220

Notes / 226

Bibliography / 265

Index / 276

I

Out to Sea

DURING LATE SUMMER and early fall 1943, storms battered a large swath of New Brunswick and Nova Scotia, where dykes were holding back the tides of the Bay of Fundy, as they had for nearly three centuries. These structures had been in a weakened state for decades, prompting a high-level meeting of interested parties in early September in Amherst, Nova Scotia, a town in the heart of the marshland region that would soon become the site of the headquarters for the Maritime Marshland Rehabilitation Administration (MMRA). The meeting was chaired by E.S. Archibald, the director of the Dominion Experimental Farms, who plays a key role in the pages that follow.

After the committee had completed its work, Archibald took advantage of his presence in the region to provide a first-hand report on the damage done by the most recent storms, one of which saw “thirty-five hours of heavy, continuous rain.”¹ He noted that

a very large number of dykes had gone out in the last month with the excessively high tides and others may go out during this week especially if storms accompany the extraordinarily high tides which are prevailing. Already thousands of acres of good hay land have been flooded and the hay crop largely ruined for the next year or two.²

Archibald and some of his colleagues from the meeting “drove for the succeeding three days over large tracts of marshlands,” concluding that while the current situation was bad, “it could be much worse” unless

something was done: either repairing the dykes or eliminating them altogether “by blocking off tidal water in these areas, and putting a large aboiteau at the mouth of the stream.”³

These were the two options that the MMRA would eventually adopt with vastly differing consequences, one restoring second nature, the other creating a new, third form through structures such as tidal dams. But in 1943, the ideas about how to deal with the problem had yet to be articulated very clearly. Instead, there was a certain amount of incredulity about how dykes and aboiteaux that seemed as if they had been part of the landscape forever were literally washing away, and with them drained marshland that had gone “out to sea,” the expression that recurs in the correspondence from that era.

Archibald was a visitor to the region, but we also have testimony from people who had to live with the diminished dykes on a daily basis. One such individual was H.A. Francis, who in July 1943 (a few months before Archibald’s visit) represented the views of the Marsh Owners’ Association of Annapolis County before the Nova Scotia Royal Commission on Provincial Development and Rehabilitation, one of various inquiries set up at both the federal and provincial levels to explore how government could shape the postwar world. During its tour of the province, the Royal Commission made a number of stops where it looked into the vulnerable state of dykeland. In the case of a thirty-kilometre stretch on both sides of the Annapolis River, Francis said that there had once been 4,800 acres of dyked marsh. When asked how much of this dykeland had been lost, he thought hard and then said that “3000 acres, that is two-thirds has gone out to the tide and is absolutely useless. I could show you stretch after stretch ... that has gone out, and you will ask me why. It is owing to the fact of not keeping up with the dykes and aboiteaux.”⁴

To provide the commissioners with a specific example, Francis pointed to Bloody Creek marsh: “It was a big marsh, but it is now nothing but a mud hole,” because the aboiteau designed to stop water from entering and to allow standing water to flow out had washed away. “I talked to one of the dyke owners and I said, ‘Is your aboiteau gone out again,’ and he said, ‘Yes, and we will let it stay out.’ He said: ‘Three years ago I spent \$600 on the (aboiteau), and last year \$400, and we have no aboiteau today.’ So the water is coming in and it goes around behind the dyke and helps wash the dyke out.”⁵

Nineteen forty-three was difficult for marsh owners, as the situation depicted in [Figure 1.1](#) was repeated across the region. The Dykeland Rehabilitation Committee that Archibald helped set up reported in November



FIGURE 1.1 Middle Dyke Road flood, Grand-Pré, Nova Scotia, mid-1940s. *Acadia University Archives, Grand Pre Marsh Body Fonds, 2010.047-GMB/11b. Courtesy Ruth Conrad.*

that “large breaks in the dykes (have) occurred and in many cases, aboiteaux swept out to sea, resulting in the exceedingly heavy loss of hay and grain over very large tracts of dykeland.” But the specific weather conditions, what the committee referred to as “exceptionally high tides and heavy rain and wind storms,” would not have mattered if the structures had been in good repair.⁶ After all, stormy weather was not unusual in this region, and yet the minute books of the marsh bodies, the local organizations that managed the protective structures, contain few reports of massive failures prior to the 1920s.⁷

No one really doubted that the weakened state of the dykes and aboiteaux was at the heart of the problems faced by farmers, but there was a significant difference of opinion over the role those same farmers played in creating the situation. On the one hand, the Dykeland Rehabilitation Committee recognized that the marsh owners were hard-pressed to make needed repairs “due to the shortage of labour and sufficient money.”⁸ On the other hand, various witnesses before the Nova Scotia Royal Commission referred to evidence of “neglect” on the part of the farmers, leading the commissioners to ask: “Even if the government should come to the help

of the marsh owners and rehabilitate the dykes and aboiteaux and so on, what assurance is there that these will be maintained?”⁹ As this question suggests, there was some concern that the local knowledge of the farmers was not up to the task at hand. In that context, this chapter explains how expert knowledge confronted local knowledge and how a system that largely functioned without direct government involvement for nearly three centuries became dependent on state intervention.

THE END OF FIRST NATURE

On their arrival in the seventeenth century, Acadian settlers entered a region with roughly 80,000 acres of salt marsh that had been formed over the course of millennia due to the tides of the Bay of Fundy, which – as much as the sun – governed the newcomers’ lives. Twice daily, the tides make their way into the bay, moving up the various streams that flow into it, confounding the notion of what is upstream or downstream, all the while becoming larger and larger. By the time the tides reach the Minas Basin, near Grand-Pré, they can be up to fifteen metres in height. Sherman Bleakney, who has written extensively about this landscape, has observed that at mid-tide at this location, “the flow is equivalent to the combined flow of all rivers and streams on earth. From the sheer weight of that water, the land beneath the Minas Basin rhythmically sinks and rises with each tide. No other region on earth is quite like this one.”¹⁰

Samuel de Champlain was typical of early European observers of Acadie, when he commented in 1604, on entering the Annapolis River: “From the mouth of the river to the point we reached are many meadows, but these are flooded at high tide.”¹¹ The French newcomers were very conscious of the tides, but had little to say about the fauna and flora that thrived in this ecosystem thanks to the nutrients that washed up on the marshes and were trapped by its grasses. As George Matthiessen has explained, a salt marsh can produce ten tons of organic matter per acre per year, roughly what is produced via “terrestrial wheat production under modern and efficient methods of cultivation and is roughly equivalent to intensive sugar cane and rice production.”¹² The Indigenous people of the region, the Mi’kmaq First Nation, understood this well, building their lives around the marshland “habitat for waterfowl and other animal life,” and Acadian settlers followed their lead when they first arrived, taking advantage of the wild food resources available in the marshes. Ultimately, however, the Acadians

worked at bringing first nature to an end, in the process aggravating relations between the Mi'kmaq and the newcomers.¹³

Within a year of commenting on the tides, Champlain was at work trying to remove unwanted water, in his words, “constructing a sluice against the seashore [at Port Royal], to drain off the water whenever I wished.”¹⁴ Decades after his brief stay in the region, there were efforts to draw profit from the marshes, this time by means of harvesting salt, but when this proved impractical, the French, leaning on their experience in Europe, turned to draining the marshes altogether to create fertile, arable land without the burden of clearing forests and removing rocks. In the process, they reflected a widespread understanding of the marsh environment that linked the natural buildup of sediment with the dyking of such soil. In this conception, the construction of dykes and aboteaux became enmeshed in a natural process, leading to what Matthew Hatvany has called the “terrestrialization of wetlands,” as “continual sedimentation and biological succession led to the steady advance of marshes, permitting successive reclamation.”¹⁵ Draining marshes simply sped up and improved on a natural process, at the same time responding to the sense that wetlands were chaotic places, neither land nor water, that needed to be tamed. Writing with regard to colonial America, Ann Vileisis has shown how turning this environment “into a physically ordered landscape was not only a religious obligation but a fundamental part of the colonists’ worldview.”¹⁶

There were other North American contexts in which European settlers drained salt marshes, but as Gregory Kennedy has explained: “The [Acadian] colonists’ nearly exclusive reliance on marshlands for both immediate and long-term needs was distinctive.”¹⁷ As one French colonial governor observed: “They raise with so little labour large crops of hay, grain and flax, and feed such large herds of fine cattle that an easy means of subsistence is afforded, causing them altogether to neglect the rich upland.”¹⁸

Although farming was largely restricted to the drained marshland, Acadians used their uplands for the construction of their farm buildings, a practice that created its own challenges for future occupants. As Yves Cormier has noted, in the nineteenth and early twentieth centuries, “farm owners would sometimes have to walk several kilometres in order to reach their drained land.”¹⁹ The division between marshland and upland also led to the construction of hay barns on the drained marshland, particularly in the vicinity of the Tantramar River in New Brunswick. Travelling

through the region in 1885, Samuel Boardman observed “numberless barns to store the hay from harvest time until it is hauled to the home farms on the approach of the first snows. As many of the dyke lots are owned by farmers several miles away, it would be simply impossible for them to haul the hay home during the haying season.”²⁰ In spite of these inconveniences, farmers saw the value of owning both types of land, and government intervention after the Second World War was justified, in part, to save farms that integrated dykeland and upland, each serving a distinctive function (see [Figure 1.2](#)).

By the time of the mid-eighteenth-century deportation of the Acadians, over 13,000 acres of the region’s salt marshes had been drained, a process that was largely undertaken without any state intervention, a pattern that would continue until the creation of the MMRA.²¹ As Kennedy has observed, “colonists left to their own devices carried out the drainage of marshlands,” working as clusters of family units because

a single family would have had difficulty building dykes and digging canals at the same time as gathering food, building shelter, and care-giving. A group of families, however, could combine their labour, completing the initial constructions required for the land to drain and begin desalination while also helping each other hunt, fish and gather, plant gardens, look after livestock and build homes.²²

These familial clusters provided the basis for Acadian settlement under both French and (after 1713) British rule, developing areas that lent themselves to farming on drained marshland, mostly along rivers and streams that carried the tides of the Bay of Fundy. At first, the settler population was concentrated in the Annapolis Valley, near Port-Royal, the initial Acadian settlement in what would become Nova Scotia. In the late seventeenth and early eighteenth centuries, Acadians drained marshes in the area of Grand-Pré along the Minas Basin, and from there they extended their reach to the area of the Avon River (near present-day Windsor) and to that of the Salmon River (near present-day Truro).²³ During the final decades before the deportation, settlement expanded into what would become southeastern New Brunswick as salt marshes were drained along the Tantramar, Shepody, Memramcook, and Petitcodiac Rivers.²⁴

In the centuries that followed, as dykes were moved further toward the sea to allow more land to be drained, the structures built by the Acadians sometimes turned up in the middle of farmers’ fields. Boardman, writing in the late nineteenth century, could make out old dykes at Grand-Pré



FIGURE 1.2 Uplands and marshlands, with dykes in the background. *Original drawing by Caroline Boileau, 2019.*

that had “been plowed down and leveled off in places, but it is not a difficult matter to trace them.”²⁵ In the early twenty-first century, I was shown by Dick Haliburton, a farmer from Avonport, not far from Grand-Pré, how the structures left over from the Acadian dykes provided the basis for a swimming hole in the midst of his family’s farm, which had expanded through the construction of a dyke further out. Similarly, George Trueman, a farmer from southeastern New Brunswick, showed me a mound in the

middle of his field, where the original Acadian dyke had been plowed over.²⁶ However, even if the extent of drained marshland increased after the expulsion of the Acadians, the marshland geography remained largely the same, with the MMRA eventually working in the same areas as had the Acadian settlers.

