

Riparian Area Assessment for the East Duck Mountain/Sagemace Bay Watershed

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Outline

1. Definition
2. Benefits to watershed health
3. State of riparian health
4. Recommended steps
5. Programs and resources

What are riparian areas?

Riparian areas are the bands of land adjacent to water bodies such as runs, creeks, rivers, wetlands and lakes. They are transitional zones between the aquatic and terrestrial ecosystems. Abundant moisture is a key factor that defines riparian areas, as are the processes that create fertile soil conditions. These areas support some of the most diverse and productive ecosystems on the prairies.

Benefits of riparian areas to water quality and watershed health

It must be recognized that riparian areas function most effectively within a landscape that is well managed overall and that the benefits will be enhanced cumulatively at the watershed scale. Although riparian areas only occupy a small percentage of the land area within the watershed, they represent an extremely important component of the overall landscape. Their ecological functions are summarized below:

Trapping sediment: The vegetation in riparian areas collects sediment that are transported through runoff from adjacent lands. Reducing the amount of sediment reaching the water improves water quality. The accumulated sediment in turn enhances riparian soils.

Filtering water: Nutrients, pathogens and other contaminants are transported over the landscape attached to sediment, so by trapping sediment, riparian areas are also helping to prevent these elements from entering the waterway. The vegetation growth and other processes help to break down, remove and recycle these components within the ecosystem.

Maintaining banks and shorelines: The vegetation and extensive root systems in healthy riparian areas trap sediment and slow the flow of water, thereby reducing erosion. In flowing systems, water naturally erodes bank materials on the outside bend of streams and deposits sediment on the inside bend. The riparian area helps to balance and normalize these processes.

Reducing impacts of flooding: Riparian areas act like safety valves, storing excess water during flood events and reducing the intensity of flooding downstream.

Recharging local groundwater reserves: The productive riparian vegetation increases water infiltration during runoff and flooding, and their deep roots draw up moisture. The spongy soils in these areas store water and keep it nearer to the surface. The higher water tables help moderate water levels and stream flow, increasing local water availability.

Enhancing biodiversity and habitat: Riparian zones support lush, diverse plant communities and are often the only significant natural areas in agricultural landscapes. A high proportion of prairie species rely on riparian areas for at least part of their lifecycle. They also act as corridors that link these vital habitats, which is important for species dispersal and migration. Healthy riparian areas also benefit the adjacent aquatic habitat as overhanging trees and vegetation provides shade that moderates water temperature. Reducing sediment from runoff also contributes to aquatic health.

What does a healthy riparian area look like?

Riparian areas will differ depending on factors like type of water body, soils and topography, but a number of features will be consistent relating to health and function:

- Riparian soil surface is covered by vegetation growth, with little to no bare soil exposed
- Healthy and diverse plant communities that include herbaceous species (especially sedges and grasses), shrubs and trees (where appropriate). Shrubs and trees are actively regenerating with all age categories represented; individuals are healthy (no excessive browsing or disease) and decadent or dead wood is not present in large amounts.
- Invasive species and other weeds are at a minimum
- Structural alteration of the bank or shore is minimal
- Rutting, pugging and hummocking of riparian soils is minimal
- The bank is being held together by deep binding root mass (for flowing water systems)
- Excess water can escape the banks and access the floodplain (for flowing water systems)

Riparian area management

Activities that disturb or alter the natural plant communities within riparian zones and/or the structural integrity of the banks or shores may have an impact on the ability of the riparian area to provide ecosystem services. Whether the land is used for agriculture, timber harvest, recreation, or residential development, information and technical assistance is available to ensure that these practices are conducted in ways that sustain riparian health. Financial assistance may be available for some users/activities. Resources are listed at the end of this document.

Status of riparian area health in the East Duck Mountain/Sagemace Bay Watershed

The status of riparian area health in this watershed is currently unknown. The analysis presented here is based on an analysis of 2000-2002 landcover data (Table 1, below). This data set is derived from Landsat satellite imagery and assigns the predominant land cover to a pixel that represents a 30m x 30m area. This analysis may identify areas with reduced riparian function from the predominant land use identified. However, since a number of essential riparian components occur within a few metres of the bank or shore, this very coarse resolution does not provide an accurate measurement of riparian condition. It also does not provide information on land uses such as grazing.

Table 1. Summary of percent land use/land cover within 50 metres of watercourses in the East Duck Mountain/Sagemace Bay watershed.

