

BANDED & CHINESE MYSTERY SNAILS INVADe THE SOUTH NATION RIVER

ABSTRACT

From the onset of our monitoring of the molluscan fauna of the South Nation River in 1995, until 2010 the Viviparidae were represented only by the native *Campeloma decisum* (Brown M.S.). In 2010 South Nation Conservation staff found *Cipangopaludina chinensis* (Chinese M.S.) in Henderson Creek in Winchester and two summers of 'Mystery Snail Snagaroots' removed thousands of snails from the creek. In 2012 we found *Viviparus 'georgianus'* (Banded M.S.) in the Castor River at Russell, and then in 2016 a few in the main river downstream of there at High Falls. Amie Ivany found another population of *C. chinensis* in Hess Creek in 2017, where the shells were mostly broken as if predated. Our monitoring has been sporadic, but we're encouraging closer attention, especially to the signs of predation by Mammals.

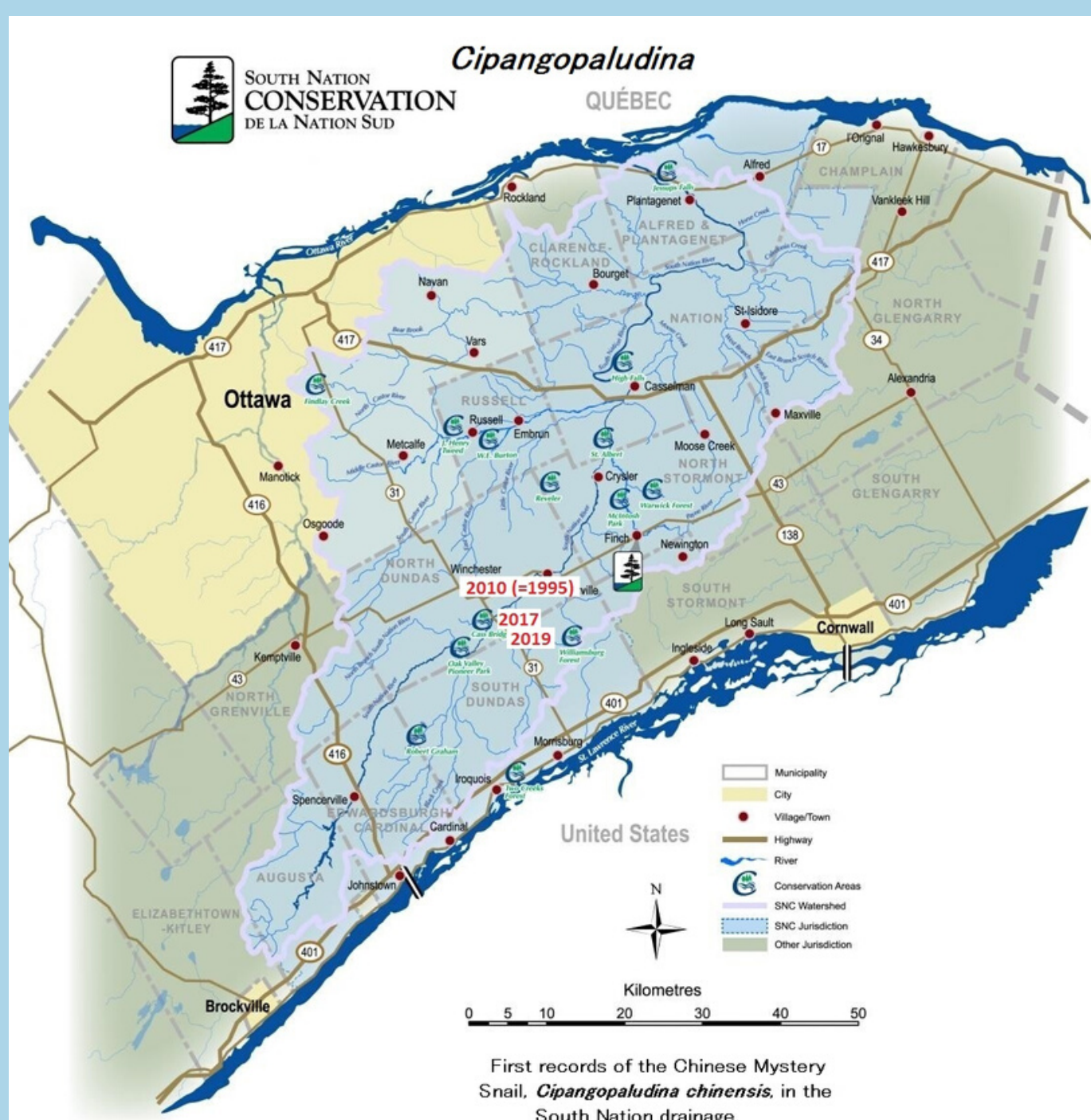
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One juvenile among abundant *Helisoma campanulatum* out on muddy floor of open water



