

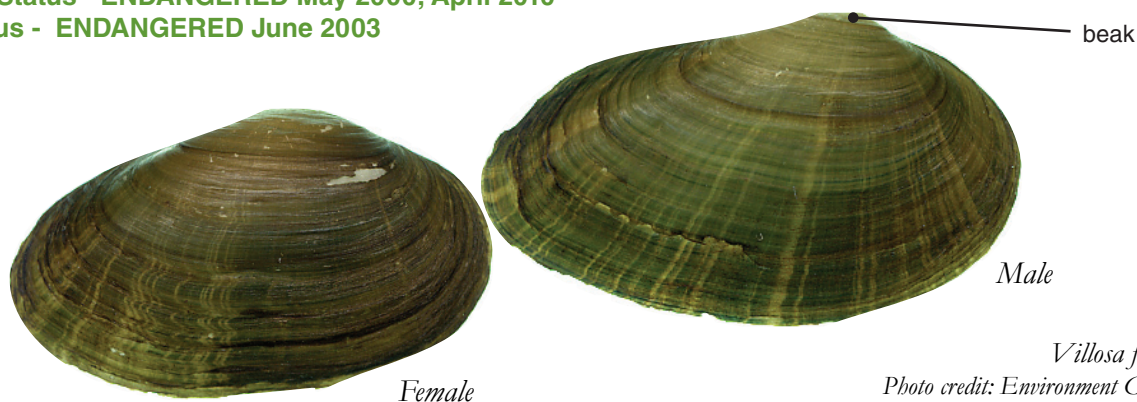
Aquatic Species at Risk



The Rayed Bean... a Species at Risk in Canada

COSEWIC Status - ENDANGERED May 2000; April 2010

SARA Status - ENDANGERED June 2003



Female

Male

Villosa fabalis

Photo credit: Environment Canada

General description

The Rayed Bean (*Villosa fabalis*) is one of Canada's 54 freshwater mussel species. It is one of the smallest mussels in Canada and has the following characteristics:

- shell is very small (less than 4 cm long), thick and oval shaped;
- outside of shell is normally light or dark green with crowded, wavy, darker green rays;
- inside of shell (nacre) is silvery white and shiny;
- raised part at the top of the shell (beak) is narrow and slightly raised above the hinge line;
- fine beak sculpture with five crowded, double-looped ridges;
- hinge teeth are unusually heavy; and
- females tend to be more inflated and more broadly rounded in the back end than males.

This species has been identified as Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). It is listed under the federal *Species at Risk Act* (SARA) and was afforded protection under the Act as of

June 2004. Additional protection is afforded through Ontario's *Endangered Species Act, 2007*. As required under SARA, a recovery strategy and an action plan have been developed for this species.

Freshwater mussels are molluscs, soft-bodied animals without a skeleton (invertebrates), that live on the bottom of streams, rivers, lakes and ponds. They use a muscular foot to burrow and crawl and have a pair of hinged shells. Mussels are filter feeders — nature's water purifiers — and are food for other wildlife like fishes, otters, mink, muskrats and some birds. They are also among the most endangered creatures in the world.



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Distribution

The Rayed Bean was historically found in western Lake Erie, the Detroit River and the Sydenham and Thames rivers in Ontario. It is found throughout a 92 km reach of the East Sydenham River and a 8 km reach of the North Thames River. The Rayed Bean was also historically known in 11 states in the United States. It no longer occurs in Illinois or Virginia and is listed as endangered or of special concern in most states where it still exists.

Habitat and life history

The Rayed Bean is usually found in or near riffle areas of clear headwaters and smaller tributaries of river systems. It is typically found deeply buried in sand or gravel substrates (bottoms) among the roots of aquatic plants. The Rayed Bean is a moderately long-lived species with a lifespan of at least 10 years. It is a sexually dimorphic mussel (males and females look different from each other) that spawns in late summer and releases its larvae (glochidia) the following spring. Like most other freshwater mussels, the glochidia are parasitic on fishes - the glochidia attach to the gills of their host fish until they reach their juvenile, free-living stage and drop off into the substrate below. Adult Rayed Bean are essentially sessile and may move only a few metres on the river or lake bottoms. Adults also use strong, silky fibres called 'byssal threads' to anchor themselves to the substrate, a special feature not seen in other adult freshwater mussels. The host fishes for this species in Canada are thought to include the Greenside Darter, Mottled Sculpin, Rainbow Darter and Largemouth Bass.

Diet

Like all species of freshwater mussels, the Rayed Bean filters its food from the water. Bacteria and algae are its primary food sources.

Threats

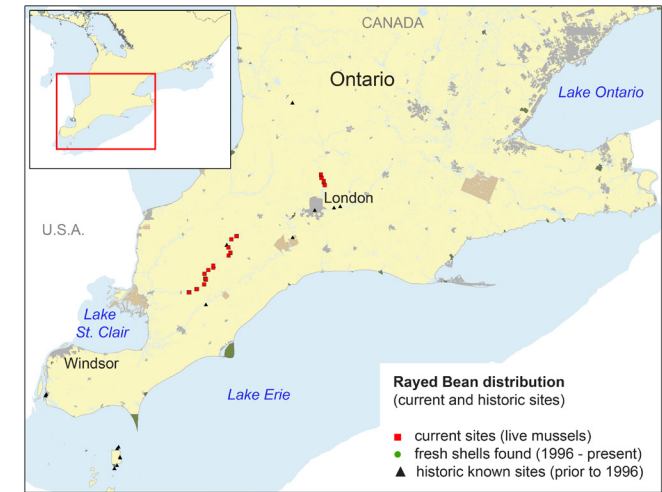
The major threats to the Rayed Bean continue to be habitat loss and destruction from increasing municipal, industrial, and agricultural activities. Siltation and pollution of clear waters, removal of sand bars, dam building and impoundment of rivers, and rising water temperature have likely destroyed much of the habitat for this species throughout the last century. More recently, the Zebra Mussel devastated some Rayed Bean populations in Lake Erie, but the remaining populations in the East Sydenham River and North Thames River are not yet threatened by this invasive species. Similarly, the invasive Common Carp and Round Goby may threaten both the Rayed Bean and its hosts.

Similar species

The Rainbow (*Villosa iris*), young specimens of the Kidneyshell (*Ptychobranchus fasciolaris*) and juvenile Spike (*Elliptio dilatata*) are all similar species.

Text Sources: COSEWIC Status Report on the Rayed Bean (*Villosa fabalis*) in Canada, 2010; Fisheries and Oceans Canada. Action Plan for the Sydenham River in

Rayed Bean distribution in Canada



Canada [proposed], 2012; Fisheries and Oceans Canada. Recovery Strategy for Northern Riffleshell, Snuffbox, Round Pigtoe, Mudpuppy Mussel and Rayed Bean in Canada [proposed], 2012; Metcalfe-Smith et al. Photo Field Guide to the Freshwater Mussels of Ontario, 2005; West, E.L. et al. 2000. Status of the Rayed Bean, *Villosa fabalis* (Bivalvia: Unionidae), in Ontario and Canada. *Canadian Field Naturalist*. 114(2): 248-258.

For more information, visit the SARA Registry at www.SARAreistry.gc.ca or the website below.

Cette publication est également disponible en français.

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www.aquaticspeciesatrisk.gc.ca

Section 32 (1) of the Species at Risk Act (SARA) states that “no person shall kill, harm or harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species.”