NAME OF SPECIES: *Valvata piscinalis*	
Synonyms: European valve snail[6], *Cincinna piscinalis*[2]	
Common Name: European stream valvata[6]	
A. CURRENT STATUS AND DISTRIBUTION	
I. In Wisconsin?	1. YES ☒ NO ☐
	2. Abundance: 2.4/m^3 and 119.6/m^2 in Superior Harbor[11].
	3. Geographic Range: Superior Harbor, Lake Superior[5,10]; Lake Michigan[7]; Mississippi River?
	4. Habitat Invaded: Disturbed Areas ☒ Undisturbed Areas ☐
	5. Historical Status and Rate of Spread in Wisconsin: Found in Lake Superior in 1995, Lake Michigan in 2002[5].
	6. Proportion of potential range occupied: Small – no noted inland records in Wisconsin.
II. Invasive in Similar Climate Zones	1. YES ☒ NO ☐ Where (include trends): Recorded in Lake Ontario and Lake Erie as well as the St. Lawrence River and Hudson River, Lake Champlain and Cayuga Lake in New York[7].
III. Invasive in Which Habitat Types	1. Wetland ☒ Bog ☐ Fen ☐ Swamp ☐ Marsh ☒ Lake ☒ River ☒ Stream ☒ Other:
IV. Habitat Affected	1. Soil types favored or tolerated: Favor submerged macrophytes[9].
	2. Conservation significance of threatened habitats:
V. Native Range and Habitat	1. List countries and native habitat types: Found in standing and slightly flowing freshwater throughout much of Europe and Central Asia[7].
VI. Legal Classification	1. Listed by government entities? No information found.
	2. Illegal to sell? YES ☐ NO ☒ Notes:
B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS	
I. Life History	1. Average Temperature: Can overwinter in mud, but may not survive frozen littoral zone sediments[7].
	2. Spawning Temperature: No information found.
	3. Methods of Reproduction: Asexual ☐ Sexual ☒ Notes: Hermaphroditic with one snail acting as male and another female[3]. Snail lays eggs on submerged vegetation[4].
	4. Number of Eggs: 150/breeding and may breed 2-3 times a year[5].
	5. Hybridization potential: No information found.
	6. Salinity tolerance: Can survive salt water intrusion for days at a time [7].
	7. Oxygen Regime: No information found.

	8. Water Hardness Tolerance: This species has been found in soft water lakes (hardness as low as 3 mg Ca/L)[4].
III. Dispersal Potential	1. Pathways - Please check all that apply: Unintentional: Bird ☐ Animal ☐ Vehicles/Human ☒ Wind ☐ Water ☒ Other: ballast water, canals, recreational boating (by association with submerged macrophytes) Intentional: Aquarium release ☐ Forage/Erosion control ☐ Medicine/Food: Other:
	2. Distinguishing characteristics that aid in its survival and/or inhibit its control: Broad range of habitat types, wide environmental tolerance, hermaphroditism, short life span, rapid embryonic growth, high reproductive capacity, broad diet habits (grazer or filterer)[5].
IV. Ability to go Undetected	1. HIGH ☐ MEDIUM ☒ LOW ☐
C. DAMAGE POTENTIAL	
I. Competitive Ability	1. Presence of Natural Enemies: Molluscivorous fishes (Common carp, pumpkinseed sunfish, freshwater drum, etc), crayfish, leeches
	2. Competition with native species: It's establishment coincided with reduced abundance of native hydrobiid snails in Oneida Lake, New York[5].
	3. Rate of Spread: -changes in relative dominance over time: no -change in acreage over time: yes HIGH(1-3 yrs) ☐ MEDIUM (4-6 yrs) ☐ LOW (7-10 yrs) ☒ Notes: The species increased its spread in the St. Louis River/Superior Harbor area greatly between 1995 and 2006. However, it is found at relatively low abundance at all sites[11].
II. Environmental Effects	1. Alteration of ecosystem/community composition? YES ☐ NO ☐ Notes: No information found
	2. Alteration of ecosystem/community structure? YES ☐ NO ☐ Notes: No information found
	3. Alteration of ecosystem/community functions and processes? YES ☐ NO ☐ Notes: No Information found
D. SOCIO-ECONOMIC EFFECTS	
I. Positive aspects of the species to the economy/society:	Notes: No information found
II. Direct and indirect effects of the invasive species:	Notes: No information found
III. Type of damage caused by organism:	Notes: No information found
IV. Industries affected by invasive:	Notes: No information found
V. Effects on human health:	Notes: No information found

