

The Impacts of Wetland Loss in Manitoba

We cannot afford to keep losing wetlands. **Yet wetlands continue to be lost.**

Wetlands are among the Earth's most productive ecosystems. Unfortunately, wetlands are also one of the Earth's most threatened ecosystems. Estimates on wetland loss indicate that up to 70 per cent of wetlands have been lost or degraded in settled areas of Canada.

Wetland loss is significantly deteriorating Manitoba's environment. Algae blooms on Lake Winnipeg and many other lakes in Manitoba are a symptom of increased nutrients delivered from upstream watersheds. When we lose wetlands, significant amounts of greenhouse gases are released and our landscape's ability to

store carbon is reduced. Ducks Unlimited Canada (DUC) wants the loss of wetlands in our province to stop.

DUC recently completed Phase I of a multiphase research project to determine the impacts of wetland loss and associated drainage activity in the Broughton's Creek watershed located in southwestern Manitoba. The research paints a clear but startling picture. We need the government of Manitoba to develop an integrated wetland policy that includes financial incentives for landowners to protect and restore wetlands across the province.



Needed: Financial incentives for landowners! A Wetland Policy for Manitoba! Your support is critical. You are part of the solution. Call or contact your local MLA today.

Research Partners and Logistics

During the first phase of the research, DUC partnered with the University of Guelph and Tarleton State University, a member of the Texas A&M University system. Lead funding for this innovative project was provided by the Murphy Foundation. The study was conducted in the Broughton's Creek watershed, located in the Rural Municipality of Blanshard north of Brandon. The area was

selected as a study watershed because the land use and wetland loss trends are representative of southwestern Manitoba. Additionally, impacts of wetland drainage on carbon sequestration were estimated using results from a previous series of DUC lead studies that were funded by Environment Canada, Natural Resources Canada and Agriculture and Agri-Food Canada.



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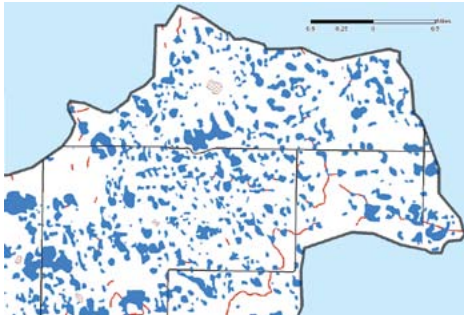
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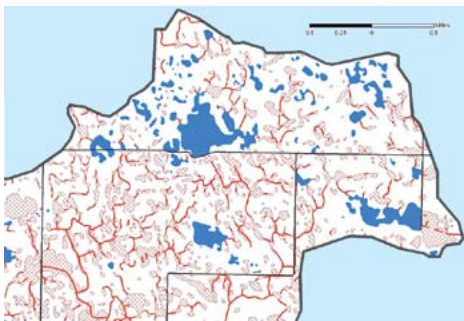
Research results

The first step of this research project was to determine the amount of wetland loss and drainage activity that occurred in the watershed between 1968 and 2005. This project confirmed that 5,921 wetland basins, or 70 per cent of the total number of wetlands in the Broughton's Creek watershed, have been degraded or totally lost due to drainage activity. This has resulted in 21 per cent of the wetland area being lost. These numbers do not account for wetland loss prior to 1968 or after 2005.

Portion of Broughton's Creek Watershed, 1968



Portion of Broughton's Creek Watershed, 2005



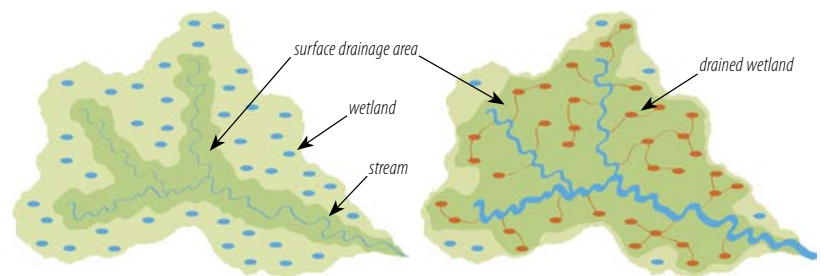
blue = wetlands red hatch = drained red lines = drainage ditches

The second step of the project focused on the development of a hydrologic model to evaluate environmental impacts of this loss at a watershed scale. This research determined that wetland loss since 1968 in the Broughton's Creek watershed has resulted in:

- 31 per cent increase in area draining downstream (12 square miles)
- 18 per cent increase in peak flow following rainfall
- 30 per cent increase in water flow
- 31 per cent increase in nitrogen and phosphorus load from the watershed
- 41 per cent increase in sediment loading (average annual)
- release of approximately 34,000 tonnes of carbon, equivalent to 125,000 tonnes of CO₂ – the annual emissions from almost 23,200 cars
- estimated 28 per cent decrease in the waterfowl production

Why does wetland loss cause these negative impacts?

