

Briefing Note: Modeste Watershed Riparian Area Assessment

About the North Saskatchewan Watershed Alliance (NSWA)

The NSWA is a multi-stakeholder organization that seeks to improve the management of water quality, water quantity and the health of our aquatic ecosystems by developing and sharing knowledge, facilitating partnerships and collaborative planning, and working in an adaptive process. The NSWA has three intermunicipal working groups throughout the watershed who meet regularly to discuss issues and solutions to watershed health that affect each partnering municipality, as well as downstream communities. This pilot project was initiated by the members of the Headwaters Alliance working group, whose municipal jurisdictions cover the entire headwaters of the North Saskatchewan River Watershed.

Project Team

Membership of the NSWA's Headwaters Alliance working group includes:

- Parkland County
- Wetaskiwin County
- Leduc County
- Clearwater County
- Brazeau County
- Rocky Mountain House
- Drayton Valley
- Town of Devon
- Village of Thorsby
- O'Chiese First Nation.

Each of the five counties in this region have environmental restoration programs, either *ALUS*, *Green Acreages* or *LandCare*, which engage private landowners to implement restoration and conservation projects on agricultural lands.

Context

Riparian lands are “transitional areas between upland and aquatic ecosystems”, and they are important for maintaining watershed health and provide additional benefits such as:

- Improving water quality by trapping, filtering sediment, nutrients and pollutants;
- Mitigating floods /droughts and reducing erosion by storing /slowly releasing water;
- Improving biodiversity by providing habitat, cooling waters;
- Providing aesthetically pleasing areas for recreation, cultural activities; and
- Adding economic value (real estate values, forage/woodlot production).

There are ~100,000 km of riparian areas throughout the North Saskatchewan Watershed, the condition of which is largely unknown (<1%). Previous efforts to assess riparian areas in the province have been focused on smaller scale studies, such as a single properties or creeks, which are insufficient for understanding riparian condition at the watershed-scale. It is well recognized that modern, automated methods using remotely-sensed data are required to assess riparian areas across large scales. However, this method is meant to complement, not replace, field-based methods.

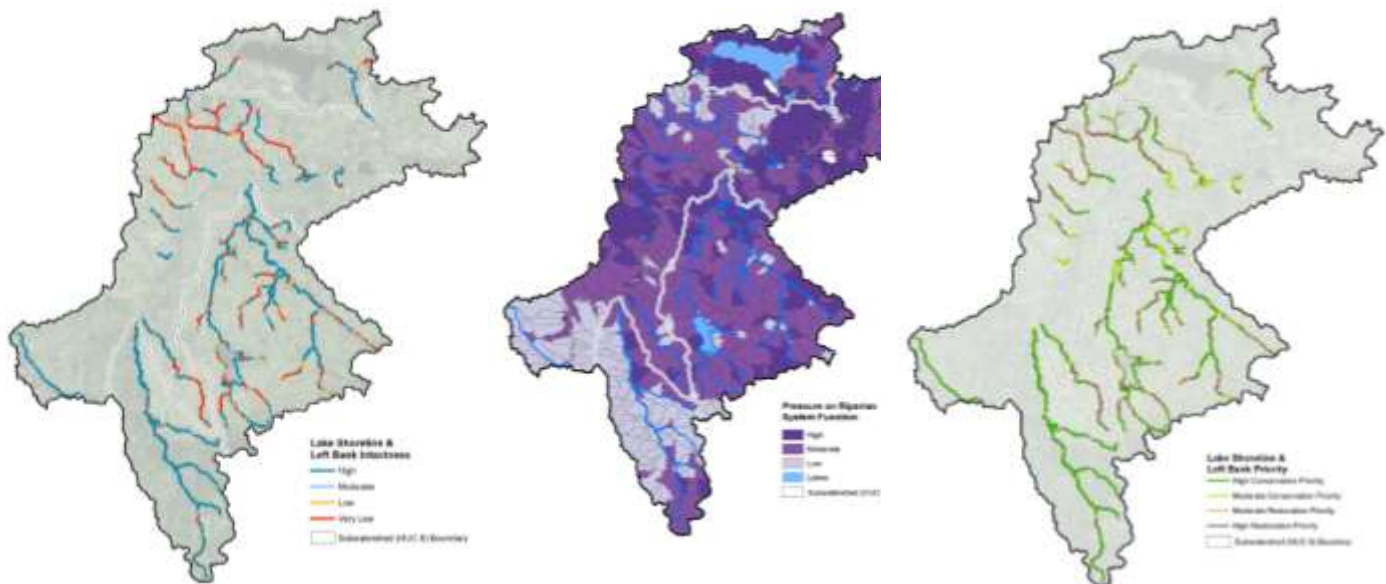
About the Project

In 2016, the Headwaters Alliance initiated a research project to analyse the condition of riparian areas along lakes and creeks within a pilot project area: the Modeste sub-watershed. Their intention was to use this data to provide direction for their environmental restoration programs, *ALUS*, *Green Acreages*, and *LandCare*.

