

Aquatic Invasive Species

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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 6 of 11 summarizes aquatic invasive species (AIS) in the LWRB.

Aquatic Invasive Species

AIS are non-native species introduced into an ecosystem that threaten the ecological balance of rivers and lakes. These species thrive in some aquatic ecosystems due to their high reproductive rates and lack of predators. The risk of AIS transport is high in the LWRB due to its popularity for cottagers and vacationers and the use of any in-water-contact gear, such as boats, nets, buckets, ropes, or anchors (Wildlife and Fisheries Branch, n.d.a, n.d.b). AIS establishment in the LWRB can have serious implications for habitats, fish and invertebrate populations, Manitoba hydroelectric stations, recreation, drinking water, and the local economy.

The top AIS of concern listed by Manitoba Sustainable Development (n.d.a) include zebra mussels (*Dreissena polymorpha*), quagga mussels (*D. bugensis*), spiny waterflea (*Bythotrephes longimanus*), rusty crayfish (*Orconectes rusticus*), and Asian carp (*Hypophthalmichthys* spp).



Presence of AIS

Table 1. Confirmed presence (Y) or absence (N) in the lower and entire Winnipeg River basin

Invasive species	LWRB	Entire Winnipeg River basin	Description
Zebra mussels	N	Y	Confirmed presence in Lake Winnipeg in 2013 (Wildlife and Fisheries Branch, n.d.d)
Quagga mussels	N	N	No presence
Spiny waterflea	Y	Y	Confirmed presence in LWRB (Wildlife and Fisheries Branch, n.d.c)
Rusty crayfish	N	Y	Confirmed presence in Falcon Lake, Manitoba, in 2007 (Invasive Species Council of Manitoba, n.d.)
Asian carp	N	N	No presence

Once an AIS is established in an ecosystem, it is very difficult to eradicate and manage. The most effective strategy is to control and prevent the spread of AIS into aquatic waterways, an initiative currently being led by the province.¹

While AIS can overtake ecosystems because of high reproductive rates and a lack of natural predators (Wildlife and Fisheries Branch, n.d.a), the physical or chemical conditions may limit their spread and colonization potential. Water column calcium (Ca) concentration can act as an indicator of risk or probability of zebra mussel colonization. Therriault et al. (2013) indicate the range of calcium concentrations that support zebra mussel colonization, and data² on the Winnipeg River indicates that the basin has moderate suitability (12 to 19 mg Ca/L: moderate suitability).

Establishment of AIS could have serious implications for the LWRB. Future research should consider the ecological, industrial, social, and economic impacts of AIS on the river.

¹ The Water Protection Act. Part 3.1 Aquatic Invasive Species. <https://web2.gov.mb.ca/laws/statutes/ccsm/w065e.php>

² Data were provided by the Coordinated Aquatic Monitoring Program (2018), Environment and Climate Change Canada (2018), and Water Quality Management Section, Manitoba Sustainable Development (2018).



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