Wetlands collect and store water from the surrounding landscape during rain or snowmelt. Wetlands are able to filter sediments and nutrients before slowly returning water to the water cycle. When wetlands are drained, or even partly drained, the local drainage area is connected to downstream flows. This causes water carrying nutrients and sediments to move rapidly through the former wetland area and directly to downstream ditches, streams, rivers, lakes and drinking water supplies. When many wetlands are drained, the cumulative impact is significant, as confirmed by this study.



Watershed with intact wetlands

Watershed with drained wetlands



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What does wetland loss mean for Manitoba?



Wetlands are an integral component of the Manitoba landscape and play a significant role in watershed health, especially at a large scale. DUC extrapolated the Broughton's Creek research results to southwestern Manitoba (*left, in yellow*), an area that has land use characteristics and wetland

loss rates similar to the Broughton's Creek watershed. Scaling up our results from the Broughton's Creek research results to southwestern Manitoba, we estimate that wetland drainage since 1968 has resulted in:

- an increase in total phosphorous loading by 114 tonnes per year to Lake Winnipeg, equivalent to six per cent of the total annual phosphorous load into Lake Winnipeg each year from all Manitoba human-related sources including agriculture and point source pollution such as wastewater treatment facilities. It is also the same as dumping 10 semi loads of commercial agricultural fertilizer or 544,000 bags (seven kilograms each) of lawn fertilizer directly into Lake Winnipeg every year.



Manitoba's future?

The impact of wetland drainage and water quality should be of concern to all Manitobans. Wetland loss impacts our quality of life and our economic well-being. If wetland loss continues at the present rate, **phosphorus export from southwestern Manitoba will increase by 41 per cent by 2020, contributing an additional 370 tonnes (46 tonnes per year by 2020) to Lake Winnipeg.** Considering that the Lake Winnipeg Action Plan has a goal of a 10 per cent reduction in phosphorus loading to Lake Winnipeg, it will be extremely difficult to achieve this goal if we allow wetland loss to negate progress made through other methods of reduction. Wetland loss needs to be stopped immediately to prevent further deterioration of Manitoba's water resources. Additionally, wetland restoration must begin if we hope to improve and maintain the quality of our water supplies for future generations.

- a release of 5.0 million tonnes of carbon stored in wetland sediments and plant material – equivalent to the emissions of 169,000 cars for 20 years.
- an increase in area contributing runoff to Lake Winnipeg of 4,518 square kilometres, an area equivalent to 10 times the size of the city of Winnipeg.

The estimated value of wetland ecosystem services associated with nutrient removal and carbon sequestration lost between 1968 and 2005 as a result of wetland drainage is \$430 million. To replace the ecosystem services lost in Manitoba in 2005 alone would cost approximately \$15 million and this will increase to \$19 million by 2020 if wetland drainage is not stopped.

The estimates above are for southwestern Manitoba alone and do not account for wetland drainage across Manitoba. The numbers would be staggering if the impact of all wetland loss was determined. Additionally, the value of ecosystem services provided by wetlands is dramatically underestimated here as we only focus on benefits associated with nutrient removal and carbon sequestration.



Your support is critical to solve this problem. Manitobans must support government to:

- develop and implement programs and policies that provide financial incentives for landowners to retain and restore wetlands in an economical and sustainable fashion
- develop and enforce regulations that are effective
- encourage wetland protection and restoration

Solutions exist!

Once we stop further losses we must begin the road to recovery. Among other benefits, restoring 25 per cent of the wetlands drained since 1968 in southwestern Manitoba would:

- reduce annual phosphorus loading into Lake Winnipeg by 28 tonnes
- sequester 59,000 tonnes of carbon (approximately 217,000 tonnes of CO₂ per year)
 - the same as taking 40,000 cars off the road

What can you do to help?

Your involvement is vital; we need to help governments make good decisions. Contact your local MLA or councillor to encourage the government of Manitoba to develop an integrated wetland policy that includes financial incentives and regulation that protect and restore wetlands across Manitoba.

Wetlands are an important public issue and our provincial government needs to hear from you.



