

Executive Summary

The State of the Rideau River report has been produced by the Rideau Roundtable, an association of individuals and organizations working together to protect water quality, biodiversity and habitat along the Rideau River. This report provides a picture of current conditions along the River (and trends when possible), as it flows between Smiths Falls and Ottawa. Information is provided on a set of indicators of water quality and biological conditions, as well as some indicators of sources of stress on the River. While this set of indicators is by no means complete, it represents an important first step in the process of providing information and monitoring environmental conditions on the River. It is intended that follow-up reports in future years will add information on management response indicators, as well as reporting on any changes in environmental conditions on the Rideau. The main findings of this report are summarized below:

Water Quality Indicators

- **Total phosphorus (TP)**

TP levels have declined in the Rideau River overall, since the 1960s. However, TP in the lower Rideau River (downstream of Kars) often continues to exceed the provincial water quality objective. We still do not know the relative importance of the various sources of TP (ex. municipal wastewater, agricultural runoff, septic systems, fertilizers etc.) to the River.

- **Nitrate + Nitrite**

Average nitrate + nitrite concentrations are lower than those considered harmful to aquatic organisms and human health. However, high nitrate + nitrite concentrations are still occasionally found in the lower Rideau River, particularly downstream of the Jock River.

- **Dissolved Oxygen**

Dissolved oxygen is generally high enough to support warm water aquatic life, but there are areas of low oxygen levels in the deeper main channel of the River and in Mooney's Bay. However, the overall impact on aquatic life is not known.

- **Chlorophyll a (Chl a)**

Phytoplankton concentrations are generally quite low in the Rideau, and the types of algae found suggest the water is relatively clean. However, some "problem" algae have been found in the Rideau, which are not monitored as part of current Chl a sampling programs (which focus on the main channel). These include floating algal mats in shallow areas and occasional (potentially toxic) cyanobacterial blooms.

- **Metals**

"Heavy" metal concentrations are generally very low in the Rideau. However, concentrations of several heavy metals occasionally exceed provincial objectives, particularly in the lower Rideau (below the Jock River).

- ***E. coli***

E. coli levels usually meet provincial objectives for recreational uses such as swimming in most of the River. Beaches are rarely closed due to high *E. coli* concentrations. However, *E. coli* concentrations are often high within the downtown area of the City of Ottawa.

Biological Indicators

- **Species diversity**

The Rideau River supports diverse communities of suspended algae, aquatic plants, amphibians and reptiles, fish, aquatic birds, clams and other invertebrates. However, several invasive, introduced species have been found in the Rideau, notably zebra mussels, Eurasian water milfoil, curly pondweed and the common carp.

- **Species at risk**

The Rideau River is home to a number of provincially rare species, and two vulnerable bird species, the black tern and the least bittern. However, we know little about the size and health of the populations of these rare species.

- **Fish diversity & abundance**

There is a diverse community of fish in the Rideau, with a predominance of fish species that are typical of fertile, productive freshwaters. However, the non-native common carp, which has been found to cause the degradation of shoreline habitats (by uprooting aquatic plants), is now well established in the Rideau River. Other non-native species are being introduced (for example when unwanted aquarium fish are dumped into the River). This could have serious consequences for native aquatic communities in the Rideau.

- **Fish consumption**

There are some restrictions on the consumption of fish caught in the Rideau River. However, the presence of contaminants such as mercury in fish is a global problem, and the situation in the Rideau is comparable to (or even better than) that in many other Canadian lakes and rivers.

- **Aquatic plant diversity & abundance**

The Rideau River supports a diverse community of aquatic plants in its shallow areas, and even some uncommon species, such as wild rice, in places.

- **Aquatic plant harvesting**

The deeper main channel of the Rideau Canal system suffers from the heavy growth of invasive plant species (such as Eurasian water milfoil and curly pondweed), which are harvested in some areas to make navigation possible. These plants appear to be getting much thicker in recent years in the Rideau Canal (through Ottawa).

- **Zebra mussels**

Zebra mussels have invaded the Rideau, and continue to spread throughout the system. They have contributed to serious declines in native clam populations in the lower Rideau River.

Stress Indicators

- **Population growth**

Human population growth continues in the Rideau River watershed, with large increases in population projected for the City of Ottawa over the next 20 years. The impact this growth has on the Rideau will depend largely on the

type and quality of development that occurs. Improvements in urban infrastructure and planning may mitigate some of the environmental impacts associated with population growth.

- **Urban growth & density**

The City of Ottawa continues to expand, particularly outside the Greenbelt. Urban density is declining, so it takes more land to support a given population.

- **Permits to take water**

The number of permits to take water from the Rideau continues to increase. However, the actual amount of water taken, and the effect this has on the Rideau are unknown.

- **Boat traffic**

The amount of boat traffic through the locks on the Rideau has declined somewhat in recent years. However, much of the boat traffic on the Rideau originates from property owners and the users of marinas along the River (and is therefore not accounted for in these boat traffic figures). Trends in this local boat traffic, and its impacts are not currently known.

- **Draw down**

The rapid draw down (or lowering) of Rideau River water levels in the fall has resulted in serious fish kills in the past. The effects of refilling the River in the spring have not yet been studied. However, efforts are being made to monitor and reduce the negative effects of draw down on fish communities.

- **Wastewater treatment**

Most of the population within Rideau River watershed is served by some form of municipal wastewater treatment system. However, 18% of the population relies on septic systems, and their impact on water quality in the Rideau River is unknown. The performance of most of the municipal treatment plants that discharge into the Rideau is generally good to excellent.

- **Agricultural activities**

About 40% of the land in municipalities bordering the Rideau River is farmland but the impacts of agricultural activities have not yet been studied. Cattle continue to have access to the Rideau River in some areas, but the extent of their impact is not known.