

Landscape Characteristics

May 2021

Introduction

The lower Winnipeg River basin (LWRB) is located in the northwest section of the entire Winnipeg River basin (WRB), which spans parts of western Ontario and small parts of Manitoba and northern Minnesota, United States. The Discussion Sheet Series highlights research on ecological and socio-economic aspects of the basin to encourage discussion with experts, government departments, Indigenous groups, and stakeholders. The Discussion Sheet Series is based on available data collected in 2018 and 2019. Sheet 2 of 11 summarizes the landscape characteristics of the LWRB.

Landscape Characteristics

Geology

The majority of the entire Winnipeg River basin (see Figure 1 in Sheet 11: Maps) lies within western Ontario, characterized by the Precambrian Shield with underlying pink granodiorite (Schindler et al., 1996). Due to the Precambrian rock bed in the basin, the river produces high levels of water runoff downstream toward Lake Winnipeg but with low suspended sediments and nutrients (Environment Canada & Manitoba Water Stewardship, 2011).¹ The LWRB is scattered with Precambrian bedrock and areas of organic deposits and sand diamicton (Figure 1). Due to the mineral-rich watershed, there have been mining efforts in the region, with one currently operational mine that extracts tantalum and caesium.²

¹ For more information on water quality, refer to Sheet 4: Water Quality and Nutrient Loading.

² For more information on mining, refer to Sheet 10: Industries and Economic Activity.



Soil

Soil types were surveyed in the Rural Municipalities of Alexander, Lac du Bonnet, and Pinawa in 1999 by the Agriculture and Agri-Food Canada (AAFC) Land Resource Unit (1999a, 1999b, 1999c). Dominant soil types in the LWRB are clayey lacustrine, deep/shallow organic peat, and Precambrian bedrock, with very poor and imperfect drainage and dominant slope class between 0 and 2%.

