

MARITIME DYKELANDS - The 350 Year Struggle

Introduction

The history of the dykelands of the Maritime Provinces of Canada is as rich and deep as the fertile red soil that sustains them.

First came tremendous tides, surging up the Bay of Fundy, spreading layer upon layer of silt over the shores of its sprawling estuaries and along the river banks. Over thousands of years, the tides built sediment to depths of more than 40 metres. On the surface, vast rippling mudflats stretched from low-tide line toward the upland, turning to saltmarsh where the high tides reached.

Then came the dykeland culture of the Acadians. In the 1630s a small band of French settlers dyked and drained a few acres of saltmarsh at Port Royal (present-day Annapolis Royal, Nova Scotia) and discovered that the new dykeland could produce abundant crops year after year without help of fertilizer. Farmland that could produce two tons of hay or 50 bushels of wheat in a season soon became the means of providing most of the colonists' food and clothing and allowed a distinct Acadian society to prosper and grow.

To harvest the wealth of the tidal soil, the Acadians learned to work between the tides in the slippery marsh mud. They built earthen, sod covered dykes just tall enough (about 1.5 m) to keep out high water. To drain the dyked marsh, they invented the **aboiteau**, a log sluice with a hinged gate inside it. The gate would open to let the fresh water out when the tide was low but close against the tide coming in. An aboiteau would be placed in a creek bed and covered with layers of brush and earth until the channel was blocked to an elevation above the level of the highest tides.

Beginning close to the upland, the Acadians created a few acres of farmland at a time, extending the dyked land slowly toward the outer edge of the saltmarsh.

The dykelands supplied the basic needs of the Acadians so well that they largely avoided clearing the upland. In fact, when all available marsh had been dyked along the Annapolis River, the colony expanded to other marsh areas around the Bay rather than using available upland nearby.

The New Englanders who settled on the vacant Acadian homesteads after the Expulsion were upland farmers unfamiliar with dykeland agriculture. They arrived to find dykelands flooded with saltwater by a severe storm in 1759 which had badly damaged dykes and aboiteaux.

To survive the first years, the new immigrants had to rely on the dykeland skills of Acadians who had been confined to English forts. yet they soon learned how to use a dyking spade and patch a sea wall.

Although they turned to clearing the upland for many of their crops, the New Englanders always valued dykeland for hay and pasture, and used marsh mud as an upland fertilizer. In fact dykeland would sell for the highest per acre prices.

Over the next two decades came Germans, Yorkshiremen and a huge influx of Loyalists. By the early 1800s these immigrants and their descendants had not only recovered most of the tidal land once protected by the Acadians but had begun to create new dykeland, sometimes on a large scale.

Marsh owners in the Canard, Nova Scotia area, reclaimed 214 hectares (528 acres) of new farmland in one piece when they completed the Wellington Dyke in 1825 after eight years' work. The Etter Aboiteau, finished in 1840, protected hundreds of hectares of tidal land along the Aulac River from the tides of the Cumberland Basin. All owners of a marsh body, a unit of land naturally covered by saltmarsh, shared the

costs of dyke-building and maintenance by contributing labour, money or materials.

During the nineteenth century, as horses became the main source of power for the region's prosperous mining and logging operations and for most land transportation, hay became an increasingly lucrative cash crop. By the early 1900s, there were markets for Fundy hay as far away as Boston. In 1921, prices had reached more than \$25.00/ton. Where large tracts of dykeland could be devoted to hay, as in the Tantramar Marshes or at Minudie, some owners made small fortunes.

But the bubble burst during the 1920s as fossil-fuel engines replaced horsepower as North America's main source of energy. The price of hay fell to \$6.00/ton by 1938 and the value of dykeland slid to \$65.00/hectare by the 1940s. Many hay fields brought into production for the boom were abandoned, leaving the burden of maintaining dykes and aboiteaux to the dykeland owners on each marsh body who wanted to continue working the land. Sometimes the job was beyond their resources.

By the late 1930s all dykeland areas - even those where the owners had not concentrated on exporting hay - were suffering from the effects of the world-wide depression. Drainage ditches clogged up, dykes leaked and aboiteaux sagged. On some marsh bodies the protective works failed completely, sending acres of long-dyked soil out to sea'. Thousands more hectares of the region's best farmland threatened to disappear.

The crisis was too serious for dykeland owners to handle alone. In 1943, the Experimental Farms branch of the Federal Department of Agriculture set up an emergency program to meet the situation. The cost of dykeland repairs in New Brunswick and Nova Scotia would be shared equally by the owners, their provincial governments and the Federal Government. A two-man staff would arrange and oversee all the work in both provinces.

With this three-way program "came the first wide use of modern machinery in dykeland construction." Although long thought too heavy for slippery marsh mud, bull-dozers and draglines did the bulk of the work on several major projects. Even with the help of this break-through, however, it became obvious that the scope of the emergency program was too small. Dykes and aboiteaux were failing faster than the owners and the program's tiny staff could patch them up, and only a massive reconstruction effort would save the day.

In 1948 the Federal Government created the Maritime Marshland Rehabilitation Act to mount a comprehensive long-term program for preserving the region's dykelands. Under the Act the Federal Government would build and maintain dykes and aboiteaux, and the three Maritime provinces would provide liaison with landowners to look after the main drains and promote land-use programs.

Based in Amherst, Nova Scotia, the 70-member staff of the Maritime Marshland Rehabilitation Administration (MMRA), began applying modern engineering techniques to the traditional problems of dykeland construction and maintenance. Draglines and steam shovels replaced dyking spade and draft animals altogether. Over the next 20 years, the MMRA ensured the protection of 18,000 hectares (44,500 acres) of tidal farmland in Nova Scotia and 15,000 hectares (37,300 acres) in New Brunswick, building 373 kilometers (232 miles) of dyke in the process.

A major accomplishment of the Administration was the construction of large tidal dams near the mouths of the Shepody, Annapolis, Avon, Tantramar, Petitcodiac and Memramcook rivers, all bounded by saltmarsh and dykeland. These giant concrete and steel aboiteaux now keep the tides off all lands upstream and eliminate the need for many kilometers of dyke and many smaller aboiteaux.

In 1970 the individual provinces took over all government responsibilities for the dykelands. Since then one of the major aims of the Nova Scotia and New Brunswick governments has been to increase the amount of dykeland that can be farmed with modern machinery. Small holds have been assembled into larger, more efficient units and through a drainage technique known as landforming', networks of deep,

narrow ditches have been replaced by wide, grassy waterways.

Today the total area of 33,000 hectares (82,000 acres) of tidal land protected from saltwater supports the production of hay, dairy products, beef, hogs, some grain and a small but growing amount of vegetables.

Surprisingly, much dykeland soil now lies out of production. The market for many of its products is already saturated. However, the situation may be temporary. An increase in transportation costs (making imported foods more expensive), and an increase in the region's population due to offshore oil development - or other factors - could bring all the available dykeland into production.

Some dykeland owners are not waiting for change, but are testing the market for such produce as canning peas, beans and corn as well as other specialty crops.

Dykeland has been called a reserve of energy in the form of fertility. As the cost of fertilizers needed for upland farming continues to rise, the value of the same nutrients in dykeland soil increases as well. In the future, some farm operators may increase their efficiency by moving the site of some of their production from upland to dykeland.

The advantages of the tidal lands around the Bay of Fundy are certainly no secret to the agricultural community. Recent sales of dykeland for as much as \$2,500/hectares (\$1,000/acre) indicate a growing appreciation of the region's most fertile soil.

This excerpt is from the book "Maritime Dykelands - The 350 Year Struggle".