The impact of wetland drainage and water quality should be of concern to all Manitobans. **Wetland loss impacts our quality of life and our economic well-being.**



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Wetlands

1. Surface water management – drainage capacity. In my brief tenure as OHM manager, I have come to recognize that the current drainage system does not provide adequate capacity to move water out of the OHM Wildlife Management Area (i.e. Parks Creek and Dewar Drain). Proper and timely water level manipulation within the OHM WMA is required to maintain the integrity of the dyke system and water control infrastructure, to maintain optimal wetland habitat, and to prepare for overwinter/spring runoff water storage. If I operated the water control structures within the WMA as I should be doing, I would quickly flood farm fields and other properties down stream, east and south of OHM. In a nutshell, I can store spring melt and significant rainfall to help alleviate problems down stream, but when I need to get rid of water, I can't. Emergent vegetation within Parks Creek and Dewar Drain must be routinely managed to allow for unimpeded flow, the grades and capacities of these drains need to be improved, a drain maintenance strategy should be identified and implemented, and sufficient funds need to be identified in order to fulfill these requirements. I am aware that some vegetation removal efforts and infrastructure improvements have or will soon occur and this is a great start. Perhaps EICD can lobby for and facilitate the process required to bring about these much needed drainage improvements.

2. Surface water management – Lake Winnipeg water level management. Although I am not yet fully cognizant of the issue, I am aware that a static lake level resulting from hydro-electric dam projects on outflows can negatively affect the wetland vegetation community and biodiversity of Netley-Libau Marsh. It appears to me that a lack of natural water level fluctuation has precluded sufficient cyclical rejuvenation and growth of emergent and other wetland vegetation in this marsh. When coupled with other issues like invasive carp, many areas of the marsh are now devoid of suitable habitat for many wildlife species and have been for quite awhile (i.e. Big Netley Lake). As a local resident and hunter within the marsh, I have witnessed a noticeable decline in the abundance of many duck and shorebird species over the last 10-15 years. I would suggest a study commence to determine the relative health of the Netley-Libau Marsh (if one has not been done so already), and draft a strategy and implement a plan to help restore Netley-Libau to its former glory. Key to this would be artificially manipulating the water level within the marsh apart from Lake Winnipeg levels. Who undertakes this, pays for this? Tough question and not likely many takers but perhaps the EICD could be the initial impetus behind this effort.

3. Surface water management – regulatory enforcement. Better efforts need to be undertaken to curb illegal drainage activities on private property and Crown Land. This should include larger fines and a PR/education campaign to raise public awareness of the seriousness of undertaking such illegal activities. I believe this would fall within Water Stewardship's purview.

4. Natural Areas (Wetlands and Wildlife) – invasive species management: purple loosestrife. Fortunately, there is no PLS in OHM WMA (although small pockets nearby have been removed every now and then). However, it is becoming increasingly common

to see it in Netley-Libau and in numerous roadside ditches throughout the watershed area. ATV traffic may be exacerbating the problem by spreading PLS seed further afield. I am having difficulty in restricting ATV access within OHM WMA (it is prohibited by regulation). My ultimate fear is that, despite our best efforts, wanton and careless operation of ATV's in protected areas may result in the irreversible spread of this invasive species. We will try to enforce our regulation as resources will allow but others may need to help out.

Riparian Habitat

Riparian habitat has been lost on the middle and upper portions of the main creeks in this watershed due to the canalization and the destruction of natural watercourses to facilitate agricultural development. An assessment of the status of riparian habitat along the creeks in the watershed should be undertaken, with the aim of identifying where riparian habitat could be re-established without significantly impacting agricultural activity. Examples are the upper reaches of Netley Creek, near the village of Komarno and Jackfish Creek near Balmoral. Also, consideration should be given to returning some or all of the natural flow of Wavey Creek through the Clandeboye Ponds. These measures will enhance wildlife habitat where it has been lost due to creek canalization and agricultural development, as well as potentially reduce agricultural run off.

Rural Residential Subdivisions

Significant rural residential subdivision development has occurred along Netley Creek and Wavey Creek in the vicinity of Petersfield and to a lesser degree along Muckle Creek near Clandeboye. This development has reduced the amount of riparian habitat along these creeks and the density of residences has likely had a negative impact on wildlife distribution and use. If the RM of St. Andrews has not already done so, consideration should be given to increasing the minimum lot size to 5 acres in future rural residential developments in the Petersfield – Clandeboye area. This measure will assist in reducing the loss of riparian habitat on private land along creeks in this area.

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