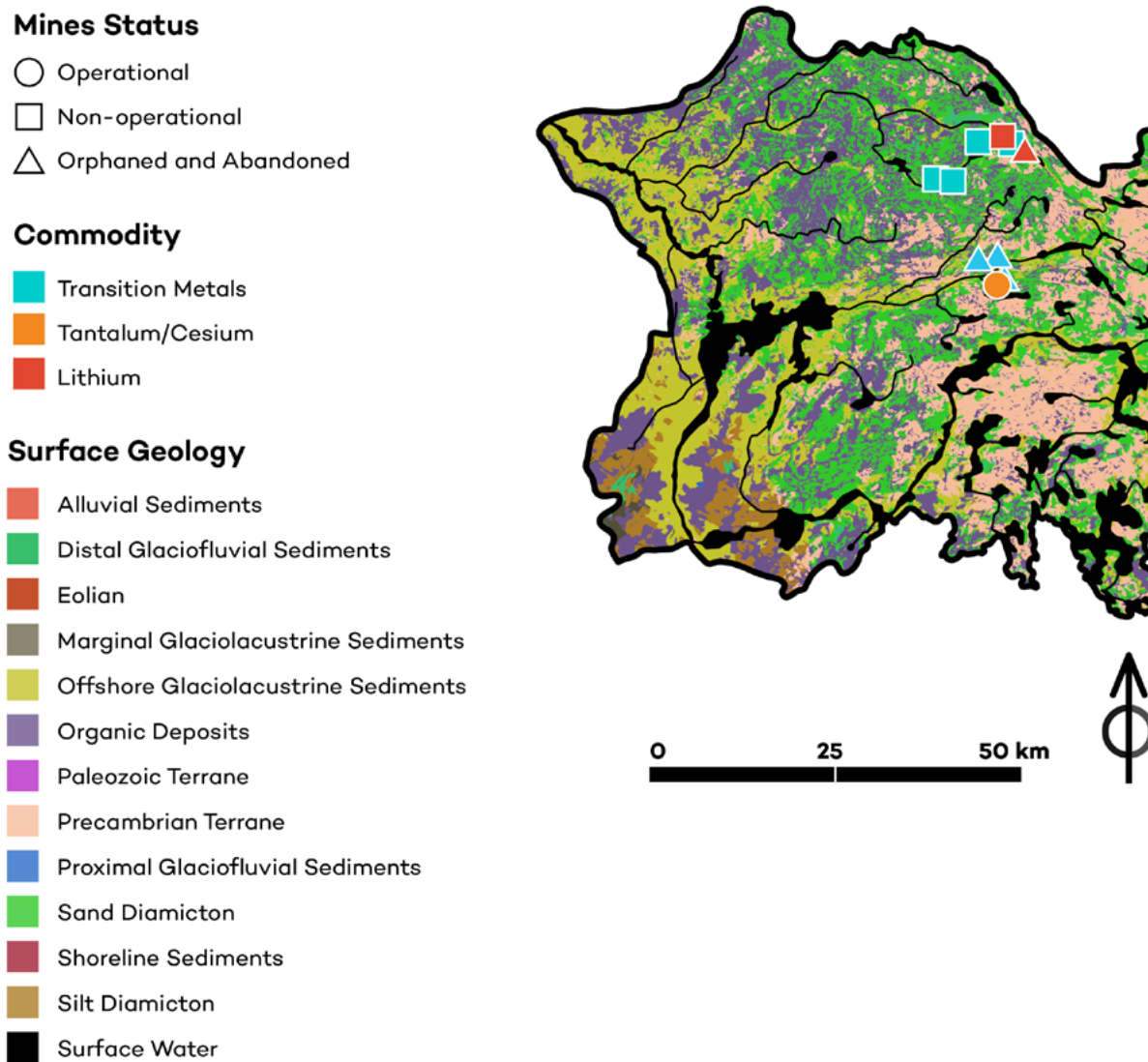
Land Cover

Land cover in the LWRB was assessed using land-cover data from 2017 and forest cover from 2000 (AAFC, 2017; Hansen et al., 2013). Due to the limited agricultural-capable soils, the watershed is dominated by forested land, at 76% cover, followed by water, temperate or sub-polar grasslands, cropland, wetlands, and minimal shrubland and urban land (Figures 2 and 3). There is minimal cropland in the LWRB, at approximately 3%. There is, however, a patch of cropland to the south of the LWRB along the Whitemouth River, which empties into the Winnipeg River downstream of the Seven Sisters Generating Station (see Sheet 11: Maps).

Landscape characteristics, particularly terrain, soil and sediment types, and land cover, inform how the watershed interacts with the river and potential economic activity, such as forestry or mining. Future research may consider how landscape characteristics influence river discharge and water quality and how associated industries may influence the long-term health and sustainability of the watershed.