Bags of invasive Chinese Mystery Snails



Chinese Mystery Snail, *Bullamya chinensis*

First records of the Chinese Mystery Snail, *Cipangopaludina chinensis*, in the South Nation drainage

Said to have been introduced to California as a food species, and now spread by aquarium dumps and on launched boats, this big dark snail has been known from the Rideau River near Carleton University, and is being discovered upstream along the Ottawa River to Mattawa, and in North Bay & Blind River.

July 2010 – an SNC team found abundant *Cipangopaludina* in Henderson Creek, a drain in downtown Winchester.
 18 July 2011 – Ontario: Stormont, Dundas & Glengarry Cos: Henderson Creek, 0.2 km NNE centre of Winchester, 45.09623° N 75.35111° W – narrow black clay muck *Sagittaria* drain under *Acer negundo* near urban residences. One taken by dipnetting – moved 987m S – Henderson Creek/588 St Lawrence Street, 45.08741° N 75.34965° W – nearly dry black muck drain through lawns & brush in town. The landowner says the snails have been present & abundant through the 15 years they've lived here. In a sample of 120 x 70 cm of exposed mud were found: n=52 mean height=24.06 mm (10.8–43.3 mm) st. dev. =5.97 mm. The SNC party (Michelle Schreeder, Brandon Oosterhof, Sarah Craig, & Janet Greenhorn) took a more general sample: n=872 mean height=20.27 (8.7 – 38.2 mm) st. dev. =4.91 mm. 19 August 2011 – moved 644m SSW – Henderson Creek, 14 km S centre of Winchester, 45.0878° N 75.35158° – highwater clayey culvert in brushy oldfields. Along 60 m of ditch: n=307 mean height=30.83 mm (14.4 – 49.2 mm) st. dev. =9.01 mm. Taken by Corey Wood, Janet Greenhorn, Naomi Langlois-Anderson, Brandon Oosterhof, Sarah & Chris Craig and Donna & John Greenhorn.

This control effort was repeated at these sites in 2012 & 2013, removing thousands of snails. According to Rob Dillon these "Snail Snagaroots" were the first known North American attempt to eradicate a population of this invasive species.

5 September 2017 – Hess Creek at Webb Road, 268 km N Winchester Springs, 45.05611° N 75.29819° W – brownwater cobble/clay creek through *Acer negundo*/brush shores. On 2 August 2017 11:42 AM, Amie Boudreau Ivany wrote: "I found these today while walking the creek near Camp Sheldrick downstream of the low level crossing" ...many shells, many of which looked like they had been broken, as if by mammalian predation. – moved 129km S – Hess Creek/Nesbitt Road, 143 km NNW Winchester Springs, 45.04452° N 75.29870° W – brownwater cobble/clay creek through *Acer negundo*/*Fraxinus* woods. Shells scattered along shore on banks, some broken as if by predation. Some living ones from the surface of the mud. 29 July 2019 – moved 668m S – Highway 31/Hess Creek, 0.8 km NNW Winchester Springs, 45.03852° N 75.29907° – ditch-like creek through agricultural fields, scattered on branches in clear water near culvert.

First records of the Banded Mystery Snail, *Viviparus 'georgianus'*, in the South Nation drainage

