

Species Status Assessment

Common Name: Spindle lymnaea

Date Updated: February 2025

Scientific Name: *Acella haldemani*

Minor Edits By: DEC Wildlife Diversity Section

Class: Gastropoda

Family: Lymnaeidae

Species Synopsis *(a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York):*

This slender-shelled mollusk occurs in the Great Lakes-St. Lawrence River drainage from southeastern Ontario, southern Quebec and northern Vermont westward to Minnesota and southward to Illinois (Jokinen 1992). It is rare in occurrence rangewide (Kart et al. 2005). The spindle lymnaea occurs in lakes, where it attaches to submerged vegetation, spire down and about 20cm from the bottom substrate (Goodrich 1932). It occurred historically in five counties in New York and was last documented in Oswego County in 1971 (Harman and Berg 1971). This snail is easily overlooked in surveys because individuals do not move far from where they were hatched, and thus populations may be clumped at just one location within a lake (Morrison 1932, Jokinen 1992).

DEC is not aware of any additional data or new information on population trends or threats to this species since the last SWAP revision in 2015. This species was listed as SPCN in 2015, but with the removal of this status in the 2025 revision it has been changed to SGCN.

I. Status

a. Current legal protected Status

i. **Federal:** Not listed **Candidate:** No

ii. **New York:** Not listed

b. Natural Heritage Program

i. **Global:** G3

ii. **New York:** SNE **Tracked by NYNHP?:** Yes

Other Ranks:

- New York 2025 SGCN status: Species of Greatest Conservation Need
- IUCN Red List: Near Threatened
- Northeast Regional SGCN: not listed
- American Fisheries Society (AFS): Vulnerable

Status Discussion:

Jokinen (1992) called this mollusk rare in New York and did not detect it during surveys, nor did Strayer (1987). The most recent record is from Oswego County in 1971 (Harman and Berg 1971). It is believed to have been extirpated from the Lake Champlain basin, the Lake Erie basin, the SE Lake Ontario basin, and the Susquehanna basin (NYSDEC 2005).

Kart et al. (2005) note that species in the freshwater snails group in the Vermont State Wildlife Action Plan range from extirpated to declining to rare, and that spindle lymnaea in particular appears to be greatly reduced from its historic range. Spindle lymnaea is ranked as Critically Imperiled in Ontario and Vulnerable in Michigan, but is not ranked (SNR) in the other states and provinces where it occurs.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Unknown	Unknown			-
Northeastern US	Yes	Unknown	Unknown			-
New York	Yes	Unknown	Unknown		Not listed	Yes
Connecticut	No	-	-			-
Massachusetts	No	-	-			-
New Jersey	No	-	-			-
Pennsylvania	No	-	-			-
Vermont	Yes	Declining	Declining		Not listed	Yes
Ontario	Yes	Declining	Declining		Not listed	-
Quebec	Yes	Unknown	Unknown			-

Column options

Present?: Yes; No; Unknown; No data; (blank) or Choose an Item

Abundance and Distribution: Declining; Increasing; Stable; Unknown; Extirpated; N/A; (blank) or Choose an item

SGCN?: Yes; No; Unknown; (blank) or Choose an item

Monitoring in New York (*specify any monitoring activities or regular surveys that are conducted in New York*):

None.

Trends Discussion (*insert map of North American/regional distribution and status*):

Spindle lymnaea has been extirpated from four basins in New York: Lake Champlain, Lake Erie, SE Lake Ontario, and Susquehanna (NYSDEC 2005).