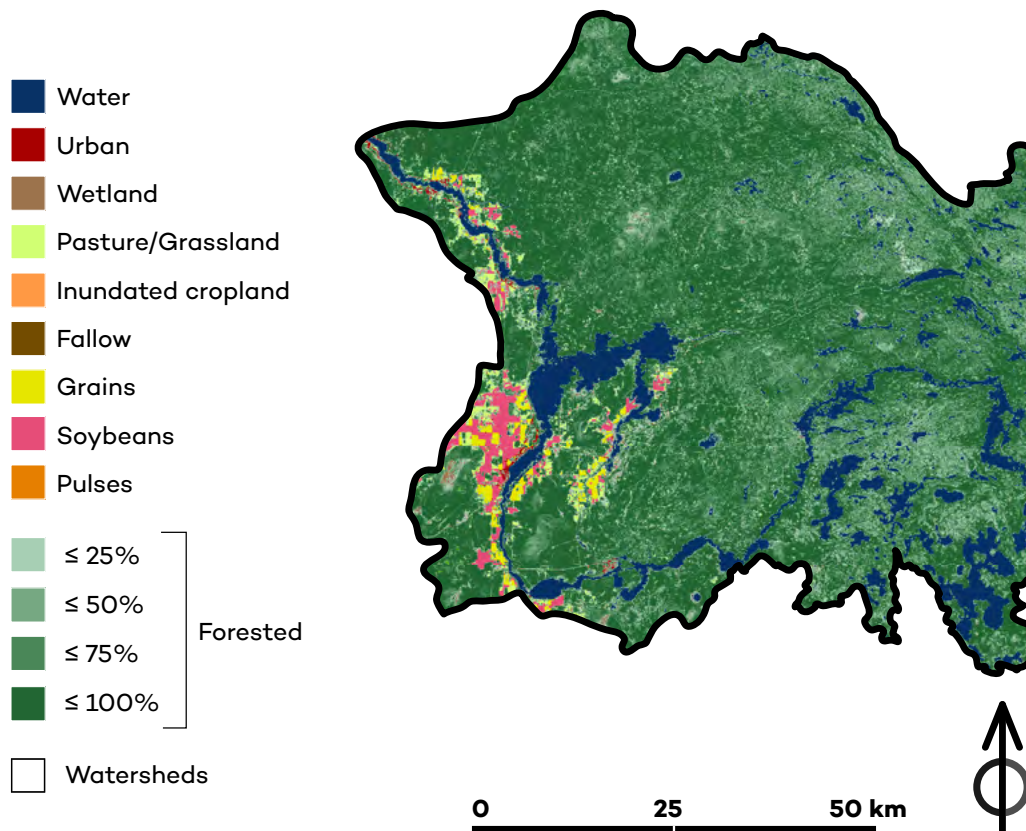
Figure 1. Surficial geology and mine site map of the LWRB



Source: Government of Manitoba, n.d.

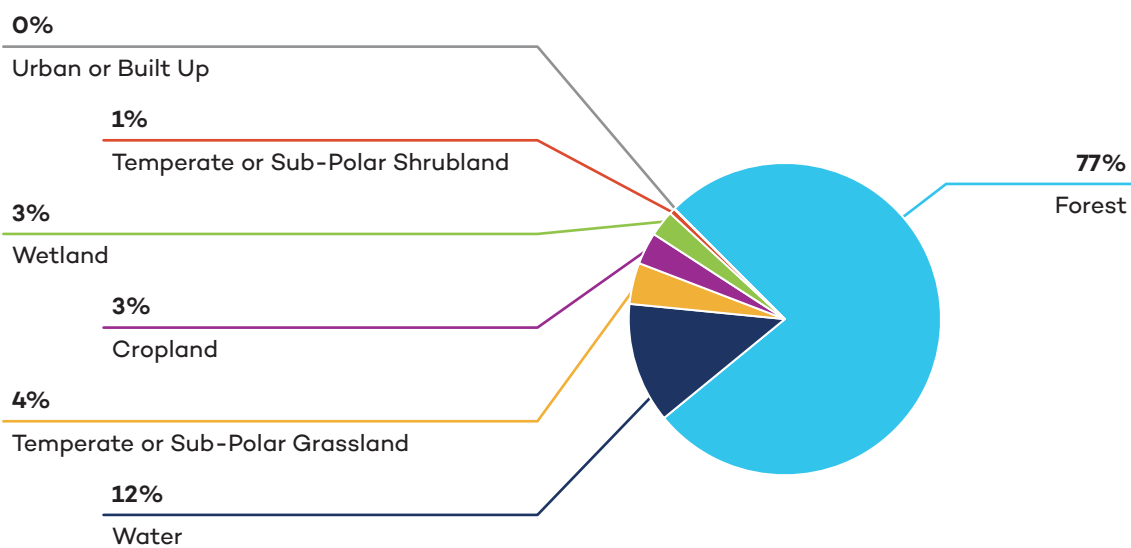


Figure 2. Land cover (2017) and forest cover (2000) map of the LWRB



Source: AAFC, 2017; Government of Manitoba, n.d.; Hansen et al., 2013.

Figure 3. Land cover (2017) and forest cover (2000) area in the LWRB (4,650 km²)



Source: AAFC, 2017; Hansen et al., 2013.



References

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