Given that there were no more than 14,000 Acadians in 1755, settling largely in the distinctive marsh areas, it was inevitable that there would be considerable distances between pockets of settlement. As Kennedy observed: “The distribution of these marshlands influenced the Acadians to adopt a more dispersed settlement pattern which gave them greater autonomy but also greater isolation.”²⁷ Living on their own, the Acadians developed an unwillingness to recognize the authority of any state, either French or British, a practice that ultimately led to their forced removal by the latter.

In this context, the Acadians drained the marshes by means of a system many of whose characteristics remain unchanged to this day. In the process, they developed a set of skills, a form of local knowledge, regarding how to hold back the tides and make their lands suitable for cultivation. This process was led by an individual, chosen by the settlers and not by the state, known as *le sord de marais* (the lord of the marsh). In research prepared for the film *Les aboiteaux*, Roméo LeBlanc, the future federal cabinet minister and governor general, described this individual as

an elder in the community who was skilled in aboiteau construction. It was not at all uncommon to see the title passed on from generation to generation within the same family ... The “lord” would supervise the work, would study the water currents and the approaches to the sluice, as well as the direction of the tides and changes to the riverbed. He would decide on where to carry out the construction and nobody would ever think of challenging his experience and his knowledge in this regard.²⁸

With the *sord* directing the operation, teams of Acadians created and maintained three different elements of a system that, as a whole, turned salt marsh into land suitable for cultivation: dykes blocked the tides from entering the marsh; sluices known as aboiteaux were built into the dykes and were capped on the seaward side by a hinged gate (known as *le clapet*) that only opened out so that fresh water drained from the marsh at low tide, without allowing salt water to enter at high tide; and finally there was a system of ditches on the inland side of the dykes that channelled water to the aboiteau, to be expelled. Much like blood making its way to

the heart, smaller ditches fed into ever larger ones, ultimately reaching a main channel that led the water out of the marsh (see [Figures 1.3](#) and [1.4](#)).

These elements needed to function together as a single unit because if any one part was compromised, the entire system would fail. For instance, if the ditches were not kept clear of obstructions, water would not flow from the fields, making it impossible for crops to grow. Similarly, if the hinged gate on the aboiteau was stuck open, salt water would be able to enter at high tide, removing the drained marsh from cultivation for several seasons, until it was again desalinated. The doomsday scenario saw the collapse of both the dykes and the aboiteaux, effectively allowing tides unobstructed access to the drained marsh, returning it to first nature, roughly the situation that E.S. Archibald observed first-hand in the fall of 1943.

Until the creation of the MMRA, most of the work involved in draining a marsh, and keeping it drained, was done by hand, following practices that were imported from France and then refined in the Atlantic Canadian mud. The Acadians built running dykes that “meandered along the high ground to each side of the creeks,” which flowed into larger rivers and eventually the Bay of Fundy. The Acadians might have constructed barriers across streams, precisely what was done by the English-speakers who succeeded them after the deportation, but the Acadians, according to Sherman

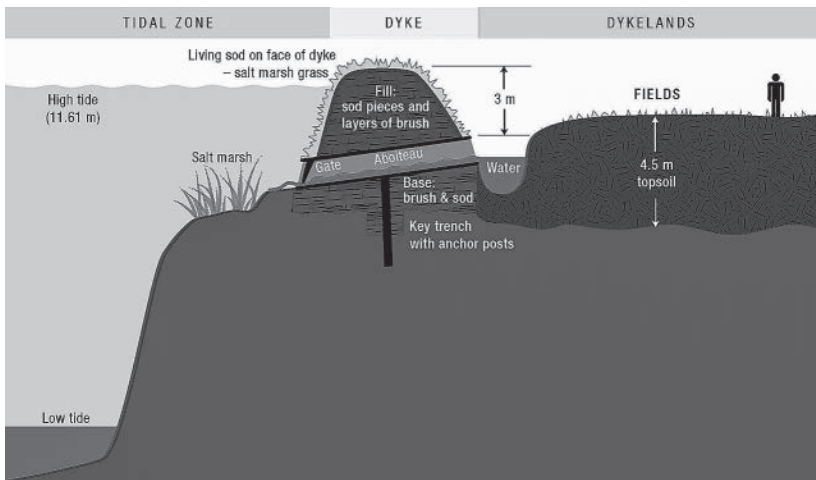


FIGURE 1.3 Cross-section of dykelands. While this graphic pertains to Grand-Pré, all dykelands were drained through this system. *Graphic by Steven Slipp. Image copyright Parks Canada. Reproduction based on an image produced by Parks Canada.*



FIGURE 1.4 Drainage ditches expel water from field. *Original drawing by Caroline Boileau, 2019.*

Bleakney, “had the foresight not to.” Instead, they expended “a minimum of labour and materials ... The trade-off was that these miles of walls had to be patrolled and maintained, but this was easily accomplished.”²⁹

As for the construction of the dykes, Acadians assembled “teams of six men equipped with spades, pitch forks, and oxen. An assemblage of 120 men could construct more than a mile of dyke wall in just twenty days.”³⁰ They began by installing anchor posts, around which they packed pieces of sod and marsh mud. This material anchored the dyke, around which walls were built out of bricks of sod that were carefully cut to a particular dimension so that they would fit together. The roots of the sod intermingled, creating walls that could stand up to the tides, the seaward side carefully sloped more than the inland to deflect the water crashing up against it.

The sod cutters were skilled craftspeople whose local knowledge changed little in the centuries between the arrival of the Acadians and the creation of the MMRA. In this regard, Ernie Partridge was a transitional figure who played a role in introducing machinery into the construction process but was also knowledgeable about how dykes had been built for centuries. Making a particular point of talking about the cutting and installation of the sod facing, Ernie explained how the starting point was to identify a sod pit relatively close to the work site, minimizing the time needed for transporting the cut sod by horse-drawn drags.³¹ Time was also of the essence in cutting the sod, because workers further down the line would have nothing to do if the cutter did not produce, according to Sherman Bleakney, a 4-inch-by-8-inch brick every fifteen seconds. “As tide and time wait for no man, especially on marshlands, so it was that the production of the greatest number of uniform sod bricks in the shortest time was the ultimate key to quickly transforming saline tidal marsh into farmland.”³²

The crucial tool for carrying out the job was the dyking spade, a light-weight object with a sharp cutting edge that enabled it to slice through the roots. Sod cutters developed a close attachment to their spades, much as musicians to their instruments. When Bleakney interviewed Walter Kelly, a sod cutter then in his eighties, and handed him a spade, “his face lit up and his hands automatically grasped the shaft and twisted it as he showed the cutting motions.” Bleakney also learned from his interviews that “the spade was never used for anything else for fear of dulling or nicking its edges. It always hung in a special place on the farm ... not to be touched by anyone other than the sod cutter.”³³ Indeed, when I visited Ernie Partridge, a crucial part of his explanation of how dykes were built was a visit to his shed, where his spades were prominently displayed (see [Figure 1.5](#)).

Sod cutters wielded their spades as if they were extensions of their bodies. In this regard, there is the testimony of George Frail, whom we will meet again later as an engineer connected with several of the MMRA's dam projects. Frail was on the scene in the 1950s and so “was in the unique position of hiring the last of the professional dyke builders and of being able to stand aside and ... watch them perform.” In an interview with Sherman Bleakney, he observed that the cutters “could produce sod while talking face to face with someone, not looking where they were cutting, somehow sensing what their spades were doing.”³⁴ Their dexterity was similarly reflected in stories that Bleakney received from “the oldest dykers” he interviewed, who described lunch breaks that “involved contests of throwing sod the greatest distance, and wall builders who could catch a



FIGURE 1.5 Ernie Partridge and his dyking spades.

sod in mid-air on their fork, redirect it, and slam it into position in one continuous motion, with the precision of a bricklayer and the pride of a master craftsman.”³⁵ And as was the case with the spade for sod cutting, the pitchforks were made particularly for the job, with “short, sturdy tines” so that the small holes produced would not “pry apart [the sod’s] entanglement of roots.”³⁶

Like the dykes, the aboiteaux were the product of skilled craftspeople working in a particular environment, essentially what we see Placide doing in the film *Les aboiteaux*. We have the testimony of Jonathan Crane, who was “present [in 1764] when the first Aboiteau of any consequence was made here, by the English – which was superintended by two Frenchmen.” Crane explained that it was important that “the bigness of the sluice ought to be in proportion to the fresh water that is to pass through it.”³⁷

If the sluice was too small, it would be impossible for water to drain properly, leaving some sitting in the fields; if it was built too large, limited resources would be wasted.

In some of the earliest Acadian dykes, sluices were constructed from hollowed-out tree trunks, but by the time Crane came on the scene, they were being built from “large hewn lumber joined well together, covered at the top and bottom with plank set into the timber and then sheathed with boards.”³⁸ On the seaward side of the sluice, there was a clapper valve – a hinged gate made of wood in Acadian times – that allowed fresh water to leave the marsh at low tide but prevented new, salt water from entering. Over the course of two to three years, this process, aided by the careful construction of ditches on the inland side that channelled water toward the aboiteau, allowed the marsh to be drained and desalinated, permitting crops to be grown and cattle to graze.

With all the elements in place, first nature was replaced by second nature, marshes by arable land that was subsequently distributed among the local populace. While collective work allowed the drained marshland to exist, at least in the case of the dykeland at Grand-Pré, “collaboration did not mean collective ownership. Evidence suggests that once the collective transformation had been completed, the land was allotted through a lottery system. In order to consolidate fields or acquire better land, land-owners would then trade or buy fields.”³⁹

Clearly, however, the process of consolidation was never entirely completed. A map of New Brunswick in the 1840s shows the random distribution of parcels of marsh among six proprietors, their properties having been distributed “by chance,” so that there was “no logical order.”⁴⁰ Even at the time the MMRA was created, small parcels of drained marsh still existed, distributed so that a farmer might own several that were not contiguous. For instance, a map that the agency created in 1951 for a marsh body along the Memramcook River, near the site of the filming of *Les aboiteaux*, indicated that one landholder, Elois Cormier, owned fourteen separate parcels, only four of which were contiguous with others that he owned; the rest were scattered across the dykeland.⁴¹ The dispersed nature of land ownership underscored the point that individual farmers were inextricably linked with one another in the protection of their properties from the tides. At times, however, the communal management of the dykes and aboiteaux ran up against farmers’ insistence that they had a right to manage their lands as they wished, a situation that we see in *Les aboiteaux* when the marsh owners at first refuse to assume their collective responsibilities.⁴²

With drained marshland at their disposal, Acadians grew an array of grains, fruits, and vegetables, but the primary activity on the dykelands was the grazing of livestock. As Kennedy notes: “Where Acadian farmers surpassed most of their contemporaries was in the size of their herds. Already by 1671, there were more cattle than people in the colony, and almost as many sheep.” This pattern continued into the eighteenth century, integrating the Acadians into export markets and making their new British masters nervous as “large numbers of cattle and sheep [were] being transported to French-held Louisbourg.” More pragmatically, livestock appealed to marsh dwellers because “they were easier to transport than grain and could be moved if the dykes were breached by storms or raiders.”⁴³ Centuries later the preoccupation with livestock – sometimes grazing on the dykeland, but more frequently housed on upland that was supplied by forage from the drained marsh – would lead the region’s beef cattle interests to take the initiative in securing government support for dyke repairs, demands that ultimately resulted in creation of the MMRA.

