

## Species Status Assessment

**Class:** Gastropoda  
**Family:** Valvatidae  
**Scientific Name:** *Valvata lewisi*  
**Common Name:** Fringed valvata

### Species synopsis:

Freshwater gastropods (snails) are an important and diverse component of aquatic ecosystems worldwide. They have diversified into every available aquatic habitat, including springs, small streams, large rivers, ponds, lakes, and ephemeral to permanent wetlands. Most graze on algae, aquatic plants and biofilms, though some are suspension or deposit feeders, and they can play a vital role in the processing of detritus and decaying organic matter. Freshwater snails are not predatory, unlike some of their terrestrial or marine counterparts and they often dominate benthic stream communities, regularly exceeding 50% of the invertebrate biomass (Johnson et al 2013). Gastropods are important dietary components of many North American fishes, and also are consumed by a variety of aquatic associated birds and mammals such as the snail kite and the muskrat (Johnson et al. 2013).

The fringed valvata occurs in southern Canada from Quebec to British Columbia and in the United States from New York west to Minnesota (Goodrich 1932, Burch 1982).

### I. Status

#### a. Current and Legal Protected Status

i. **Federal** Not listed **Candidate?** No  
ii. **New York** Special Concern

#### b. Natural Heritage Program Rank

i. **Global** G5  
ii. **New York** S1 **Tracked by NYNHP?** Yes

### Other Rank:

American Fisheries Society: CS – Currently Stable

**Status Discussion:**

The fringed valvata is ranked secure globally and critically imperiled in New York. Little is known about its status within the state or throughout its range.

**II. Abundance and Distribution Trends**

**a. North America**

**i. Abundance**

declining  increasing  stable  unknown

**ii. Distribution:**

declining  increasing  stable  unknown

**Time frame considered:** \_\_\_\_\_

**b. Regional**

**i. Abundance**

declining  increasing  stable  unknown

**ii. Distribution:**

declining  increasing  stable  unknown

**Regional Unit Considered:** \_\_\_\_\_

**Time Frame Considered:** \_\_\_\_\_

**c. Adjacent States and Provinces**

**CONNECTICUT**                      Not Present   X                        No data       

**MASSACHUSETTS**                      Not Present                             No data   X  

**i. Abundance**

       declining          increasing                             stable                        X   unknown

**ii. Distribution:**

       declining          increasing                             stable                        X   unknown

Time frame considered: \_\_\_\_\_

Listing Status:        Not listed (SNR/ SU)        SGCN?   No  

**NEW JERSEY**                      Not Present   X                        No data       

**ONTARIO**                      Not Present                             No data       

**i. Abundance**

       declining          increasing                             stable                        X   unknown

**ii. Distribution:**

       declining          increasing                             stable                        X   unknown

Time frame considered: \_\_\_\_\_

Listing Status:        Not listed (SNR/ SU)       

**PENNSYLVANIA**                      Not Present                             No data       

**i. Abundance**

       declining          increasing                             stable                        X   unknown

**ii. Distribution:**

       declining          increasing                             stable                        X   unknown

Time frame considered: \_\_\_\_\_

Listing Status:        Not listed (SNR/ SU)        SGCN?   No



**Trends Discussion:**

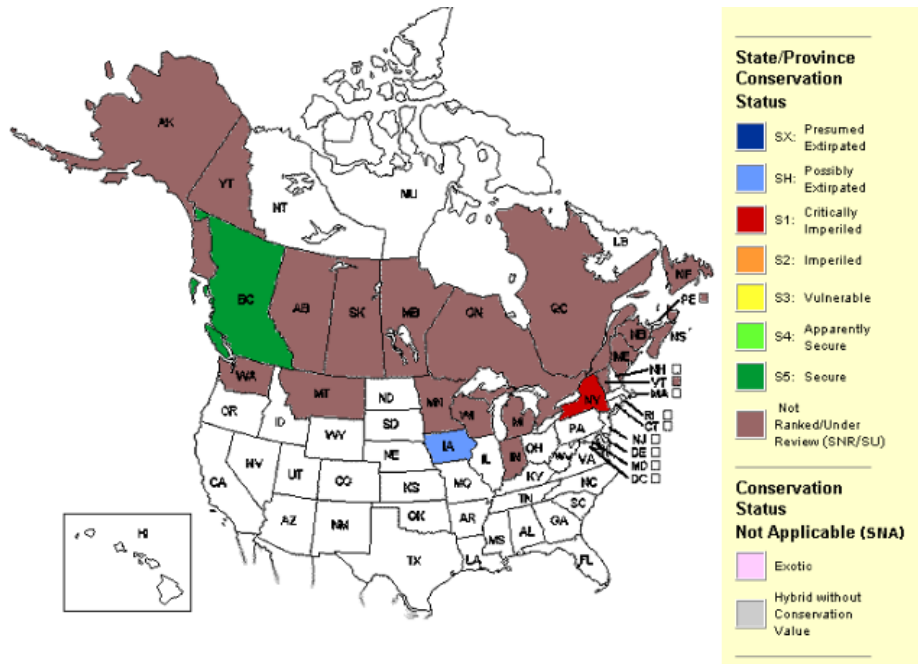


Figure 1. Conservation status of the fringed valvata in North America (NatureServe 2012).