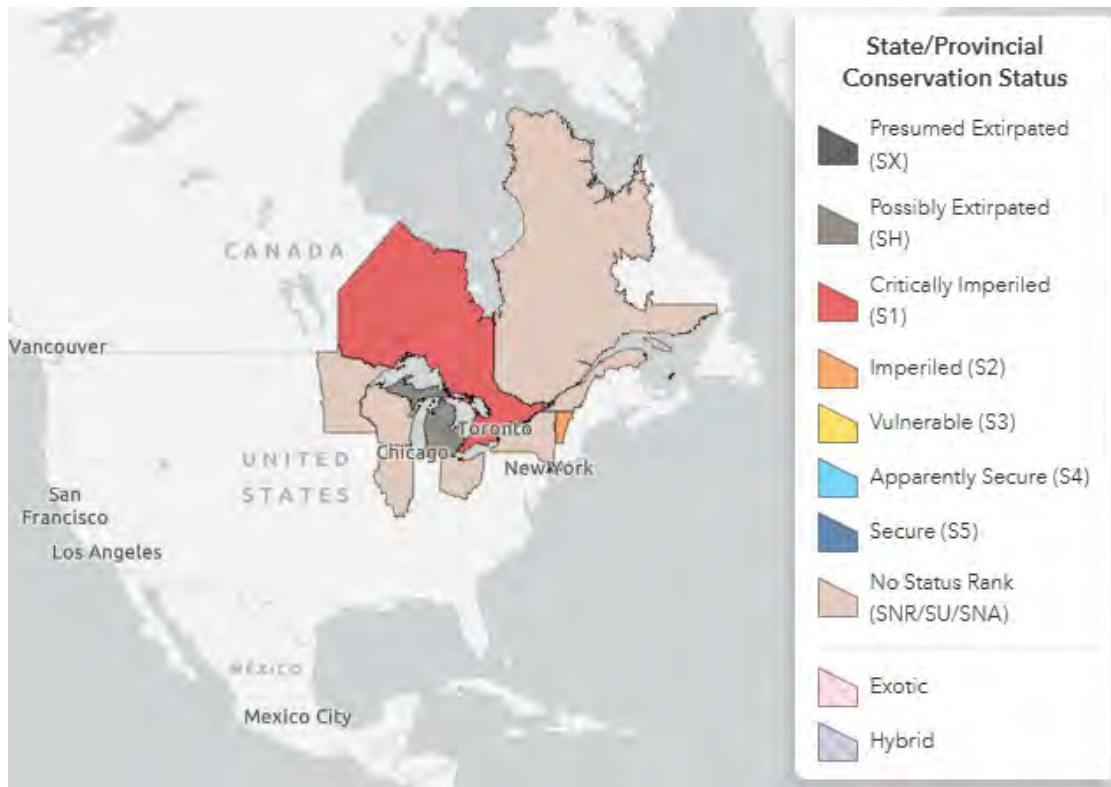


Figure 1. Conservation status of spindle lymnaea in North America (NatureServe 2025)

III. New York Rarity (provide map, numbers, and percent of state occupied)

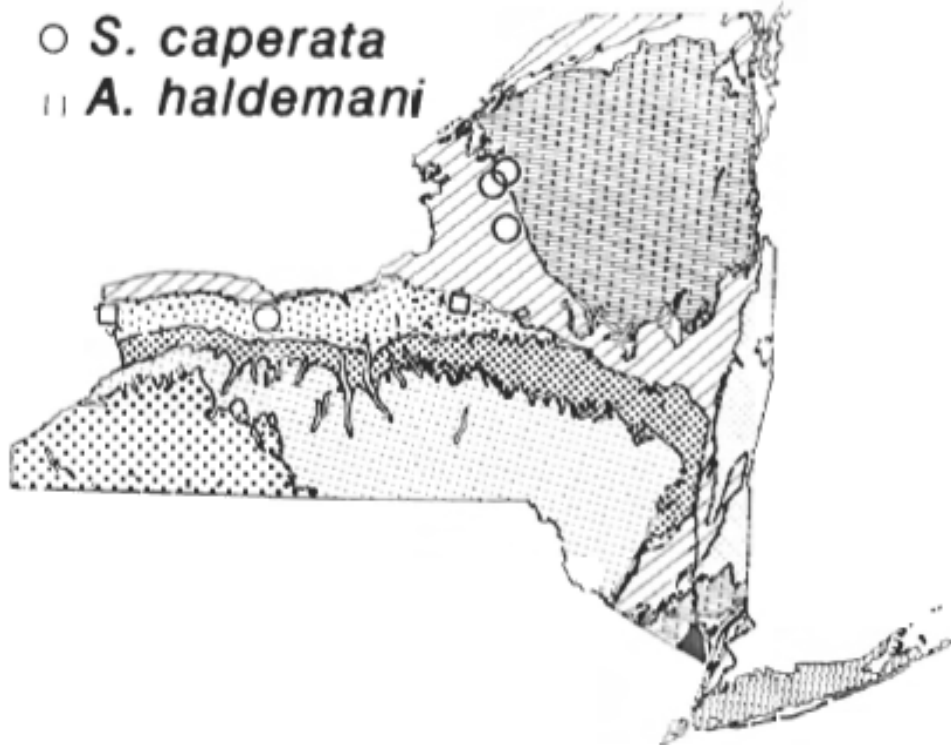


Figure 2. Records of *A. haldemani* (spindle lymnaea) in New York. Closed circles indicate records from current surveys, while open circles indicate records from museum specimens (Jokinen 1992).

Details of historic and current occurrence:

Jokinen (1992) reported that spindle lymnaea occurred historically in five counties: Clinton, Niagara, Onondaga, and Oswego. It was not detected in statewide surveys during four survey periods ranging from 1978 to 1991 by Jokinen (1992) or by Strayer (1987). It was documented at Oneida Lake, Oswego County (Harman and Berg 1971).