WHILE THIS SECOND-NATURE landscape would continue intact well into the twentieth century, it would do so largely without the Acadians who had built it. Indeed, one of the reasons the British were so eager to gain control of this land was to make it available to American colonists, newcomers known as Planters, who took over the drained marshes on the removal of the Acadians. In early August 1755, only weeks after the deportation order had been issued, a letter was widely circulated in the colonial press that described the action as “a great and noble scheme ... If we effect their Expulsion, it will be one of the greatest Things that ever the English did in America; for by all accounts, that Part of the Country they possess, is as good Land as any in the World.”⁴⁴ As Nova Scotia governor Charles Lawrence noted late in 1755, after the *grand dérangement* had begun: “As soon as the French are gone, I shall use my best endeavours to encourage People from the Continent to settle their lands ... and the additional circumstances of the Inhabitants evacuating the Country will, I flatter myself, greatly hasten this event, as it furnishes us with a large Quantity of good Land ready for immediate Cultivation.”⁴⁵

Among the Planters who came north to farm drained marshland was the Palmetter family, which arrived in Grand-Pré from Connecticut in the 1760s. Members of the family subsequently played a central role in the management of the marsh, and are still farming the same land over 250 years later.⁴⁶ But families such as the Palmetters did not exactly find the

paradise they had been promised. For instance, at Grand-Pré they discovered in 1760 that much of the drained marshland was under water. With the Acadians no longer there to keep up with needed repairs, there was significant damage to the dykes in 1759 at the peak of the Saros cycle, when the relationship of the earth to both the sun and the moon results in exceptionally high tides every eighteen years.⁴⁷

In spite of these problems, the newcomers appeared to have quickly acclimatized to marshland farming. New Englanders like the Palmeters may well have been familiar with what was involved in draining a marsh before moving north. As Kimberly Sebold has observed, “probate records and deeds suggest that reclamation occurred [in New England] during the colonial period.”⁴⁸ And even if the Palmeters came without any previous experience, there were British settlers who could pass along their knowledge, having already developed expertise during the forty years between the conquest of Acadie and the deportation of the Acadians. Graeme Wynn has shown how “settlers used the marshlands in the vicinity of the British forts to supply the garrisons throughout the 1750s.” Familiarity with marshland farming came from various directions, allowing Wynn to conclude that “the New Englanders soon put the marshland to use,” with the result that “prices given for dyked marsh were consistently higher than those for undyked marsh and approximately the same as those for good upland in the late 1760s.”⁴⁹

In addition to knowledge secured within the British colonial world, the newcomers also benefited from the experience of the Acadians. Some of the former occupants of the land, now prisoners of war, were forced to “train” the new marsh owners. Jonathan Belcher, the chief justice of Nova Scotia, “asked military authorities to assist the Planters by distributing the Acadian prisoners [so that they] could be housed under guard and put to work maintaining the dykes.” Belcher observed in 1761: “It appears extremely necessary that the [new] inhabitants should be assisted by the Acadians in repairing the dykes for the preservation and recovery of the marshlands.”⁵⁰

After the Acadians were allowed to return to Nova Scotia later in the 1760s, some were hired to provide paid labour to those who now farmed what had once been their land.⁵¹ It was in this context that Jonathan Crane, whom we met earlier, was on hand as Acadians worked for some Planters in 1764. The direct Acadian contribution to the “new” local knowledge of the Planters can be heard even in the early twenty-first century by way of the terms that have migrated from one language to another. Aboiteaux are now widely referred to in English as “abideaux,”

and the sod blocks used to construct the dyke walls are called “*parmang*,” from the Acadian *parment*.⁵²

The only marshes available to Acadians as proprietors were at the northern reaches of pre-deportation drainage, in places such as Memramcook (in what would become New Brunswick in 1783), where the Planters had not taken over the land. As this remained a site where the Acadian connection with the drained landscape continued, it served as the backdrop for *Les aboiteaux*. Everywhere else, however, the marshes were now managed almost exclusively by English-speakers, their ranks bolstered in the 1770s by settlers from Yorkshire, “where fen-land was made productive by ditching, draining, and the construction of flood-gates.” Much like the Planters, “it is quite possible that they applied their familiarity with wet-land reclamation in England to the problems of their new lands in Nova Scotia,” and in the 1780s Loyalists became part of the mix.⁵³

As during Acadian occupation of the drained marshland, the English-speaking proprietors looked after the dykes and aboiteaux with relatively little intervention by the state. While there were effectively no pertinent colonial statutes under earlier French and then British rule, this changed in 1760 when the Planters, faced with the inundation of their fields, received the support of the “provincial assembly [which] passed an act empowering proprietors to choose commissioners with the authority to repair and maintain the dykes.”⁵⁴ This was essentially the system that prevailed until creation of the MMRA in the late 1940s.

The 1760 act allowed for the appointment of one or more “Commissioners of Sewers,” adopting language from English statutes that referred to open drainage ditches, and not sewers in the more modern sense of the term. The preamble to the act noted that there were “great quantities of marsh, meadows, and low ground in this province, and particularly in the Bay of Fundy, and rivers, bays, and creeks, branching therefrom ... which by industry may be greatly improved.”⁵⁵

This improvement would come through the governor’s appointment of commissioners “for the building and repairing such dykes ... as are necessary to prevent inundations.” The commissioners would be named following “the request of the proprietors of such lands” in particular areas of the colony, in the process setting the stage for the division of the dykelands into marsh bodies, discrete groups of marsh owners, each of which was collectively working lands that required protection. The commissioners would be paid for their services and have the power to hire individuals to carry out needed work. The relevant costs would be covered by taxing marsh owners in relation “to each person’s quantity of land and benefits



FIGURE 1.6 Grand Pre Marsh Body commemorative plaque.

to be received thereby.” Proprietors could pay off their debt either through cash or by providing labour; if any failed to contribute, the shortfall would be covered by the other proprietors, who would take possession of the delinquent’s lands pending reimbursement.⁵⁶

In the nearly two centuries that followed this initial legislation, there were a variety of minor changes to the law that defined the operations of the dykelands, but nothing challenged the owners’ autonomy.⁵⁷ This stability is reflected in the operations of several marsh bodies that can boast an uninterrupted corporate existence dating back to the immediate aftermath of the expulsion of the Acadians. Two such marsh bodies in the vicinity of Grand-Pré proclaimed their deep roots in the landscape in 1995 by erecting commemorative plaques on their 235th anniversary, with structures that were symbolically framed by timber from an old aboiteau and backed by the gate from the sluice (see Figure 1.6).⁵⁸

Once settled in the region, the new proprietors set out to increase the extent of drained marshland. They did this in part by constructing much larger structures than the Acadians had ever built, an early example being their efforts in 1783 to install an “‘aboideau’ across the sixty-four-yard wide Missaguash River (which separates New Brunswick from Nova Scotia), an achievement which would have eclipsed, in magnitude, any Acadian dyke building.” Such developments were closely connected to the growth of the local market, and so by the turn of the nineteenth century the drained marshland was largely “under grass and marked in the fall by ‘vast stacks of hay made up in the true English manner.’”⁵⁹

Hay remained the crop that fuelled the local economy until the early twentieth century, some sold on the open market and some used to feed cattle, both beef and dairy. While it is commonplace to speak of the difficulties of the Atlantic Canadian economy, this did not apply to the proprietors of drained marsh, who, as long as hay prices remained strong, were able to maintain their dykes, aboiteaux, and ditches, and to regularly expand their holdings by protecting ever more land.

The stability of the marsh owners’ affairs was reflected, for instance, in the annual meetings of the marsh bodies. Typical of the minutes I was able to locate were those for the Dentiballis Marsh in the Annapolis Valley, which spoke to a routine that remained unchanged for decades. From the 1880s to the 1940s, annual meetings were held in early September so that dates could be set to allow cattle onto the marsh for grazing and for their removal, with someone appointed along the way to look after branding so that only the owners benefited. As George Warren, a visitor to the region, noted in 1911: “Hay was typically cut between the middle and the latter part of July, and about September 10, thousands of cattle were turned onto the marshes to feed and fatten until November.”⁶⁰ Year after year, the Dentiballis minutes, and those of other marsh bodies, formulaically reported the setting of those dates, the approval of the marsh body’s finances, and the provision of funds for minor repairs.

A sense of stability was also conveyed by several American visitors to the region, who reported on the drained marshes as part of studies designed to improve the management of salt marshes in the United States. For instance, Samuel Boardman, who journeyed there in 1885, wrote positively about the area near the Dentiballis Marsh:

All along the valley of the Annapolis the dyked lands are among the most valuable of the improved lands, and are wholly devoted to grass and grain ... Dyked land of good quality is worth here \$150 to \$200 per acre, and in

some instances even \$400. Such land will yield from 2½ to 4 tons of the best timothy [hay] and clover, per acre.⁶¹

Even more enthusiastic were the reports of George Warren, who visited the region twenty-five years after Boardman. Wherever he travelled, he wrote excitedly about how “many tracts [of drained marsh] have been cropped for generations without renovations of any kind, and without once failing to yield good crops of the best English grasses.” The situation was so positive that “not only farmers, but merchants and professional men who are looking for good, sound 8 and 10 percent investments believe and invest in these reclaimed marshlands. The leading social club of the thriving city of Amherst is named the Marshlands Club.” Writing for an American audience, Warren was so impressed with what he found that he was left to wonder how the Canadian provinces “have made such pronounced success in marsh-reclamation work, while the great bulk of our [American] marshes ... are still in their natural state, or where reclaimed the successes have been few or indifferent.”⁶² Warren could have hardly anticipated that by the 1940s some of this dykeland would be washing out to sea.

THE EXPERTS ARRIVE

During the early decades of the twentieth century, it appeared that first nature had been tamed, marshes having been transformed into drained, arable, and productive land. As in many other parts of the world, here was the seemingly “natural terrestrialization of wetlands.”⁶³ To be sure, there were moments when even the best efforts of proprietors were no match for the elements, as during the 1869 Saxby Gale, which resulted in the highest tides ever recorded in the Bay of Fundy. George Warren observed how the tide “rose in different parts of the bay from four to eight feet above high-water springs ... submerging the marsh lands generally.”⁶⁴

By and large, however, whatever challenges arose appear to have been handled successfully through the mobilization of local resources. This positive depiction of local efforts to maintain second nature was reinforced by the photographic record, which frequently showed workers successfully fixing problems connected with their dykes through the use of manual labour, as had been the case for centuries (see, for example, [Figure 1.7](#)). This local control, however, depended on the marsh owners sustaining an economy largely based on raising hay on the drained marshland. Hay was



FIGURE 1.7 Work crew on the Wallace Bay aboiteau, ca. 1910. *Courtesy North Cumberland Historical Society.*



FIGURE 1.8 Hay barn on the Tantramar Marsh, New Brunswick. *Courtesy of Shaun Cunningham.*

so dominant in production on the drained marshes of the Tantramar region in southeastern New Brunswick that the region was commonly referred to as the “World’s Largest Hayfield,” its iconic hay barns defining the landscape (see [Figure 1.8](#)).