For the NSWA, a new tool was developed by Fiera Biological Consulting Ltd, which uses Geographical Information Systems (GIS) and satellite data to assess:

1. The intactness of the riparian area, and
2. The pressure on riparian health from adjacent upland areas.
3. Combining intactness and pressure data provides a score of low, medium and high prioritization of conservation and restoration potential.

This project establishes a baseline of environmental health which can be referred to to understand the health of the watershed. Using this data to identify key project areas could result in a more efficient use of public funds to maximize ecosystem service improvements.



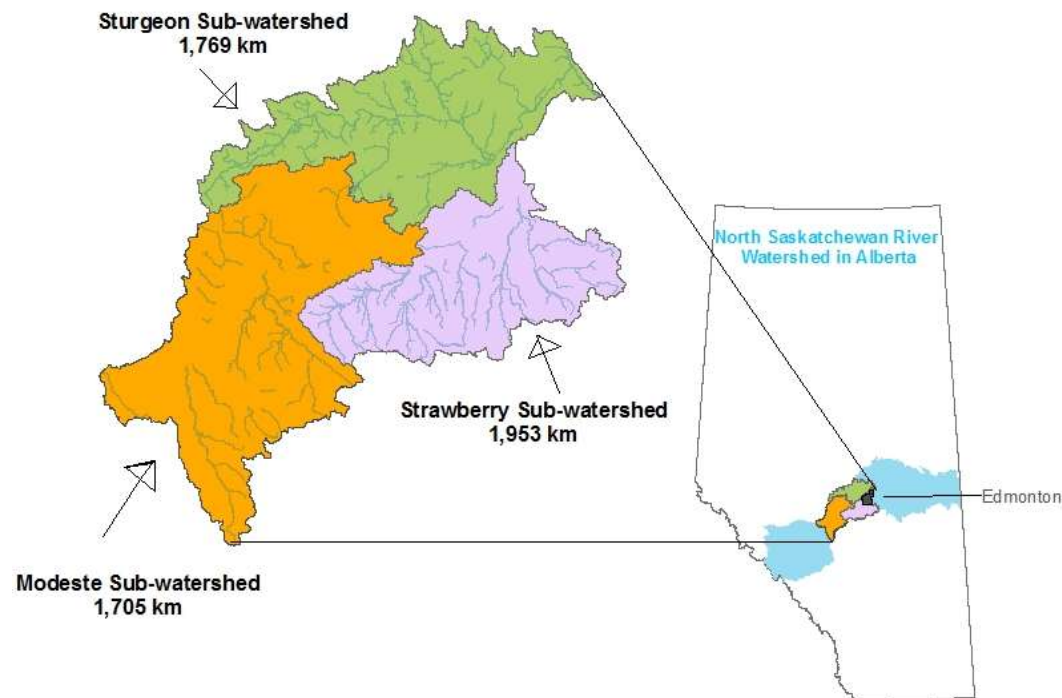
Results of the Modeste Watershed Pilot Project

Riparian Intactness: The results of the Project show that, of 1708 kms of rivers (left and right banks) and lakeshores, 254.8 kms (15%) have very low intactness, 63.2 kms (5%) have low intactness, 167.8 kms (10%) have moderate intactness and 1224.6 kms (70%) have high intactness.

Upland Catchment Pressure: The results of the project show that, of 5500 kms² of upland area, 27% was classified as High Pressure, 50% was classified as Moderate Pressure, and 22% was classified as Low Pressure.

Conservation and Restoration Priority: When intactness and pressure scores were combined, they created 4 categories of conservation or restoration prioritization. Of the 1708 kms of rivers and lakeshores, 246.8 km (58%) were classified as high conservation priority, 71.0 km (23%) as moderate conservation priority, 399.0 km (14%) was classified as high restoration priority, and 991.4 km (4%) as moderate restoration priority.

The NSWA further expanded this project to the Sturgeon and Strawberry sub-watersheds for a total project area of 5,400 km of riparian area. Furthermore, these methods were used by the Government of Alberta to assess intactness of ~800 km of riparian areas in other regions of the province. The methods developed in the Modeste Pilot Project were adopted as a standard practice for assessing riparian health at the watershed-scale within the province of Alberta.



Next Steps

“How healthy (%) do we want riparian areas to be for the next generation?”

In the next phase of this project, the Headwaters Alliance working group will:

- Discuss the results of the project;
- Determine if the working group wants to improve or maintain the status quo on management of riparian areas;
- Develop objectives and targets for riparian health;
- Continue to work with *ALUS*, *Green Acreages*, and *LandCare*. and other NGOs to develop a restoration and conservation plan to meet the established targets;
- Aligning municipal environmental bylaws to ensure a consistent approach to meet the riparian health objective.