**III. New York Rarity, if known:**

| <b>Historic</b>      | <b><u># of Animals</u></b> | <b><u># of Locations</u></b> | <b><u>% of State</u></b> |
|----------------------|----------------------------|------------------------------|--------------------------|
| <b>prior to 1970</b> | _____                      | _____                        | _____                    |
| <b>prior to 1980</b> | _____                      | _____                        | _____                    |
| <b>prior to 1990</b> | _____                      | _____                        | _____                    |

**Details of historic occurrence:**

Harman and Berg (1971) documented a population in Oneida Lake, where it was relatively scarce, living on sand down to the depths of 7 m (Harman and Berg 1971). Other substrata include mud and aquatic vegetation (Baker 1928a).

| <b>Current</b> | <b><u># of Animals</u></b> | <b><u># of Locations</u></b> | <b><u>% of State</u></b> |
|----------------|----------------------------|------------------------------|--------------------------|
|                | _____                      | _____                        | _____                    |

**Details of current occurrence:**

One population was located during a survey of the freshwater snails of New York, in a ditch at Oneida Shores County Park, Onondaga County, within the St. Lawrence River watershed (Jokinen 1992). In June of 2012 Alexander Karatayev, Vadim Karatayev, and Lyubov Burlakova found 4 individuals in 3 locations in Oneida Lake (A. Karatayev, personal communication). It is also known to occur in Lake Erie and in the Hudson River.

**New York's Contribution to Species North American Range:**

| <b>% of NA Range in New York</b> | <b>Classification of New York Range</b> |
|----------------------------------|---|
| ___ 100 (endemic)                | ___ Core                                |
| ___ 76-99                        | <u>X</u> Peripheral                     |
| ___ 51-75                        | ___ Disjunct                            |
| ___ 26-50                        | <b>Distance to core population:</b>     |
| <u>X</u> 1-25                    | _____                                   |

**IV. Primary Habitat or Community Type:**

1. Winter-stratified Monomictic Lake
2. Ditch/Intermittent Stream
3. Summer-stratified Monomictic Lake
4. Large/Great River

**Habitat or Community Type Trend in New York:**

Declining  Stable  Increasing  Unknown

Time frame of decline/increase: \_\_\_\_\_

Habitat Specialist?  Yes  No

Indicator Species?  Yes  No

**Habitat Discussion:**

The fringed valvata is most commonly found in lakes, often at considerable depths, as well as on mud among submerged vegetation (Clarke 1981). Sites where it has been found spanned a relatively narrow range of pH (7.7 to 8.6) and conductivity (0.31 to 0.57 mS) (Prescott and Curteanu 2004).

**V. New York Species Demographics and Life History**

- Breeder in New York**
- Summer Resident**
- Winter Resident**
- Anadromous**
- Non-breeder in New York**
- Summer Resident**
- Winter Resident**
- Catadromous**
- Migratory only**
- Unknown**

**Species Demographics and Life History Discussion:**

Very little is known regarding the life history of this species.

Most Gastropods belong to the clade Caenogastropoda, in which individuals mature slowly (requiring at least a year), are long-lived dioecious species with internal fertilization, and females generally attach eggs to firm substrates in late spring and early summer. Many species are narrow endemics associated with lotic habitats, often isolated in a single spring, river reach, or geographically restricted river basin (Johnson et al. 2013). In contrast, members of the clade Heterobranchia are hermaphroditic, mature quickly, and generally have shorter generation times (Johnson et al. 2013).



## VI. Threats:

Experts meeting concluded that there is insufficient information to assess threats to this species. High imperilment rates among freshwater gastropods have been linked to alteration, fragmentation and destruction of habitat and introduction of non-indigenous species. Causes of habitat degradation and gastropod species loss include dams, impounded reaches, development of riparian areas, channelization, erosion, excess sedimentation, groundwater withdrawal and associated impacts on surface streams (flows, temperature, dissolved oxygen), multiple forms of pollution (salt, metals such as Cu, Hg, Zn, untreated sewage, agricultural runoff, pesticides/fertilizers), changes in aquatic vegetation, and invasion of exotic species (Johnson et al. 2013). Most gastropod species live in the shallows (depths less than 3 m), where food abundance is greatest. As a result, drastic water fluctuations, such as draw-downs, may cause declines in snail populations (Hunt and Jones 1972).