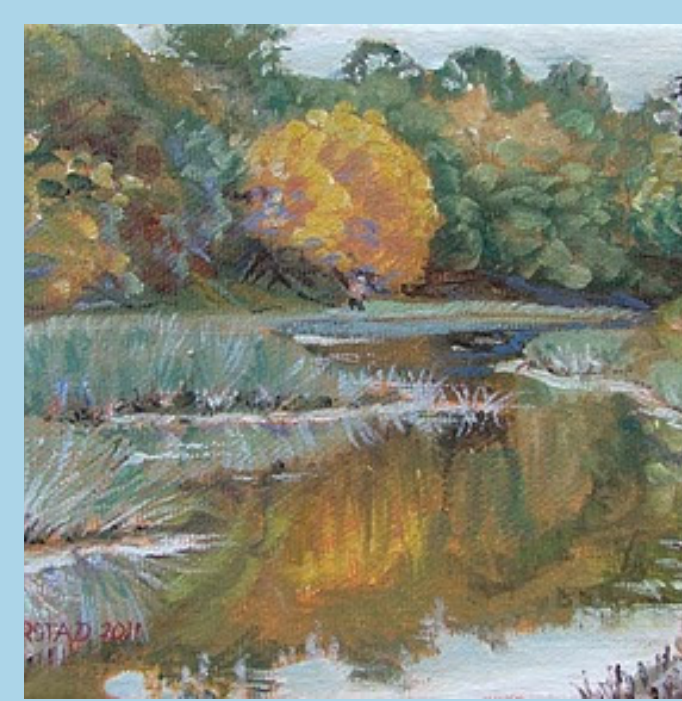
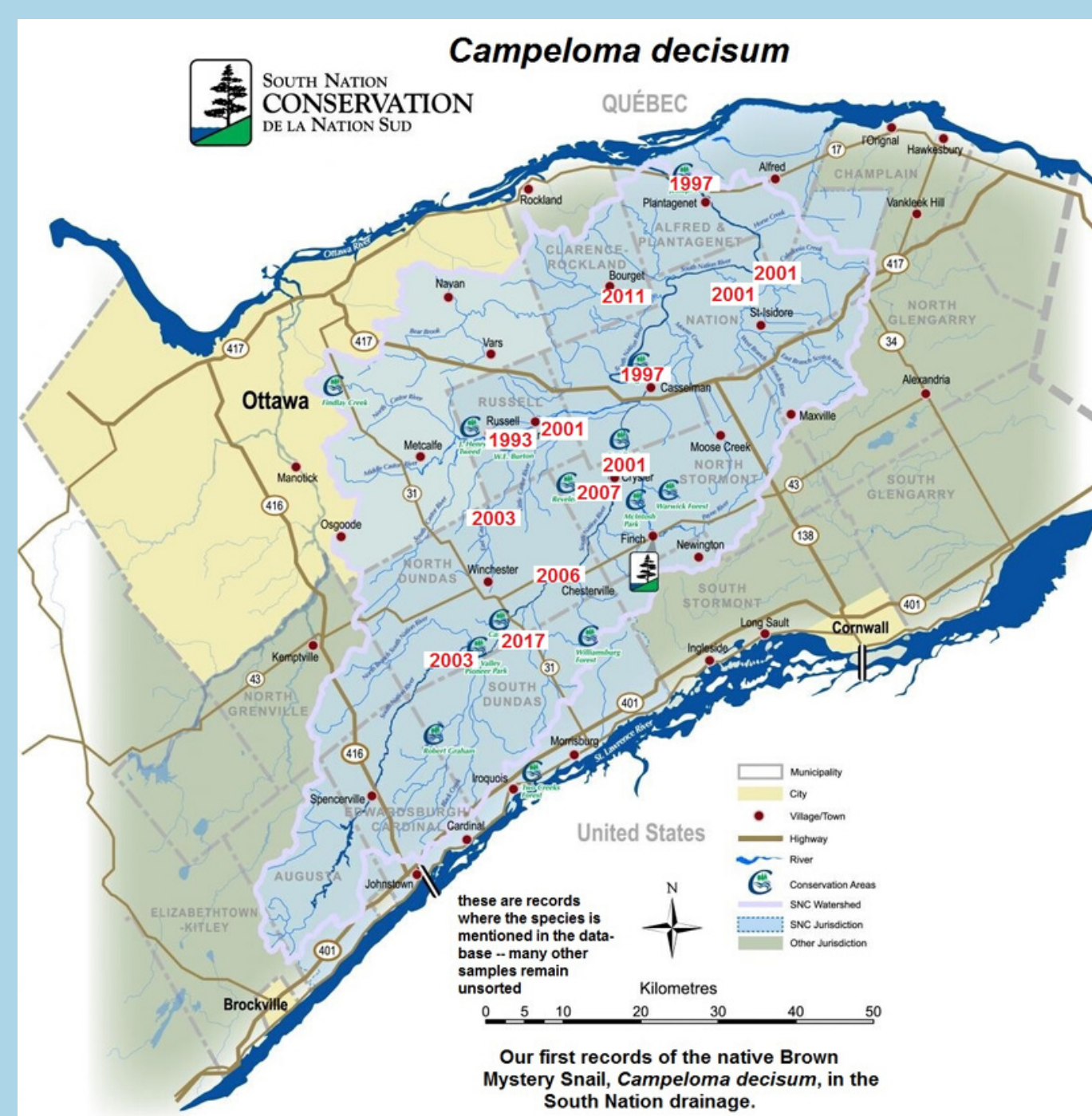
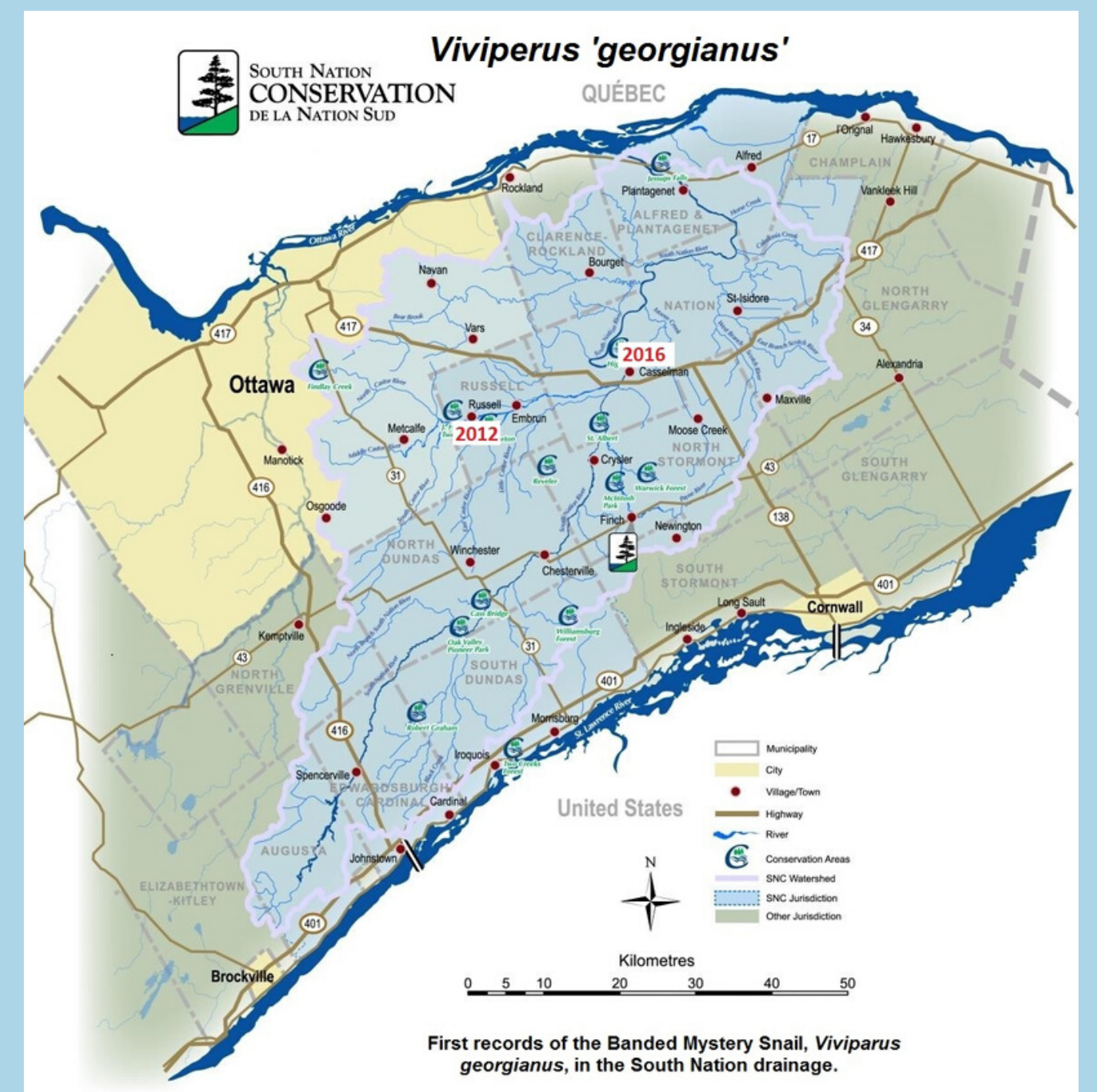
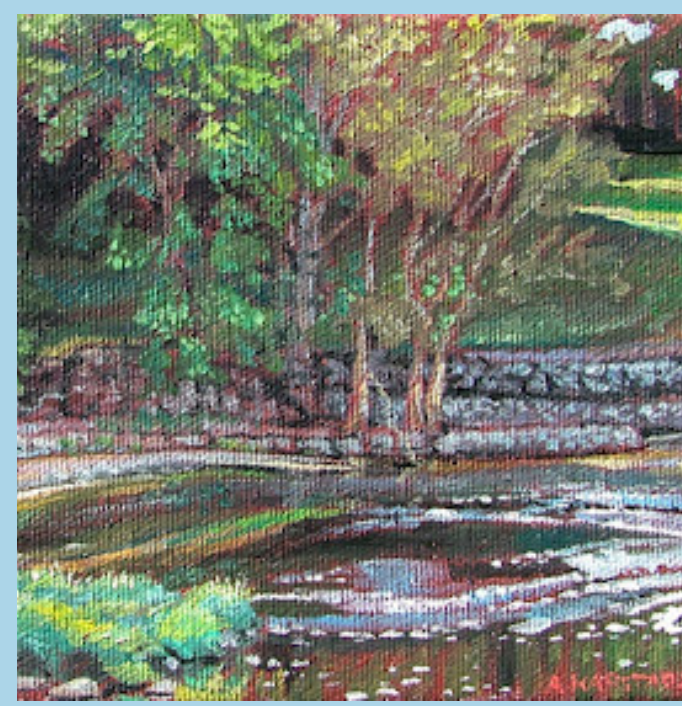
This species is abundant in the surrounding Ottawa and St-Lawrence Rivers, and in the adjacent Rideau system. It has invaded Ontario either from the SE States, via the Erie Canal, or, if really *V. viviparus*, from Europe. The shells are similar to those of *V. viviparus*, and different from those of the *V. georgianus* complex, and the DNA has not yet been studied.