Spindle lymnaea has not been documented in New York since 1971. One dead shell was found near Lake Ontario during summer 2012 (Expert meeting).

New York’s Contribution to Species North American Range:

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Core	

Column options

Percent of North American Range in NY: 100% (endemic); 76-99%; 51-75%; 26-50%; 1-25%; 0%; Choose an item

Classification of NY Range: Core; Peripheral; Disjunct; (blank) or Choose an item

IV. Primary Habitat or Community Type (from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):

- a. Lacustrine
- b. Winter-stratified Monomictic Lake

c. Summer-stratified Monomictic Lake

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/Community Trend	Time frame of Decline/Increase
No	Yes	Stable	

Column options

Habitat Specialist and Indicator Species: Yes; No; Unknown; (blank) or Choose an item

Habitat/Community Trend: Declining; Stable; Increasing; Unknown; (blank) or Choose an item

Habitat Discussion:

This snail is found in lakes with substrata that includes submerged logs, silt, sand, and mud in 0.3 to 2.0 meters of water (Jokinen 1992). Individuals attach to reeds and rushes about 20cm above the bottom (Goodrich 1932). Little is known about the chemical tolerance (Jokinen 1992) but Harman and Berg (1971) reported a pH of 8.1 in Oneida Lake where spindle lymnaea were found.

Aquatic gastropods are frequently used as bioindicators because they are sensitive to water quality and habitat alteration (Callil and Junk 2001, Salanki et al. 2003).

V. Species Demographic, and Life History:

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/Catadromous?
Yes	Choose an item.	Choose an item.	Yes	Yes	Choose an item.

Column options

First 5 fields: Yes; No; Unknown; (blank) or Choose an item

Anadromous/Catadromous: Anadromous; Catadromous; (blank) or Choose an item

Species Demographics and Life History Discussion *(include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):*

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).

Spindle lymnaea has an annual cycle. About one month after ice has melted from the lake, eggs are laid in masses of 3 to 12 on submerged vegetation and sticks and logs on the bottom. Young hatch in ten days and grow rapidly. They overwinter and lay eggs during the following spring, then die by mid-summer. This snail does not travel far from where it was hatched and thus populations may be clumped in one area of a lake but not elsewhere (Morrison 1932).

VI. Threats (from NY 2015 SWAP or newly described):

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
1. Residential and Commercial	1.1 Housing & Urban Areas	Choose an item. (habitat loss/degradation)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
7. Natural System Modifications	7.2 Dams & Water Management/Use	7.2.1 Water level management using dams (channelization)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.3 Aquatic animals (New Zealand mud snail)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.1 Domestic & Urban Wastewater	9.1.1 Domestic wastewater (untreated sewage)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.2 Industrial & Military Effluents	Choose an item. (metals)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.3 Agricultural & Forestry Effluents	9.3.3 Herbicides & pesticides	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.1 Habitat Shifting & Alteration	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to spindle lymnaea .

Insufficient information to assess threats.

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 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).

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?

Yes:

No:

Unknown:

If yes, describe mechanism and whether adequate to protect species/habitat:

The Protection of Waters Program provides protection for rivers, streams, lakes, and ponds under Article 15 of the NYS Environmental Conservation Law.

The Freshwater Wetlands Act provides protection for regulated wetlands greater than 12.4 acres in size under Article 24 of the NYS Conservation Law. The Adirondack Park Agency has the authority to regulate smaller wetlands within the Adirondack Park. The Army Corps of Engineers has the authority to regulate smaller wetlands in New York State, and the DEC has the authority to regulate smaller wetlands that are of unusual local importance. The Protection of Waters Program provides protection for rivers, streams, lakes, and ponds under Article 15 of the NYS Environmental Conservation Law.

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 (Brown et al. 2008).

The following goals and recommended actions are provided in the NY Comprehensive Wildlife Conservation Strategy (NYSDEC 2005):

- Conduct surveys to determine distribution and population trends
- Identify habitat requirements for all life stages
- Develop specific plans for each listed species (or appropriate suite of species) that details status, threats, and actions necessary to reverse declines or maintain stable populations
- Develop fact sheets for each listed species for paper and online distribution

Action Category	Action	Description
B.3 Outreach	B.3.1.4.3 Fliers and Brochures	
C.6 Design and Plan Conservation	C.6.5.0.0 Conservation Planning	
C.8 Research and Monitoring	C.8.1.5.0 Literature Search and Analysis	
C.8 Research and Monitoring	C.8.1.5.1 Species Monitoring	
C.8 Research and Monitoring	C.8.1.5.3 Analyzing Threats or their impacts	

Table 2. Recommended conservation actions for spindle lymnaea.

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