This dependence on hay was nothing new, but in the late nineteenth and early twentieth centuries, many farmers moved away from the sale of beef cattle, fattened on their hay. W.W. Baird, the superintendent of the experimental farm in Nappan, Nova Scotia, and an important figure in developing policy to assist farmers when their dykes began to deteriorate, observed that there had once been “annual shipments out of the Amherst and Sackville districts of 4,000 to 5,000 heads.” However, these shipments began to decline at the turn of the century, and seemed unlikely to return because “the beef industry was being developed on the prairies and keen competition was soon felt from western beef.”⁶⁵

Farmers adjusted to the new circumstances, happily selling their hay on the market in the face of skyrocketing prices. Warren found hay prices exceeding \$10 per ton in 1911, peaking at nearly \$30 in 1918.⁶⁶ In this context, the Special Beef Cattle Committee, created to help farmers on drained marsh return to the sale of cattle, reported in the late 1930s that “these farmers are *hay-minded* and when hay sells for *seven dollars per ton or better*, the major portion of the hay is sold and cattle are curtailed in number.”⁶⁷

Heavily reliant on the hay market, farmers across the region were devastated when prices began to plummet, falling to \$23 in 1923 and to \$10 a decade later, before bottoming out at around \$6 per ton by the late 1930s.⁶⁸ This situation was no doubt exacerbated by the Depression, but it began earlier and was directly related to the declining market for hay that was no longer in demand for feeding horses, which were being displaced by vehicles powered by the internal combustion engine. In Canada as a whole, the number of horses reached an all-time high of 3.5 million in 1921, falling by nearly 20 percent over the next two decades. This decline was evident in urban areas, where streetcars and automobiles became dominant, as well as in rural areas, where the tractor and the truck displaced the horse.⁶⁹ As the Special Beef Cattle Committee observed, “the replacement of the horse with other types of power had noticeably lessened the volume of market for good horse hay, which was a valuable market for many of these growers.”⁷⁰

By the late 1930s, farmers were struggling with much-reduced incomes that could barely cover their expenses. According to Baird, “this was the end for the hay farmer, for after deducting \$2.50 for cutting, \$1.50 for pressing and fifty cents per ton for cartage, it left nothing for interest or

maintenance charges.”⁷¹ To make matters worse, at the same time that prices were collapsing, farmers’ yields were also in decline, one report noting in 1940 that “there are many such areas where the crop is less than half its former yield.” In light of all the problems in the region, “land values have likewise been affected. Land that formerly sold readily at \$110 to \$150 per acre is now a drag on the market at twenty dollars to thirty dollars per acre.”⁷²

The collapse of the hay economy led directly to the deterioration of drained marshland as owners, their incomes sapped, found it difficult to maintain either their protective structures or the drainage channels on their lands. As a result, by the late 1930s nearly 75,000 acres of drained marsh, out of a total of 80,000 across the two provinces, were in danger of reverting to first nature.⁷³ Faced with this unprecedented crisis, the dykelands were studied as never before. Long managed by proprietors through their marsh bodies, the area became a magnet in the late 1930s and early 1940s for organizations and individuals dedicated to applying professional expertise to fix the problems. By and large, those who came to study the region were connected with the federal, New Brunswick, or Nova Scotia governments; they came from as far away as Saskatchewan, and arrived with long years of experience, often grounded in engineering or through association with Canada’s chain of experimental farms. They did not always agree with each other on how the dykelands should be fixed, but they were all confident that their expertise provided them with informed solutions to a difficult situation.

In this context, three separate inquiries in 1939 and 1940 alone focused on dykelands on either side of the Nova Scotia–New Brunswick border, frequently employing questionnaires distributed among the farmers to arrive at results through the scientific, methodical collection of data. The Special Beef Cattle Committee’s 1939 study of the region, supplemented by a further inquiry the following year, was based on a survey of nearly 1,200 farms. To dig deeper into the situation, the committee carried out a “detailed study of 280 farms in the Sackville and Westmorland parishes” of New Brunswick, together with “a carefully prepared questionnaire [that] was sent out to some seventy odd farmers in the Cumberland district in Nova Scotia.”⁷⁴ Cumberland County was also mined for data by J.E. Lattimer, an economist from McGill University’s agricultural college, who spent the summer of 1940 collecting information from 128 farms.⁷⁵ The most elaborate project was the Nova Scotia Marsh Survey, which – in spite of a name suggesting a broader mandate – was also focused on Cumberland County.⁷⁶

To carry out the Marsh Survey, J.W. Byers, from Nova Scotia's agricultural engineering office, was accompanied by five student assistants during the summer of 1939. Byers explained: "As the summer was unusually dry the greater part of time was spent in [carrying out] the field measurements; rainy days were spent in calculations." In addition, "questionnaires were sent out to land owners and to Commissioners of Sewers ... As the party was organized, all the members were needed to keep the work going ahead, and there was no opportunity for one man to be free." Byers seemed to be self-conscious about the lengths to which he and his team went to carry out their survey: "It might be said that there were more pains taken in making [the survey] than the project justified," but for "a project of the magnitude of the Marsh Survey, [it] is worth taking special precautions [so] that the greatest possible usefulness may be obtained from it."⁷⁷

These studies collectively provide a vivid picture of the situation facing farmers at the time, paying considerable attention to the deterioration of the dykes. For instance, the Special Beef Cattle Committee described how "during recent years, dykes for miles have been undermined and washed in over the growing crop and some have slipped off into the sea, while others have been left an easy prey to high tides, when accompanied by strong winds."⁷⁸ For its part, the Nova Scotia Marsh Survey reported that aside from 15 to 20 percent of the region where the "dykes were in fairly good condition ... the remainder of the area is in very poor condition ... Dykes are battered and weak; aboiteaux are battered and leaking. There are all stages of deterioration, but this is a fair picture of the marshes."⁷⁹

But while the washing away of the dykes might have been the most visible and dramatic part of the crisis, the challenge for marsh owners extended to their fields, where poor drainage often made it impossible for water to reach the aboiteaux so that it could be expelled at low tide. The Special Beef Cattle Committee report noted that with the deterioration of the dykes, there were "heavy losses to the growers, for not only do they lose their crop, but the drainage systems are filled with sediment each time the tide entered."⁸⁰ The Nova Scotia Marsh Survey pointed to one particularly disastrous case, describing drainage at the Amherst Marsh as "*Extremely unsatisfactory*." The survey team had trouble getting out into the marsh "on account of the quantities of water lying [there] after at least a month of dry weather." They found "6 inches of water all over the marsh. One of the party ... waded in water up to the waist, and went through an old ruined barn which was practically floating off its foundations." In response to the survey's questionnaire, one marsh owner observed: "This

marsh drains a large area of upland and after a heavy rain I have seen the marsh in parts flooded from one to two feet deep which stayed there until the hay and grass were completely ruined.”⁸¹

In addition to describing the problems that farmers were facing, the studies also assessed the roots of the crisis. Dependent on manual labour to both keep up the dykes and aboiteaux and maintain the ditches in the fields, farmers were faced with ever-rising costs at the same time that their incomes were in decline. The Special Beef Cattle Committee focused on the “yearly decrease in available, experienced dykers and ditchers. Most of this work has been done, in the past, by spade work. This naturally brings up the question of experienced help or efficient machinery for this kind of work.”⁸²

In terms of finding help, farmers were hamstrung by the exodus of young people who were leaving to find better prospects elsewhere, a common situation across rural Atlantic Canada at the time. In his 1939 survey of the Tantramars Marsh, H.R. Hare told the story of one farmer who was “greatly concerned over one of his four sons who was associated with him on the farm. The three other sons had gone out into the world and were doing well, coming back weekends with a nice car, while his boy at home found it necessary to work Sundays and all, and could not afford to own a car or get married.”⁸³ Along the same lines, there is a poignant scene in *Les aboiteaux* in which Placide, the *sourd de marais*, is boarding a bus to check out the MMRA facilities in Amherst. At the bus stop, he comes across a group of young men waiting for transport to take them to work in the city. In the absence of such labour, farmers were faced with inflated costs for those who remained, leading one farmer in the film to observe: “You’ve got to understand, Placide, a day’s wage is too much money. These days, we can’t get ahead by paying men to work on the dykes.”⁸⁴

As for the use of machinery, the time had not yet come when this was a real option for most farmers. To be sure, by the 1930s there were already exceptional occasions on which equipment such as draglines along with bulldozers were being used, both in the Bay of Fundy region and in other dykeland contexts such as the Kamouraska region of Quebec. A dragline, like the one from the early 1950s shown in [Figure 1.9](#), was essentially a crane with a large bucket on the end that, through a system of cables, was able to excavate in minutes what would take men days to accomplish. Matthew Hatvany has described the introduction of such machinery in Kamouraska in 1938, enabling the protection of over 800 acres.⁸⁵ A year later, a dragline was used for the first time in Atlantic Canada as the Grand Pre Marsh Body found itself in a bind when

a section of dyke on the easterly side of the marsh was gradually losing its protective foreshore. The danger of a break in the dyke became serious. At that time, it was impossible to get men to rebuild dyke according to the traditional method. R.H. Palmeter, the commissioner, arranged for the first trial of a large dragline-built dyke on the Maritime Marshlands.⁸⁶

In both of these situations, the farmers financed the use of machinery on their own, without government support. As a result, the Kamouraska experiment appears to have been a one-off, while the Grand-Pré initiative was the exception that proved the rule, as its farmers were relatively well-off, enabling them to introduce an innovation beyond the means of most marsh bodies. As part of their 1950 study of about 700 farms dependent on drained marsh, Gordon Haase and D.J. Packman pointed to the distinctive character of agriculture at Grand-Pré, where dairy farming shielded marsh owners from the decline in the demand for hay. As Haase and Packman put it, “the greatest concentration of fluid milk producers was in this area,” leading to an “intensity of farming operations that [was] reflected in the very high investment on the farms studied.”⁸⁷ By contrast, they found in other areas such as the Tantramar region of southeastern New Brunswick that a lack of resources resulted in “cultivation [that] was less intense.”⁸⁸



FIGURE 1.9 Dragline at John Lusby Marsh, early 1950s. *NSDA, Nappan, NS.*
Reproduced with permission of Nova Scotia Department of Agriculture.

