

Limitations

Consumption guidelines may be based on different combinations of contaminants, making comparisons between different sites or time periods difficult. Guidelines are not available for all species at each site. Information on trends in specific contaminant concentrations is limited, based on small sample sizes, and available over different time periods for different sites.

3.5 Biological Indicator: Aquatic Plant Diversity and Abundance

Background

Aquatic plants are critically important in river ecosystems. They slow currents and decrease wave action, protecting shorelines. They play an important role in the recycling of nutrients, and some species remove contaminants from water, through uptake or by promoting sedimentation. Aquatic plants create wetlands and lake-like environments within rivers, providing food, shelter and sites for reproduction for fauna including zooplankton, insects, molluscs, fish, reptiles, amphibians, waterfowl and semi-aquatic mammals.

Shallow eutrophic (nutrient-rich) lakes and rivers may exist in either of two stable states: one is a clear-water state associated with abundant aquatic plants, and the other is a turbid state with high algal biomass. Of these two alternate states, the plant-dominated state is preferred, and considered to be indicative of a healthier ecosystem.

Results

The Rideau River supports a rich community of aquatic plants. Between Smiths Falls and Ottawa, approximately 70% (by area) of the Rideau River is less than two metres in depth, and these shallow areas support dense beds of plants. Fifty-five species of submerged, floating-leafed and emergent aquatic plants were found in the Rideau River by researchers involved in the recent 3-year Rideau River Biodiversity study.

Six permanent, long-term monitoring plots were established along the Rideau River in 1998 by researchers at the Canadian Museum of Nature. A total of 30 species of submerged and floating aquatic plants was found during 1998 and 1999, although the number of species found at each plot ranged between only 5 and 17 (Figure 12). There was considerable variation in plant species found at the different sites (Figure 13).

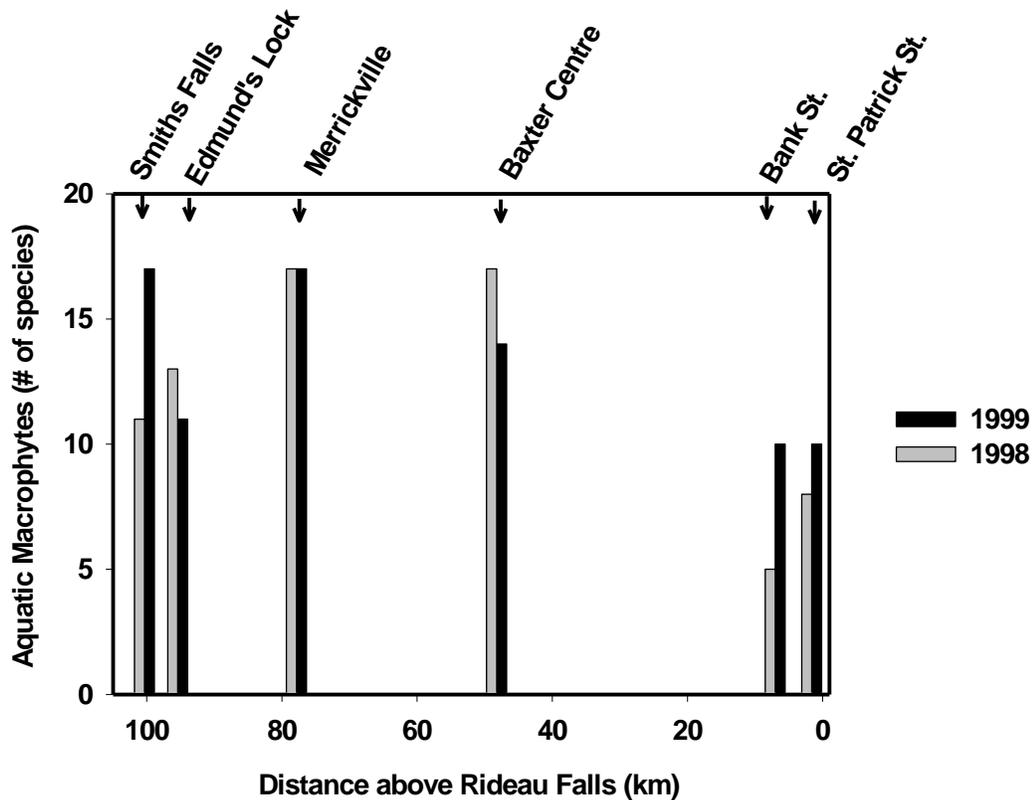


Figure 12 Aquatic plant species richness, 1998-1999.
Source: Canadian Museum of Nature

Overall, the most common species were *Vallisneria americana* (Tape grass), *Elodea canadensis* (Common waterweed), *Ceratophyllum demersum* (Coontail), *Zannichellia palustris* (Horned pondweed), *Lemna trisulca* (Star duckweed), *Nymphaea odorata* (Fragrant white water lily), and *Potamogeton richardsonii* (Richardson's pondweed). *Myriophyllum sibiricum* (Northern water milfoil) and *Myriophyllum spicatum* (the invasive Eurasian water milfoil) were not generally abundant in the long-term monitoring plots. However, these species of milfoil, as well as various pondweed species, particularly the introduced *Potamogeton crispus* (curly pondweed), are extremely common in other parts of the Rideau River, particularly in the deeper navigation channel. In fact, aquatic plants are so dense in the navigation channel that they are harvested every summer at some sites.

Limitations

The permanent sampling sites are located in shallow areas only, and therefore do not reflect conditions in deep areas in the navigation channel. Plant abundance is described by percent cover rather than biomass so it is difficult to compare the abundance of different plant species.