Strayer (1987) concluded that human activities had destroyed much of the original mollusk fauna in some parts of the Hudson basin, but not in others. Channelization of farmed mucklands and industrial pollution from Beacon were noted as causes for the notably reduced biodiversity of mollusks in the Wallkill River of Orange County and the Fishkill Creek of Dutchess County, respectively.

The New Zealand mud snail (*Potamopyrgus antipodarum*) is a highly invasive species that was introduced in Idaho in the 1980s. It can have devastating consequences to aquatic ecosystems, reducing or eliminating native snail species (Benson et al. 2013). This snail was found established in Lake Ontario in 1991 (Zaranko et al. 1997) and in Lake Erie in 2005 (Levri et al. 2007).

### **Are there regulatory mechanisms that protect the species or its habitat in New York?**

No       Unknown  
 Yes

The Protection of Waters Program provides protection for rivers, streams, lakes, and ponds under Article 15 of the NYS Conservation Law, however this may not be sufficient enough to protect this species.

### **Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:**

Basic biological information is lacking for most taxa of freshwater gastropods and there is a strong need for surveys and biological studies given the strong evidence of decline and extinction.

Although not specific to the coldwater pond snail, the NYS Comprehensive Wildlife Conservation Strategy (CWCS) recommends the following actions for the freshwater gastropods (NYSDEC 2005):

- Develop fact sheets for paper distribution and the DEC website
- Determine habitat requirements for all life stages
- Determine threats specific to species
- Determine habitat management techniques
- Determine life history and population dynamics
- Determine distribution

## VII. References

American Fisheries Society (AFS). 2013. Conservation assessment of freshwater gastropods (snails) from Canada and the United States by the Gastropod Subcommittee (Endangered Species Committee). *Fisheries* 38: 247-282.

Baker, F. C. 1928. The fresh water Mollusca of Wisconsin, Part 1: Gastropoda. *Wisconsin Geographical and Natural History Survey Bulletin* 70: 1-494.

Benson, A.J., R.M. Kipp, J. Larson, and A. Fusaro. 2013. *Potamopyrgus antipodarum*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL.  
<http://nas.er.usgs.gov/queries/factsheet.aspx?SpeciesID=1008> Revision Date: 6/11/2012

Burch, J. B. Freshwater snails (Mollusca: Gastropoda) of North America. Environmental Monitoring and Support Laboratory, Office of Research and Development, United States Environmental Protection Agency, Cincinnati, Ohio. EPA-600/3-82-026: 1-294.

Clarke, A. H. 1981. The freshwater molluscs of Canada. National Museum of Natural Sciences, National Museum of Canada, Ottawa.

Goodrich, C. 1932. The mollusca of Michigan. Michigan handbook series no. 3. University of Museums, University of Michigan, Ann Arbor.

Harman, W. N. and C. O. Berg. 1971. The freshwater snails of central New York. Cornell University Agricultural Experiment Station, Ithaca, New York 1(4): 1-68.

Johnson, P.D., A.E. Bogan, K.M. Brown, N.M. Burkhead, J.R. Cordeiro, J.T. Garner, P.D. Hartfield, D.A.W. Lepitzki, G.L. Mackie, E. Pip, T.A. Tarpley, J. S. Tiemann, N.V. Whelan, and E.E. Strong. 2013. Conservation status of freshwater gastropods of Canada and the United States. *American Fisheries Society Bulletin* 38(6): 37p.

Jokinen, E. H. 1992. The freshwater snails (Mollusca: Gastropoda) of New York State. *New York State Museum Bulletin* 482.

Levri, E. P., A. A. Kelly, and E. Love. 2007. The invasive New Zealand mud snail (*Potamopyrgus antipodarum*) in Lake Erie. *Journal of Great Lakes Research* 33: 1–6.

Prescott, D. R. C. and M. M. Curteanu. 2004. Survey of Aquatic Gastropods in the Central Parkland Subregion of Alberta. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 92, Edmonton, AB. 50 pp.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 17 June 2013.

New York Department of Environmental Conservation (NYSDEC). 2005. New York State Comprehensive Wildlife Conservation Strategy. <http://www.dec.ny.gov/index.html>. Accessed 17 June 2013.

Zaranko, D.T., D.G. Farara, and F.G. Thompson. 1997. Another exotic mollusk in the Laurentian Great Lakes: the New Zealand native *Potamopyrgus antipodarum* (Gray 1843) (Gastropoda, Hydrobiidae).

**Date last revised:**                      20 February 2014