With the decline of the hay economy, farmers had little incentive to improve their fields, and marsh bodies were hard-pressed to fund improvements as urban residents and absentee farmers, who had acquired land in the times of strong demand for hay, now abandoned their properties, so that their “failure to pay the assessment is fairly general.”⁸⁹ The widespread shortage of funds led the Special Beef Cattle Committee to recommend government assistance to give farmers access to “the best and most suitable type or types of machinery to be used for dyking and ditching.”⁹⁰

Beyond the question of funds, farmers might also have thought twice about investing in machinery, since the results at Grand-Pré were mixed at best. An MMRA report from 1949 indicated that the 1939 dragline experiment had

appeared very satisfactory, when the job was done. It was hoped that it would soon sod over and withstand erosion as well as the traditional sod-faced dykes. A few years proved otherwise. It was found necessary to erect plank facing along the most exposed end. The remainder was later faced with brush and stakes. On that exposed shore, it was questionable if the brush and stake work was really economical.⁹¹

Grand-Pré had a similar experience in 1944 with a dyke that was also built with a dragline, following “the same general procedure as in 1939 ... On the first impression, one might easily have said, ‘It’s a good job, very uniform and neat.’” Within a few years, however, it became clear that “in an exposed location, the dragline dyke could not stand up.”⁹²

In the late 1930s and early 1940s, as the experts made their way through the dykelands, marsh owners were understandably reluctant to embrace new dykeland management practices, which were both beyond their means and still unproven. Nevertheless, those same experts often took the view that it was the farmers’ unwillingness to abandon the traditional way of doing things, their local knowledge, that formed a significant part of the problem. For instance, on the issue of dyke building, J.W. Byers of the Nova Scotia Marsh Survey collected evidence from farmers who were convinced that dykes had to be constructed using centuries-old practices. They explained that it was necessary to “build a dyke in layers, each layer well tamped and packed before another layer is placed ... The whole process is one of hand labour and requires some genuinely skilled labour and good supervision.” He listened patiently to the marsh owners’ reservations about the use of dyking machines but dismissed them because “the only comments obtained were unfavourable.” While the experience at Grand-Pré

had shown that there were good reasons for such resistance to change, Byers was sure, although it was little more than an article of faith at the time, that there had to be “some method of building dyke by the use of a power shovel which would be cheaper and more satisfactory than the method of hand labour.”⁹³

More broadly, Byers was convinced that the farmers’ stubborn adherence to outdated practices was an obstacle to the rehabilitation of the dykelands. To be sure, he recognized that the farmers had been stuck with low incomes and high maintenance costs, leading some to conclude that “the marsh was more of a white elephant than an asset.” At the same time, however, he was convinced that blame also needed to be directed toward, what he called the “Attitude of the Marsh Land Owners,” an expression that was given prominence as the title to a separate section of his report. While Byers described some farmers as having been open to collaboration with his team, he viewed many others as resistant to any outside intrusion, pointing to occasions when “members of the [Marsh Survey] party were regarded as trespassers on private property.” Moreover, Byers observed that there were farmers who, when faced with deteriorating infrastructure, were ready to accept financial assistance as long as it came “without the advice of anybody.” Putting it quite baldly, he characterized farmers as having shown “a lack of interest [with] plenty of idle time in which they could drain and take care of their marsh.”⁹⁴

However, the single issue that most clearly showed the reluctance of some experts to trust the farmer’s local knowledge pertained to the centuries-old practice of tiding (sometimes called warping, flowing, or drowning), which saw marsh owners flooding their lands from time to time so that silt might be deposited to add to the soil’s fertility. They did this either by raising the gates on the aboiteaux at high tide or by creating a breach in the dyke to allow the tides to rush in. Farmers recognized that the practice was not without its costs, as the fields that had been tided with salt water would be unavailable for cultivation while the salt leached out. The Canadian naturalist W.F. Ganong observed that some proprietors did not engage in tiding because they “cannot afford to lose all return from their land for several years.” Nevertheless, he thought that this reluctance was shortsighted because of the fertility that the new mud brought to the land.⁹⁵

The Acadians engaged in tiding, as did newcomers from Yorkshire who were already familiar with the practice when they arrived in the region after the deportation.⁹⁶ Tiding was still going strong in the late nineteenth century, when J.R. Sheldon observed how tides were allowed to flow across the fields to “deposit a coating of finely granulated mud, which serves as



FIGURE 1.10 Repairing aboiteau after tiding, Falmouth Village Great Dyke Marsh Body, 1906. *Courtesy Philip Davison, Falmouth, NS.*

a dressing of the best possible manure, and operates for many years in this capacity.”⁹⁷ More specifically, the practice was followed at the experimental farm at Nappan, Nova Scotia, that had been designed to serve as a model for farmers across the region. For decades after the farm’s creation in 1886, “the land continued to produce good hay crops while the practice of opening the flood gates periodically was followed.”⁹⁸ Tiding was also employed in 1906 after the practice had been approved, at the first meeting of the Falmouth Village Great Dyke Marsh Body, by proprietors with land along Nova Scotia’s Avon River who wanted to receive “the benefit from the cutting of the two Aboiteaux and flowing of the said Dyke [i.e., drained marsh].” **Figure 1.10** shows the marsh owners reinstalling the aboiteau after the tiding operation. For his part, George Warren, the American whose report we have already seen, described in 1911 how the widespread use of tiding had “resulted in the creation of thousands of acres of fine land.”⁹⁹

More recently, Harry Thurston has explained how a neighbour on dykeland not far from Amherst “would [beginning in the 1950s] remove the clapper on the aboiteau to allow the tides to flood his hay field ... renewing the fertility of the soil.”¹⁰⁰ This was a mainstream practice that figured in all provincial statutes connected with the management of marshes, starting with the introduction of the first such acts in 1760 and continuing until the establishment of the MMRA nearly two centuries later.¹⁰¹

Tiding was so prevalent that the Nova Scotia Marsh Survey made a point of collecting evidence on the question from farmers in the late 1930s; not surprisingly, it found that “the general opinion is that tiding is beneficial, either for raising the level of the marsh or for enriching the soil.” Fairly typical was the McGowan Marsh Body (in the vicinity of Amherst), which reported: “After marsh has been overflowed the land is firmer to work on. The ditches and cross drains do not crumble and cave in so quickly. The hay is much better ... Tiding also kills weeds and helps to level the land, making it easier to drain.” Farmers differed, however, as to whether opening the aboiteau (as opposed to creating a breach in the dyke) was the best way to achieve the desired end. The Embree Marsh Body (adjacent to the McGowan Marsh) argued that raising the gates on the aboiteaux did not allow “volume enough of water to come in.”¹⁰²

Very few of the reporting marsh bodies categorically responded that tiding as a procedure should be abandoned, but one that did received high marks from the Nova Scotia Marsh Survey for eschewing the practice. The Barronsfield Marsh Body, also in the vicinity of Amherst, was described positively in terms of the upkeep of its aboiteaux and the quality of its drainage. In his report, Byers tellingly concluded that “this marsh is among the best surveyed, which explains the owners’ objection to tiding.” More generally, Byers viewed tiding with skepticism. He recognized that “it is commonly held that there is great advantage to be had from allowing the tide to flow in over the marshes and so to enrich the soil by deposit of fresh mud.”¹⁰³ From his professional perspective, however, there were problems: “Broadleaf marsh can be improved by mud deposit, but if the deposit is too heavy there will be a loss of crop for a year or two. On the English hay marsh, the salt water will kill the hay and make plowing and re-seeding necessary, so the owners of such marshes do not believe in it.”¹⁰⁴

By far, the strongest opposition to tiding came from E.S. Archibald, the director of the Dominion Experimental Farms, whom we met at the beginning of this chapter during his 1943 tour of the dykelands. Born in Nova Scotia in 1885, Archibald quickly rose through the ranks of the experimental farms, becoming its head in 1919, a position that he held until

1951. Interested in bringing science to Canadian agriculture, he “raised the educational standards of experimental farm staffs by hiring scientists with advanced degrees and by promoting educational leave for others.”¹⁰⁵ During his leadership, he played a key role in establishing the Prairie Farm Rehabilitation Administration (PFRA) in 1935, an agency that he headed for its first years and that, as we will see, provided both a model and personnel for the MMRA.¹⁰⁶

Archibald would be the single most important individual associated with the marshlands dossier in Ottawa during the 1940s. In this context, he minced no words in his correspondence about his low regard for the marsh owners’ practices, writing at the start of the decade to G.S.H. Barton, his deputy minister, about how “the methods used in handling dykes in Nova Scotia and New Brunswick are still very primitive.”¹⁰⁷ More specifically, he could not understand the persistent use of tiding, and so reacted with horror when it came to his attention in 1940 that W.D. Davies, a senior official with the federal Department of Agriculture, who was in the region along with many others to explore how beef cattle might be re-introduced, had reported positively about the practice. Davies observed: “Where the dykes have been broken and a new sediment has been deposited by the tide the quality of the hay is very good.”¹⁰⁸ In response, Archibald wrote to Barton, wondering whether “Mr. Davies had been reading Longfellow’s *Evangeline*, in which it is stated that at certain seasons the dykes were opened to allow the tides to wander at will over the meadows.”¹⁰⁹ More precisely, Longfellow wrote:

Dikes, that the hands of farmers had raised with labor incessant,
Shut out the turbulent tides; but at stated seasons the flood-gates
Opened, and welcomed the sea to wander at will o’er the meadows.¹¹⁰

Longfellow’s epic poem, which romanticized Acadian life before the deportation, was the antithesis of the new evidence-driven approach championed by the experts examining dykeland farming practices. In this context, Archibald’s choice of this particular device to criticize Davies, and by extension the farmers, was a harsh rebuke. But Archibald went further, taking Davies to task for being so misinformed:

In the early days of building these marsh lands, [tiding] might have been the practice, but those of us who have had to handle dyke lands which have been flooded by tides because of broken aboiteaux and dykes realize that the saline deposit of mud from the tides just makes it impossible to do much

in the way of bringing the land back to hay or crop production for a period of two years or more.¹¹¹

As we have seen, W.F. Ganong recognized that the intrusion of salt into farmers' fields was a real problem. He suggested, however, that damage to the soil could be reduced "by admitting only a little tide at a time, or by admitting it only in late autumn after the ground is frozen, when the grasses are little injured by it."¹¹² Indeed, nearly all of the respondents to the Nova Scotia Marsh Survey reported that tiding should take place in the fall or in the spring, "preferably when lands are wet so it will not salt badly." These farmers indicated that tiding was not some folk practice that was employed arbitrarily, but this did not impress Archibald, who maintained that farmers could best "raise their soil fertility through the use of chemical fertilizers and legumes."¹¹³

Closely related to the question of tiding, Archibald also advocated for a radical rethinking of where aboiteaux should be constructed. In his report of the findings of the Marsh Survey, Byers estimated that each aboiteau cost at least \$2,000, no small sum for marsh owners with limited means, and he went on to observe that "there is a question on whether it is advisable to run dykes along the sides of a creek and have a small aboiteau well up the stream, or to have a large aboiteau near the mouth of the creek and so gain more land along the side of the creek."¹¹⁴ In the latter case, fewer aboiteaux would be required as entire creeks, or even rivers, could be cut off from the tides, making the dykes and aboiteaux upstream superfluous. In the process, tiding would become impossible as marsh owners would no longer be able to open specific aboiteaux or sections of dykes to allow the tides to enter. Archibald was the first of the experts to weigh in on this matter, in 1942 encouraging Barton to consider "the construction of dams across drainage channels [that] might save many miles of maintenance of dykes. These are engineering jobs which I think require pretty special study."¹¹⁵ A few weeks later, writing once again to his deputy minister, Archibald reinforced his conviction that the tides could be mastered through application of the principles of "modern engineering."¹¹⁶

By consistently vaunting the application of scientific knowledge while denigrating the practices of farmers, Archibald represented what James Scott had in mind when he referred to experts who "regarded themselves as much smarter and farseeing than they really were and, at the same time, regarded their subjects as far more stupid and incompetent than *they* really were."¹¹⁷ Of course, experts did not *have* to dismiss local knowledge. Indeed, Scott pointed to the ideal of integrating expert and more experiential

knowledge, what he called “*mētis*.” For her part, Tina Loo referred to the shaping of expert knowledge to accommodate local circumstances as “high modernist local knowledge.”