Land Cover Type	Area (km ²)	Percent of Total
Agricultural Cropland	2.83	4%
Deciduous Forest	14.30	22%
Grassland/Rangeland	11.22	17%
Mixedwood Forests	6.07	9%
Marsh	23.64	36%
Treed and Open Bogs	0.38	1%
Coniferous Forest	2.24	3%
Open Deciduous / Shrub	3.65	6%
Forage Crops	0.69	1%
Cultural Features	0.08	0%
Forest Cutovers	0.23	0%
Bare Rock, Sand and Gravel	0.08	0%
Roads and Trails	0.76	1%
	66.17	100%

It is difficult to make specific statements from such a coarse analysis, but it is sufficient to provide a general overview of the watershed.

Manitoba has not conducted systematic inventories of riparian habitat in its agricultural regions but such work is ongoing in Alberta and Saskatchewan. Agricultural landscapes in those jurisdictions have an estimated 80% of their riparian areas classified as “unhealthy” or “impaired”. This aggregate result likely reflects the state of riparian area health in agro-Manitoba. However, without an investigation of riparian area health and the intensity of use of associated lands in this watershed, it is difficult to determine what proportion of riparian areas are providing a full suite of ecological services or what areas should be considered a priority.

Riparian health is most accurately evaluated by conducting an onsite assessment so a more accurate report of riparian area health within the watershed will require a more in depth analysis, including a ground survey component. An investment of time and financial resources is required to plan and conduct the inventory, but a science-based evaluation and report of riparian area health can help to identify and prioritize higher risk areas and target programs as well as establish a benchmark against from which to measure change and progress.

Manitoba Habitat Heritage Corporation, Agriculture and Agri-Food Canada, the Upper Assiniboine Conservation District and other partners are currently conducting a project to develop a methodology that uses shape-recognition GIS software and high resolution aerial photography to classify riparian zones by vegetation type and by indicators of riparian health. The anticipated outcome of the project is the development of a reliable, cost-effective methodology of assessing riparian areas on a watershed scale. Project results will be available in early 2011.

Recommended goal

Ideally watershed managers and stakeholders would strive to achieve the state where for all riparian zones and/or buffers within the watershed are in a healthy, fully-functioning condition. The first objectives include the maintenance/enhancement of existing native riparian areas and establishment of permanent cover along existing waterways to minimize soil erosion and provide additional watershed benefits.

Recommended steps

Assessment

- a) Perform an analysis of existing data sets and information (Landsat, soil maps, etc.) related to riparian landscapes within the watershed to construct a preliminary framework for improving riparian health based on areas with the highest risk for riparian degradation. Riparian sites that are cropped annually and fall within a highly erodible soil category should be given highest priority, followed by riparian areas that do not have a tree or shrub component and that fall within a highly erodible soil category, and so on.
- b) Conduct a more comprehensive assessment and inventory of riparian area health:
 - to have a science-based evaluation and report of riparian area health
 - to further and more accurately identify and prioritize higher risk areas and target programs
 - to establish a benchmark against which to measure change and progress

Education

Encourage all owners/managers of riparian lands to achieve a better understanding of the role of riparian areas in the watershed, how these areas function, and how to assess and manage them appropriately. Ensure that this knowledge is current and accessible.

Stewardship

A number of programs are currently in place to support landowners in their choice to adopt sustainable riparian management practices. When possible, facilitate riparian stewardship through educational and financial incentive programs.

Resources:

Technical and/or financial assistance

Conservation District

The Intermountain Conservation District offers technical and financial assistance to promote riparian area enhancement. The CD can also provide advice and contact information regarding current programs available to landowners in the watershed.

Grazing Clubs

A grazing club is a community of rotational graziers who work together to improve the management of their pastures. Activities include meetings and pasture tours to explore and discuss pasture management techniques and local issues. Manitoba Grazing Clubs are supported by Ducks Unlimited Canada, the Manitoba Forage Council and Manitoba Agriculture, Food and Rural Initiatives and others. Call your local MAFRI office for Grazing Club contact information. Manitoba Forage Council website:

<http://forage.lldt.net/grazingclubs/default.aspx>

Manitoba Agro Woodlot Program

The Manitoba Agro Woodlot Program provides technical assistance to landowners regarding sustainable woodlot management. Contact the regional Manitoba Forestry Association office (204) 734-5265 in Swan River for more information. Manitoba Agro Woodlot Program Website: <http://www.gov.mb.ca/agriculture/woodlot/index.html>

PFRA Shelterbelt Tree Program

The Shelterbelt Tree Program provides technical assistance and distributes seedlings for planting shelterbelts or for conservation and land reclamation projects, including riparian plantings. Farmers and producers, federal and provincial government departments, municipal governments (villages, towns, cities), charitable organizations, and Band Councils or individuals for planting trees on Indian Reserves are eligible. For more information, call (306) 695-2284 or visit http://www.agr.gc.ca/pfra/shelterbelt_e.htm.