VI. Loss of aesthetic value affection recreation and tourism:	Notes: No information found
VII. Cost of prevention or control relative to cost of allowing invasion to occur (cost of prevention is borne by different groups than cost of control):	Notes: No information found on control efforts for this species.
E. CONTROL AND PREVENTION	
I. Costs of Prevention (please be as specific as possible):	Notes: Prevention steps to stop movement of aquatic plants on recreational boats already taking place. Prevention of movement through the aquarium and biological supply trades will likely cost little as the species are not widespread in these trades.
II. Responsiveness to prevention efforts:	Notes: No information found on prevention efforts for this species
III. Effective Control tactics: (provide only basic info)	Mechanical ☐ Biological ☒ Chemical ☒ Times and uses: There is limited information published in scientific literature concerning prior application and effectiveness of control methods on *Valvata piscinalis.* Chemical control with copper sulfate compounds[12], hydrated lime[10], niclosamide compounds[4] and some plant based molluscides have been shown to be successful for planorbid, physid and thiarid snails in ponds. Stocking of molluscivorous fish has been shown to control snails in fish production ponds[8].
IV. Costs of Control:	Notes: No information found.
V. Cost of prevention or control vs. Cost of allowing invasion to occur:	Notes: No information found.
VI. Non-Target Effects of Control:	Notes: The niclosamide compound listed appears selective for snails, but not necessarily snail species[7]. There would likely be no way to control damage to other snail species with the chemical controls above.
VII. Efficacy of monitoring:	Notes: This species has been found at low frequency and abundance in the Great Lakes [5,11].
VIII. Legal and landowner issues:	Notes: To use a registered molluscicide a DNR permit and possibly EPA Special Local Needs Exemption would need to be obtained.

Notes:

Data Bases Searched:
Biological Abstracts
CAB Abstracts (Agriculture and Veterinary)
Environmental Sciences and Pollution Management

JSTOR: The Scholarly Journal Archive
Web of Knowledge (Web of Science)
Wildlife and Ecology Studies Worldwide
Aquatic Sciences and Fisheries Abstracts
Ecology Abstracts
Fish, Fisheries & Aquatic Biodiversity Worldwide
Water Resources Abstracts
Zoological Record
Google Scholar

G. REFERENCES USED:

Number	Reference
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2	Anistratenko, O., E. Degtyarenko and V. Anistratenko. 2010. Сравнительная морфология раковины и радулы брюхоногих моллюсков семейства Valvatidae из Северного Причерноморья. Shell and radula comparative morphology of the Gastropod Molluscs family Valvatidae from the North Black Sea coast. *Ruthenica* **20**(2): 91-101.
3	Cleland, D.M.1954. A Study of the Habits of *Valvata piscinalis* (Muller) and the Structure and Function of the Alimnetary Canal and Reproductive System. J. Mollus. Studies. 30(6): 167-203.
4	Francis-Floyd, R., Gildea J., Reed P. and Klinger R.1997. Use of Bayluscide (Bayer 73) for Snail Control in Fish Ponds. Journal of Aquatic Animal Health, 9:1, 41-48.
5	Grigorovich, I.A., E.L. Mills, C.B. Richards, D. Breneman, and J.J.H. Ciborowski. 2005. European valve snail *Valvata piscinalis* (Muller) in the Laurentian Great Lakes basin. Journal of Great Lakes Research 31(2):135-143.
6	Iowa State University Extension – Snail Control Literature Review http://www.extension.iastate.edu/fisheries/aqua_gc/pdf/snail_control_litrev.pdf
7	Kipp, R.M., A.J. Benson, J. Larson, and A. Fusaro. 2012. *Valvata piscinalis*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. http://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=1043 Revision Date: 6/12/2012
8	Ledford, J.J. and A.M. Kelly. 2006. A Comparison of Black Carp, Redear Sunfish, and Blue Catfish as Biological Controls of Snail Populations. North American Journal of Aquaculture, 68:4, 339-347.
9	Lodge, D.M. and P. Kelly. Habitat Disturbance and the Stability of Freshwater Gastropod Populations. 1985. Oecologia, 68(1) 111-117.
10	Mitchell, A.J., Snyder S., Wise D.J. and Mischke C.C. 2007. Evaluating Pond Shoreline Treatments of Slurried Hydrated Lime for Reducing Marsh Rams-Horn Snail Populations. North American Journal of Aquaculture, 69:4, 313-316.
11	Trebitz, A.S., C.W. West, J.C. Hoffman, J.R. Kelly, G.S. Peterson and I.A. Grigorovich Non-indigenous benthic invertebrate status of the Duluth-Superior Harbor and the role of sampling methods in their Detection. J. Great Lakes Res. 36:747-756.
12	Wise,D.J., Mischke C.C., Greenway T., Byars T.S. and Mitchell A.J. 2006. Uniform Application of Copper Sulfate as a Potential Treatment for Controlling Snail Populations in Channel Catfish Production Ponds. North American Journal of Aquaculture, 68:4, 364-368.

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