In the case of the dykelands, we have an example of the sort of thinking that Loo had in mind in the assessment of the situation in 1943 by Ben Russell, at the time a senior consulting engineer for the PFRA, where he had developed expertise in “the construction of stock-watering dams and garden-watering dugouts on individual farms within the dust bowl area.”¹¹⁸ Archibald wanted to consult with someone who had “wide experience in drainage and irrigation,” and so he brought Russell to the region, perhaps expecting confirmation for his view; but if that was his hope, he was sorely disappointed.¹¹⁹

Russell came away from his trip east with considerable respect for the marsh owners, particularly those whom he described as the “old time practical dyke men,” who had distinguished themselves through their

skill and hard work ... All of the works, such as dykes, aboideaux, and drainage ditches were designed and constructed without any assistance from engineers, and ... with little knowledge of the conditions to be met such as freshwater discharge, reservoir capacity ... The wonder is that the works have so long performed the service for which they were constructed. All respect is due to these old builders for the excellent service they performed.¹²⁰

This respect did not prevent Russell from suggesting better ways of operating when they presented themselves. For instance, he was critical of the marsh owners for resisting the use of modern tools “such as topographical surveys, aerial photographs, and other necessary data.” Russell recognized that “it is quite possible with the local knowledge of the individual parcels to put in drainage systems that will carry off surplus waters without the aid of any comprehensive surveys, [but] it is not possible to locate the most economical and best systems of drainage or to determine the best location of dykes, aboideaux, and other structures, without such maps.”¹²¹ In this case, he was not suggesting the abandonment of long-standing practices, but rather their improvement through the integration of new technology within existing local practices, which was at the heart of *mētis*.

In terms of tiding, Russell listened carefully to various perspectives. The marsh owners told him how “some of the marshes have deteriorated and require tiding to refertilize the soil.” As for the experts, referred to as “agriculturalists,” Russell observed that they “did not agree with [the farmers’ views], and are inclined to think that good drainage is all that is necessary

to bring [the fields] back into production.” Russell recognized that “it will be difficult to convince the present owners that tiding is not the most economical and best means of restoring the fertility of these poorer lands.” In discussions with dyke commissioners, he learned how the tide could be let onto the fields in the fall with little risk of damage from the salt, leading him to conclude that farmers should be encouraged to continue the practice, if they were so inclined. In fact, he went so far as to recommend that “in the design of aboideaux in future the gates should be large enough and so designed as to be readily removed or raised in a frame to let the tide go by regulated as required.”¹²²

Russell also parted ways with Archibald in terms of the construction of structures across the region’s rivers, which would have ended tiding. Once again, he listened to people on the ground, in this case those involved with experiments concerning tiding who concluded that “it is a mistake to permanently shut off the sea and that every means should be provided so that the tides can flow back and forth through the main streams and drainage channels.”¹²³

In a sense, Russell’s report provides a glimpse of what might have been if the experts in the region had more carefully listened to the marsh owners instead of dismissing them. Perhaps Russell was able to look at them differently because he was not from the area, and had not developed fixed views about the farmers. In any event, he returned to the Prairies, leaving the views of individuals such as Archibald to dominate. Convinced that they had nothing to learn from the marsh owners, these experts held sway as government intervention in the marshlands began to take shape.

PLUGGING THE HOLES IN THE DYKES

The various expert studies were preliminary to governments (both federal and provincial) taking action to *rehabilitate* the marshlands. This expression was in widespread use in numerous contexts in various national settings at the time, often applied in reference to the transformation of both specific environments and the people who inhabited them. In this particular case, what was the point of returning dykelands to their drained (second-nature) state if farmers would be left to apply the same, primitive practices to maintain them?

The term was used in both of its senses in 1939 by H.R. Hare in a study of the Tantramar marshlands of southeastern New Brunswick. After reviewing both the deterioration of the land and the varied practices of the

farmers, Hare paid special attention to “the personnel of the residents of this district,” encouraging further study to “develop a rehabilitation program for these farmers,” phrasing the matter so that it applied to both the restoration of the marshes and the re-education of the owners. For his part, Archibald, writing about the dykelands in 1944 in the *Canadian Geographical Journal*, seemed prepared to have the current marsh owners replaced by individuals returning from war, observing how “the rehabilitation of returned men and of agriculture, after the war is over, would seem to be closely associated problems.”¹²⁴

In this context, Archibald led the charge for federal action. He managed to convince his minister, J.L. Gardiner, to support an investment of \$200,000, which appeared modest compared to the \$6 million already invested in the PFRA by the early 1940s. Nevertheless, on three separate occasions in 1942 and 1943, the Treasury Board rejected these requests. Archibald had a hard time understanding how a project grounded in “modern engineering” could be turned down. For his part, Gardiner explained how his colleagues viewed the matter as a provincial concern, and more specifically a matter for the marsh owners who were responsible “for maintenance for the marsh lands, dykes, and drainage which is charged up against the land itself ... I shall be pleased to have the matter further discussed but I am afraid that the conclusion arrived at will be the same as that reached in the past.”¹²⁵ The best that Gardiner could do was to secure \$10,000 “for the purpose of making a survey of the marshland problem in the Maritime Provinces,” as if it had not yet been sufficiently studied.¹²⁶

This was a hard pill for the marshland experts to swallow. The New Brunswick and Nova Scotia legislatures passed motions in early 1943, noting that Ottawa had already “recognized like obligations in connection with reclamation projects in Western Canada and elsewhere in the Dominion.” All that the Nova Scotia House of Assembly asked was that funds be appropriated “for the opening up of the main waterways and for the construction of the foundation of the dyking system, upon condition that private owners will take care of the lateral [smaller] ditching and the secondary dyking necessary to complete the work.”¹²⁷

It soon became clear, however, that one of the major obstacles to securing federal funds was precisely the suspicion that the farmers could not be trusted to hold up their end, a conclusion that naturally flowed from the studies that questioned the owners’ practices. This suspicion was on display in April 1943 during hearings of the House of Commons Special Committee on Reconstruction and Re-establishment, which brought in

numerous witnesses, including Archibald and the premiers of the two pertinent provinces, who made the case for rehabilitation. However, their arguments did not seem to convince several MPs from New Brunswick. Douglas Hazen wondered: "If we put these dykes back and allow every farmer to go on his own initiative are we going to be any better off?"¹²⁸ For his part, Douglas Hill had no confidence in returning the lands to the marsh bodies. He wanted to avoid

letting your little local associations carry on in the haphazard way they have been doing in past years ... We must have some competent authority responsible for the maintenance of those lands once the improvements have been made, or replaced, because these individual farmers have shown by their practice during the past years that they cannot be relied upon to provide proper and adequate maintenance.¹²⁹

Similar concerns about the farmers' reliability were apparent in hearings held across Nova Scotia a few months later in connection with the province's Royal Commission on Provincial Development and Rehabilitation.¹³⁰ Particularly revealing was an exchange between the commissioners and Roy DeWolfe, who owned land that formed part of the Bishop Beckwith Marsh Body near Kentville, where one of the hearings was held. DeWolfe was pressed by his questioners to admit that the dykeland problems were "probably due to neglect by the farmers." This admission led the chair of the commission, R. MacGregor Dawson, to observe: "We have no assurance that if [the land] was reclaimed the same thing might not happen again."¹³¹

But the clearest indication of how low the farmers' stock had fallen came only a few weeks after the Royal Commission wrapped up its hearings in Amherst. In early September 1943, most of the experts who had testified in one way or another over the previous years reassembled in the same Nova Scotia town for what amounted to a summit meeting regarding the future of the marshlands. This was the meeting described at the beginning of this chapter that had brought Archibald to the region and enabled him to take a tour that brought home the severity of the crisis. At the same time that the experts were meeting, storms and high tides were creating a situation that Archibald described as "very urgent." In that context, he regretted that "there is not any money available to assist the marsh owners in getting drag lines where ever they may be available in the Maritime Provinces with experienced operators to immediately patch the gaps in these dykes."¹³²

The meeting, chaired by Archibald, brought together roughly fifty men. There were delegations from the federal, New Brunswick, and Nova Scotia governments that included both high-level bureaucrats and agricultural engineers as well as individuals connected with the Nova Scotia Agricultural College in Truro, the experimental farms in the region, and the PFRA.¹³³ In addition, Archibald noted the presence of “a strong delegation of practical marsh owners,” the modifier underscoring the fact that their knowledge came from experience, and not technical training. Archibald conceded that the marsh owners “made some of the strongest contributions” at an opening session. They “considered a broader approach to marsh land engineering problems and some had some small experience in mechanizing of dyke building and ditching.”¹³⁴ Nevertheless, this session also included repeated condescending reference to farmers who practiced tiding, and ended with the experts and the “practical marsh owners” going off to continue their conversations separately.

With the farmers in another room, the professionals and bureaucrats were tasked with coming up with a framework for emergency dyke repair, the system that continued until creation of the MMRA.¹³⁵ The repairs would be watched over by what came to be known as the Maritime Dykeland Rehabilitation Committee, which would consist of four engineers, four marsh owners, a soil specialist, and an official from the federal Department of Agriculture. There was some appropriate recognition that specific marsh owner concerns might not be adequately handled by this committee, and so it was decided that there should also be “regional committees” of owners who would be consulted “when considered necessary.” However, it was clear that such consultation was not central to the process.¹³⁶

More substantively, the Dykeland Rehabilitation Committee was responsible for devising a policy for the rehabilitation of marshlands so that costs would be divided between Ottawa, the provincial governments, and the private property owners. The committee would collect detailed information about each marsh body and “report on which are worthy of reclamation.” It was also supposed to look into the means for introducing heavy machinery and for drafting new legislation to govern the marshes, the latter suggesting that the local autonomy that had been at the heart of the existing legislation might soon be challenged.¹³⁷

As for the farmers, whose interests were central to the experts’ discussions, the minutes of their separate meeting were short on details. In the only concrete proposal that was recorded, the marsh owners called for creation of a committee “consisting of one member from each county

interested ... to make recommendations as to the needs of rehabilitation.”¹³⁸ When the two groups reassembled to close the meeting, all of the proposals from the two groups were accepted, although it remained unclear if, or how, the proposed marsh owners’ committee would exercise much influence. In any event, the paper trail provides no reference to the operations of this committee once it had been established.