Fisheries Enhancement Initiative

The Manitoba Fisheries Enhancement Initiative funds projects that protect or improve fish stocks or enhance the areas where fish live. Project examples include restoring damaged streambanks using vegetation, rock or fencing and off stream water development. Organizations such as fish and game associations, community groups, local government agencies, school and youth groups and business organizations may apply. Contact the nearest Manitoba Fisheries office for more information or visit:

<http://www.gov.mb.ca/waterstewardship/fisheries/habitat/>

Agri-environmental stewardship programs

Contact your local Agriculture and Agri-Food Canada – PFRA&E or Manitoba Agriculture, Food and Rural Initiative offices for information on current programs available to agriculture producers in the watershed.

Tax Credit Programs

Riparian Tax Credit

The Riparian Tax Credit is an innovative program initiated by the Manitoba Department of Finance. It is designed to encourage farm operators to upgrade their management of lakeshores and river and stream banks and it recognizes those who have already done so. For more information, call 1-800-782-0771 or visit the website:

<http://www.gov.mb.ca/finance/tao/riparian.html>.

Education and extension programs

Managing the Water's Edge

200-1555 St. James Street

Winnipeg, MB R3H 1B5

Phone: (204) 784-4350

Email: mhhc@mhhc.mb.ca

Managing the Water's Edge provides workshops, presentations and written materials that help landowners to understand and assess riparian areas so they can make informed management decisions.

It is a multi-agency extension initiative that draws support and expertise from: Manitoba Agriculture Food and Rural Initiatives; Manitoba Cattle Producers Association; Manitoba Habitat Heritage Corporation; Agriculture and Agri-Food Canada; Ducks Unlimited Canada; Fisheries and Oceans Canada; Manitoba Conservation Districts; Manitoba Water Stewardship; and Manitoba Conservation.

Living by Water Project

Manitoba/Saskatchewan region

c/o Nature Saskatchewan

206-1860 Lorne Street

Regina, SK S4P 2L7

Phone: (306) 780-9273

Email: info@naturesask.ca

<http://www.livingbywater.ca/>

The Living by Water Project is a national initiative to encourage and support individual shoreline residents across the country to work towards healthier human and wildlife habitat along the shorelines of Canada.

Websites

Manitoba Riparian Health Council

<http://www.riparianhealth.ca/>

This website provides information on the various federal, provincial and non-government agencies and their programs that have an interest in riparian health in Manitoba. Other riparian related information and management tools are also available at this website.

Printed materials

The following documents are available through Managing the Water's Edge:

Riparian Grazing Strategies Fact Sheet Series. Managing the Water's Edge. 2006.

1. What are Riparian Areas?
2. Riparian Grazing Plans
3. Stocking Rate and Carrying Capacity
4. Improving Bank Stability
5. Improving Water Quality
6. Improving Riparian Biodiversity

These fact sheets are intended audience includes livestock producers with a riparian component in their pastures and anyone with an interest in riparian areas and their management.

Grazing Strategies for Riparian Areas in Manitoba. 2006. Manitoba Riparian Health Council. Winnipeg, Manitoba.

This manual is intended as a technical resource for extension and decision-support staff that, through their work activities, have an impact on agricultural production practices. A copy is available at Conservation District offices.

Managing the Water's Edge – Riparian Health Assessment for Streams and Small Rivers. Version 1, 2004. Winnipeg, Manitoba.

This workbook/field guide offers a simple way to assess the health of riparian areas based on key features. It is strongly encouraged that in order to use this guide most effectively, there should be some preparatory training such as attending a Managing the Water's Edge workshop. This workbook is designed for streams and small rivers in Manitoba. A workbook designed for lakes, sloughs and wetlands is available from the Cows & Fish program in Alberta (<http://www.cowsandfish.org/>) with plans to develop a Manitoba version in the future.

A number of other excellent fact sheets and booklets that have been produced by the Cows and Fish program in Alberta and are available directly through their website (<http://www.cowsandfish.org/>) or through Managing the Water's Edge.