24 March 2012 – Ontario: Prescott & Russell County: Russell: Castor River at Russell dam, 45.25982° N 75.34970° W – shores of clay-bed river below dam in town. Scattered shells from below dam. Previous drift samples from here were from 1993, 1997, and 2002. These shells are strikingly large, which may indicate rapid growth in the process of colonization.

5 June 2012 – moved 747m SW – County Road 6 bridge in Russell, 45.25579° N 75.35733° W – shallow impounded murky-water river in town, with *Acer negundo* banks. Many seen. 8 June 2012 – moved 148km NE – Castor River just below Wade Road bridge, 45.26321° N 75.34170° W – cobbly shore of grass/brush-banked shallow rocky river. Shells of all ages from S bank of river, a large one 33.5 mm. 6 May 2014 – Castor River below Russell dam, 45.25973° N 75.34987° W. Shells of all sizes, largest very large. The Castor River downstream of Russell has not been surveyed.

7 September 2016 – South Nation River at foot of High Falls, Casselman, 45.32325° N 75.09529° W – limestone bedrock flats at foot of nearly dry shallow bedrock falls. Big shells scattered in vast flats of *Dreissena* shells, mostly in areas of greatest Gastropod concentration with twigs at crests of slight undulations in the depth of the Zebra Mussel shells. Largest 316 mm. 22

Sept 2019 – moved 71m S – 45.32261° N 75.09537° – muddy/*Zizania* pool at foot of dry shallow bedrock falls. One juvenile among abundant *Helisoma campanulatum* out on muddy floor of open water. Other observers: Clay Shearer & Robert Forsyth.



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Our first records of the native Brown Mystery Snail, *Campeloma decisum*, in the South Nation drainage

The painting is a view of the South Nation River from the Chesterville dam 45.10136° N 75.22178° W -- *Acer negundo* shore of rocky/muddy river below dam near town. *Campeloma decisum* (Brown Mystery Snail) Multiple collections of old shells from here, since this species lives buried in the mud, it's not seen alive as often as the invasive Mystery Snails are.

The South Nation used to be so virginal of alien Mystery Snails and invasive Crayfish, and now we've got two species of each...