WITHIN WEEKS OF THE meeting at Amherst, the Dykeland Rehabilitation Committee was up and running, even though it had not yet been provided with a budget. It operated out of the experimental farm in nearby Nappan, under the direction of W.W. Baird, the farm’s superintendent since 1913. From its creation as one of the original experimental farms, the Nappan facility had had a close connection with dykeland farming. Its original property included seventy acres of drained marsh, where a variety of “problems associated with the protection, drainage, cultivation, fertility and cropping of these soils [were] studied.”¹³⁹ For instance, between 1922 and 1931, the farm set aside “several marshland flats, of approximately one acre each ... to measure the response of crops to various commercial fertilizers, manure and lime”; the results indicated that improved practices could “substantially increase the average yields of crops grown on these areas.”¹⁴⁰ During a visit to the farm in 1949, just as the MMRA was being created, the deputy minister of agriculture observed that “production on the marsh lands at Nappan have been developed to a point where, if it could be duplicated on even a portion of the marsh lands in that part of the country, the basis of successful livestock production would be established.”¹⁴¹

While the experts at Nappan had studied marshland farming for decades, there is no evidence that they were involved in transferring this knowledge to the farmers – that is, until the dykes and aboiteaux had deteriorated and emergency action was required.¹⁴² In that context, with a small budget provided by Archibald, Baird’s committee hired thirty-five students from the “marshland” universities, Acadia and Mount Allison, to go out into the field to prepare an inventory of emergency work that needed to be done, in the process providing further detail about the extent of the crisis.¹⁴³ For instance, at Harvey Bank in New Brunswick, along the Shepody River (where the MMRA would build a dam in the early 1950s), there were seventeen farmers who

depended almost entirely upon the marsh for hay. As the tide came over the marsh in July of this year practically no hay was cut ... The loss of this

marsh body means practically the loss of an agricultural community as with their main source of livestock feed gone these farmers will be forced to leave their farms and seek employment elsewhere.¹⁴⁴

According to the dykeland committee, 600 feet of dyke were out at Harvey Bank, but this was “spread out over a considerable length with gaps ranging from fifteen to seventy-five feet ... In many cases, these dykes are right on the shore and they lack the foreshore which is so necessary if dykes are to withstand the rush of the tide.” To deal with the crisis, at least temporarily, Baird’s committee recommended “the construction of approximately 1,700 feet of new dyke which will cut off the exposed sections and repairs to another 215 feet where exposure is not so severe.”¹⁴⁵

The cost for this particular project, one of twenty-four that Baird identified for immediate attention, was \$4,000, and the total for all of the projects was roughly \$32,000, but to cover those costs the federal government needed to appropriate funds. Even by 1943 standards and in the midst of a war, this was not a large sum, the expenditure for the PFRA (to take one pertinent example) reaching nearly \$2 million in 1942–43 alone.¹⁴⁶ Nevertheless, Ottawa’s support could not be taken for granted given the earlier unwillingness of the Treasury Board to approve recommendations from the minister of agriculture. In 1942, J.L. Ilsley, the minister of finance, who was also an MP from the region, had blocked efforts to get federal funds for dyke repair, viewing them as impossible to “undertake in time of war.”¹⁴⁷

Indeed, throughout late 1943 and into 1944, Ilsley refused to commit any federal support, in spite of persistent lobbying by Archibald, who explained to him how “every day this construction work is delayed the loss becomes more serious through increased deposits of silt on productive land, the washing out to sea of valuable dyke lands, and the further destruction of dykes and aboiteaux on adjacent marsh bodies.”¹⁴⁸ Archibald and his colleagues tried to convince the minister that the situation could be considered a “war emergency,” because the flooding of the marshes stood to “jeopardize the highways and railroads” causing “a serious setback to the movement of our troops and war material.”¹⁴⁹ But even this did not do the job.

The logjam was broken only in the spring of 1944, as crops for that season were already in jeopardy, when the two provinces agreed that they would put up funds that would be matched by Ottawa. The original proposal along these lines, supported by the minister of agriculture, but not by Ilsley, would have created a fund of \$400,000.¹⁵⁰ In the final plan,

however, the federal contribution was set at one-third of a fund totalling only \$50,000, the other two-thirds paid in equal parts by the provinces and the marsh owners, most of whom would have been hard-pressed to participate given their straitened circumstances. Even with this drastic reduction in Ottawa's financial exposure, the federal government insisted that this was a one-off justified by "the extraordinary circumstances of war emergency" and authorized by the War Measures Act.¹⁵¹ As Ilsley explained to the Nova Scotia minister of agriculture: "It was with some reluctance that I agreed to [the 1944] expenditures and there is even less reason for following the procedure for another year."¹⁵²

For skeptics such as Ilsley, the evidence from the 1944 construction season was mixed at best. The Dykeland Rehabilitation Committee reported that it repaired over 25,000 feet of dykes and aboteaux, in the process keeping 5,800 acres in production. For instance, in the case of the Dentiballis Marsh in Nova Scotia's Annapolis Valley, where the dyke had given way in 1943, resulting in the loss of most of the hay crop, the committee helped fund the repair of 300 feet of dykes that brought 283 acres back into production.¹⁵³ Oddly, however, the committee's own data showed that the entire area at Dentiballis would "probably [have been] protected by farmers unaided." For all of the Nova Scotia projects, the committee reported that nearly 90 percent of the "reclaimed" land could have been protected by the farmers without any government aid.¹⁵⁴

These data had relatively little basis in fact, because as J.W. Byers, formerly of the Nova Scotia Marsh Survey and now serving on the committee, observed: "It is difficult to estimate what work would have been done if government aid had not been available."¹⁵⁵ Nevertheless, the information underscored the long-held sense that the farmers were somehow trying to game the system and were taking government funds when they could have been using their own, which flies in the face of the facts on the ground. Archibald wanted the farmers to put up one-half of the costs for repairs (as opposed to the one-third in 1944) were the program to continue, and even then only to "meet real emergencies ... I think that the arrangement for this year [1944] was decidedly over-generous to the farmers."¹⁵⁶ For his part, Ilsley viewed the arrangement as having encouraged "the dyke owners to refrain from doing any work at all on their dykes until they are assured that government will undertake to bear two-thirds of the cost."¹⁵⁷ Even Grand-Pré, usually viewed as the model marsh body, was the object of suspicion because it went ahead and did work on its own, without government approval, according to Byers, "probably hoping that the rumour of government aid would be true."¹⁵⁸ For his part, J.A. Roberts, who sat

on the Dykeland Rehabilitation Committee, asserted that the farmers were lazy, claiming in an interview that “half the battle was getting them to show up at the same time.”¹⁵⁹

This cynicism stands in contrast with the perspective that W.W. Baird developed from his direct experience with the deterioration of the dykes and aboiteaux as chair of the dykeland committee. Because he doubled as superintendent of the experimental farm at Nappan, Baird’s hands-on involvement with the first year of the emergency repair program was chronicled in the daily journal that documented all activities at the farm, including the comings and goings of its staff. Starting with the September 1943 meeting that led to creation of the Dykeland Rehabilitation Committee, the journal frequently noted that “Mr. Baird was away.” In early May, he met with the provincial ministers of agriculture at Amherst, from where they boarded the train to travel to Ottawa on “marsh business.”¹⁶⁰ Baird was also out in the field, most notably at Harvey Bank in New Brunswick, where he travelled on numerous occasions, his committee having warned that “the dykes might go with the next high tide.”¹⁶¹

Having seen the situation on the ground, Baird not only defended the work carried out in 1944 but imagined an even more ambitious program for 1945. He proposed that Ottawa contribute \$300,000, arguing that “at least 15% to 20% of our dykes and aboiteaux are ready to go at any minute, should a bad storm and high tides come together.” In addition, there was the matter of projects that had been started in the program’s first year but not completed.¹⁶² Byers explained at the end of 1944 that in Nova Scotia “about 800 acres of dyke land is out to tide because the work could not be completed, or because it was not considered economical.” He observed that at Belleisle “about half the job was done, but could not be finished”; at Kennetcook “the work was almost completed and then lost through an extra high tide”; and at Card’s Beach “the ground was too soft for a bulldozer and it was decided that the project was not economical at present.”¹⁶³ The situation was even worse in New Brunswick, where there was less dykeland to deal with than in Nova Scotia, but a larger area of land (1,000 acres) was still “out to tide because the work could not be completed.”¹⁶⁴

Baird’s expanded program was a non-starter for his superiors in Ottawa. Archibald wrote to his deputy minister early in 1945: “Mr. Baird’s estimates are entirely beyond reason, and I am sure that Mr. Ilsley will not consider them. I am, however, trying to get Mr. Ilsley to consider a small amount equivalent to what is provided in this year’s special war appropriation.”¹⁶⁵ For his part, Ilsley, in spite of his serious reservations about helping feckless farmers, recognized that “both the Dominion and the Nova Scotia

governments might be open to serious criticism if the money already spent were to be lost because of failure to bring the work to completion.”¹⁶⁶ In the end, Ottawa found it difficult to get out of the business of supporting the repair of the dykes and aboiteaux once it had started; and so it paid gradually increasing annual contributions, to be matched by the provinces and the marsh owners, each year hoping that it would be the last before a more permanent system was put in place.¹⁶⁷

Baird was proud that between 1944 and 1947 his dykeland committee had managed to complete 130 projects, resulting in the construction of over twenty-seven miles of dykes and aboiteaux, but in spite of this success almost everyone connected with the yearly appropriations for emergency repairs, what the federal minister of agriculture called “hit and miss methods,” recognized that a more lasting solution was required.¹⁶⁸ These annual appropriations were never designed to replace the weakened protective structures, which continued to require repair, new breaks emerging even as the committee was fixing older ones. For instance, Archibald expressed unhappiness in July 1945 that funds were not immediately available to solve an emergency situation connected with a failing aboiteau along the Canard River in Nova Scotia:

It is a pity that the money is not available now ... so that the work might be proceeded with during the month of August which is a good time for construction in so far as tides and weather are concerned. If this dyke does go out it will probably cost at least two or three times to again restore it [than if] the new sluice were put in immediately.¹⁶⁹

Writing along the same lines, Baird noted “that the cost of repairs increases to more than double if repairs are not made promptly after breaks.”¹⁷⁰

A further complaint about the system of emergency repairs came from Charles Logan, one of the few marsh owners whose voice emerges from the archival record. Logan, a farmer from Amherst Point, where he served for sixty years as an official of the marsh body, was involved in all of the discussions leading to the creation of the dykeland committee, on which he was now a member. In June 1946, he reported to A.W. Mackenzie, the Nova Scotia minister of agriculture, about a

bad break in what is known as the McGowan Body of Marsh at Amherst Point. About 500 acres of land is inundated and a serious loss of crop will result. A small aboiteau was carried out, and usually when the marshes are covered at this time of year it damages our crop for two years at least; and

our dykes on this particular body are in a bad state, and due to the scarcity of labour ... men who can do this kind of work are simply impossible to get at any price.

Since a new appropriation of funds had not yet been approved by Ottawa, Logan was at his wits' end, fearing that unless some arrangement was arrived at soon, "we will lose our crop entirely and losses will run into thousands of dollars."¹⁷¹

The marsh owner received little satisfaction from Mackenzie, who bemoaned the fact that he could only pass the news on to his counterpart in Ottawa. He observed that Logan's letter was "quite typical of what I have been receiving for the past year or more. Such breaks as these are bound to occur until we can do a complete repair job on those outer dykes," but such repairs were outside the scope of the ad hoc arrangements. Mackenzie threw up his hands, advising Logan that for the moment they were stuck with the "temporary ... three-way scheme."¹⁷²

Undeterred, Logan then turned to Ilsley a few weeks later, pointing out to the finance minister that "we were promised at the time of the organization [of the Dykeland Rehabilitation Committee] that our [permanent] marsh reclamation scheme would be sponsored by the government as a Post War measure. Three years have passed ... and the dykes have been badly battered." He urged "that a decision be made at the earliest possible date," but in 1947 Logan was still waiting.¹⁷³ This time he wrote to Archibald, explaining how "our marsh owners are getting discouraged waiting for results." Logan pointed out that "owners of marsh at the head of the Bay of Fundy are the only people in Canada that are cultivating land below sea level ... In Holland under the same conditions the State maintains both the dykes and drains (aboiteaux). Our government should give us the same consideration." Recognizing that Archibald had been Ottawa's point person for the dykeland dossier, Logan closed: "I am appealing to you as you were entrusted with our organization three years ago."¹⁷⁴

In fact, Archibald claimed in 1945 (unknown to Logan) that he had already prepared a draft of a "Maritime Rehabilitation Act," but it was being held up until "the provincial authorities come to grips with the situation."¹⁷⁵ Over the following three years, until legislation was finally passed creating the MMRA, Archibald saw the provinces as the problem, engaging in further finger pointing while drained marshland remained out to sea. If the federal government were to take on the responsibility for a permanent repair of the dykes and aboiteaux, Archibald wanted to be

sure that the marsh owners, already guilty of negligence in his eyes, would be held accountable by the provinces for the maintenance of drainage on their lands. This was a matter that fell under provincial jurisdiction, and so, as he put it in 1946, he kept “hammering [the provinces] to review the two provincial Dykeland Acts and bring them up to date, but as far as I know, nothing has been done. The Provincial Dykeland Acts are about as antiquated and useless as they can be.”¹⁷⁶

Growing increasingly negative about the situation, Archibald took the marsh owners to task once again eighteen months later, noting how they needed to have “a definite sense of responsibility in the proper ditching, the renewal of the fertility of the marshlands through the use of commercial fertilizers.” He went on to describe how he had spent the summer of 1947 visiting the region but came away disappointed: “I could see no extensive improvement over previous years. The lack of drainage on those marshlands, which are still adequately protected by dykes and sluices, is an evidence of neglect, and this is certainly evidenced by the low yields.” Although Archibald had been dealing with farmers such as Charles Logan for years, he now tarred them all with the same brush, and saw their redemption only through their organization into effective marsh bodies by means of new provincial legislation, “designed to meet modern needs.”¹⁷⁷ Archibald and his colleagues wanted an entirely new structure that would force farmers to commit their resources to the upkeep of their lands, as if a lack of will had been the problem in the past. In the process, the centuries-old tradition of the marsh owners’ control of their lands and the structures that protected them was about to come to an end.

MARITIME MARSHLAND REHABILITATION ADMINISTRATION

The legislation leading to creation of the MMRA was finally presented to Parliament in the spring of 1948. In providing this name for the agency that would be responsible for the marsh landscape for the next twenty years, Ottawa turned its back on the terminology that had been used for the temporary repairs. By tagging that committee as one looking after “dykeland rehabilitation,” it was made clear that the object of attention was the landscape created by the dykes, leaving no question that this was second nature. When that name was replaced by a focus on rehabilitating “marshland,” it almost sounded as if the government were going to return

the marshes to their pre-European form, when in fact the goal was to ensure that the drained landscape would remain intact. Calling this landscape “marshland” was to naturalize it, conflating first and second nature. Indeed, J.S. Parker, the founding director of the MMRA, recognized the difference in terms when he made reference to “the marshlands, or dykelands as perhaps they should be called.”¹⁷⁸

More substantively, the act creating the MMRA provided the framework for “the construction and reconstruction of dykes, aboiteaux, and breakwaters.” Ottawa was prepared to put up over \$3 million, although the bill would run to more than \$30 million by the time the MMRA wound up its operations in 1970, at which time it handed off the responsibility to the provinces, as laid out in the act. However, this federal support was conditional on the passage of provincial legislation committing the provinces to oversee the “reconditioning and construction” of the system of drainage ditches on the inland side of the dykes, “either with or without the assistance of the marshland owners.”¹⁷⁹ At the very least, Ottawa wanted to be sure that it would not be stuck having to force the irresponsible farmers to shoulder their share of the burden, a concern that came out loud and clear when the House of Commons debated the bill.

This debate began inauspiciously when the MPs had difficulty focusing on the subject at hand. Following introduction of the bill, the House became a committee of the whole and immediately turned its attention to flooding in British Columbia, soon moving on to comparable problems in Ontario. After lengthy interjections along these lines, the committee chair remarked: “I must call attention to the fact that what we have before us is a resolution to assist the provinces of Nova Scotia, New Brunswick, and Prince Edward Island.”¹⁸⁰ Discussion then returned to British Columbia, before the merits of the MMRA legislation were finally addressed.

In presenting the legislation to the House, the minister of agriculture expressed Ottawa’s willingness to take the lead, claiming that the dykes would never have existed without a strong central authority. As Gardiner put it: “If it were to be done at all it had to be done on the same basis as the French did it in the first place and as the British did later on; it had to be directed and partly financed by some central authority and put into shape where the local people could handle it.”¹⁸¹ This was a gross distortion of the record, which was marked, as we have seen, by an absence of central control and by the dominant role assumed by local marsh owners. But that narrative did not suit the mood of the time, in which both levels of government viewed the farmers as part of the problem and centralized control as the solution.

In that context, Douglas Hazen, an MP from New Brunswick who had been involved with the marshland dossier during the 1940s, reminded the House about the farmers' shortcomings:

For some years past the owners of the land failed to keep up these dykes; they failed to look after their own property, and as a result the dykes went down ... Now if public moneys are to be voted and spent on erecting these dykes and putting these lands in shape for their owners, I think it is essential that arrangements be made to see that the owners of the land keep up the dykes after they have been built.¹⁸²

These arrangements were laid out in the largely identical pieces of legislation passed in Fredericton and Halifax in 1949, most of whose provisions pertained to a new system of marsh bodies.¹⁸³ While such organizations had been operating under provincial legislation that was first introduced in the 1760s, no federal or provincial support for rebuilding the dykes and aboiteaux would be provided to a marsh body unless it committed itself to an entirely new set of rules, on the face of it starting from square one. Marsh owners, even in a situation such as at Grand-Pré, where the marsh body had existed since the Acadian deportation, needed to petition the provincial government stating that they were prepared to accept the new regime. The petition needed to have the support of two-thirds of the marsh owners, holding the majority of the land within the area to be protected. Once the petition was accepted by the province's newly created Marshland Reclamation Commission, the marsh body would no longer be subject to the older rules and regulations, which people such as Archibald had found to have been at least partly responsible for the failure of the owners to keep up their lands.

In keeping with that sentiment, the new rules significantly reduced the range of activities to be watched over by the marsh bodies. For instance, in Nova Scotia the previous legislation from 1900 described at great length how bodies could protect their lands from the tides through construction of "any dyke, aboiteau, weir, dam, [or] breakwater"; could route water off their lands and toward the aboiteaux by way of "any drain, ditch or water-course"; and could engage in tiding, by allowing entry of "water for the manurance, building up, and improvement" of the dykelands.¹⁸⁴

By contrast, the new provincial legislation did not specify that the marsh bodies were solely responsible for any of the works that had for centuries been their concern. Instead, the province was empowered, on its own or in partnership with another body, "to construct, recondition, repair, maintain,

conduct or operate works” pertinent to dykeland farming. In practice, this meant that the province would work with the MMRA to reconstruct the dykes, and with the marsh owners to look after the drainage ditches. As for tiding, it was not even mentioned in the 1949 provincial legislation, which was perhaps to be expected as the marsh owners’ knowledge was being marginalized.¹⁸⁵

While the activities for which the new marsh bodies were responsible were reduced, the mechanisms for managing their resources were increased, a change entirely in keeping with the often-expressed view that marsh owners had long been cavalier in applying their resources to the job at hand. As in earlier versions of the Marsh Act, the new legislation detailed how property would be evaluated, rates would be set, and fees would be collected; however, the legislation also mandated marsh bodies to establish reserve funds. Archibald and his colleagues were convinced that the old marsh bodies had been incapable of dealing with emergencies because they had failed to save, literally and figuratively, for a rainy day. In 1947, he criticized the Nova Scotia marsh legislation that “practically prohibited any marsh body from setting up a reserve to meet any emergencies in repairs and replacements.”¹⁸⁶ In order that the marsh owners become ants instead of grasshoppers, the new legislation required that 1 percent of the assessed value of all dykeland be placed annually in a reserve fund, continuing until the fund equalled half the value of the property in the marsh body.

In the case of the Grand Pre Marsh Body, with property assessed at slightly over \$44,000 in 1950, at least \$440 would need to be set aside annually until the reserve reached \$22,000, no small amount for a marsh body of the time, or, to put it another way, more than the entire federal appropriation for emergency repairs across the region at the start of that operation.¹⁸⁷ As Austin Taylor, the New Brunswick minister of agriculture, noted in terms of his own province’s legislation, marsh owners would not on their own “provide for taxation until damage was done; therefore the reserve fund would take care of this. In a depression, many marshowners would leave repair work undone as they could not pay the bills. By setting up the emergency fund, this problem would be met.”¹⁸⁸ There was a certain internal logic to Taylor’s argument if farmers could actually find the necessary funds – but that was a very large *if*.

In the end, the marsh owners had little choice but to accept the new rules of the game, which offered them freedom from sole responsibility for the construction, repair, and upkeep of their dykes, aboteaux, and drainage ditches in return for closer scrutiny over their now much more limited affairs. As a result, every set of marsh body minute books that I

could find indicated substantial, and sometimes unanimous, support for their reconstitution, which in certain ways made little difference in terms of day-to-day affairs. For instance, the individuals who directed the Denti-ballis Marsh Body under the old regime were the same as those who did so under the new one, the only change being a renaming of the board of commissioners as the executive committee, both of which were elected annually by the proprietors.¹⁸⁹ The seamlessness of the transition was similarly evident at Grand-Pré, whose proprietors met on several occasions over the course of 1949 and early 1950 to weigh the consequences of the new regime. They met for the last time as the “Grand Pre Dyke” in March 1950. In its last bit of business, the clerk announced that all outstanding rates needed to be paid immediately because debts “are not to be carried over to the new setup.” With that, the meeting adjourned, and immediately “a meeting of the Grand Pre Marsh Body opened.”¹⁹⁰

In spite of this appearance of continuity, a profound change had taken place, ending, in the case of Grand-Pré, two centuries of local autonomy. Even before the proprietors met for the last time under the old regime, the new executive committee received a letter from J.S. Parker, the director of the MMRA, “requesting this committee to appoint patrolmen for the running dyke,” an unprecedented intrusion on their ability to look after their own affairs.¹⁹¹ Parker’s intervention led executive committee chair L.H. Curry to ask him on several occasions: “Has the commission taken over the Grand Pre Marsh Body?”¹⁹² Parker set Curry straight by commenting that “the Dominion does not actually take over the Marsh Body.” He outlined the financial support that would be forthcoming for reconstructing the dykes, and assured Curry that he “did not like to think that the Body or the dykes are to be turned over to the Dominion. That is just not the case.”¹⁹³ Technically, Parker may have been right, but in practice the marsh owners were no longer in charge. That mantle now belonged to the MMRA, whose experts reshaped the marsh landscape, for better or worse, over the next twenty years.

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