NAME OF SPECIES: Spiny waterflea (Bythotrephes longimanus) formerly known as B. cederstroemi

A. CURRENT STATUS AND DISTRIBUTION	
1. In Wisconsin?	a. YES ☒ NO ☐
	b. Abundance: variable
	c. Geographic Range: Great Lakes, Gile Flowage in Iron County
	d. Type of Waters Invaded (rivers, ponds, lakes, etc): lakes
	e. Historical Status and Rate of Spread in Wisconsin: Introduced into Great Lakes in 1980s (Ontario - 1982, Huron - 1984, in all Great Lakes by 1987), inland infestation in Gile Flowage discovered in 2003
2. Invasive in Similar Climate Zones	YES ☒ NO ☐ Where: All Great Lakes, inland lakes in Ohio, MN, MI, NY, Southern Ontario
3. Similar Habitat Invaded Elsewhere	YES ☒ NO ☐ Where: see above
4. In Surrounding States	YES ☒ NO ☐ Where: see above
5. Competitive Ability	High: Reproduce asexually and rapidly, spiny tails protect them from some predation (by small fish), produce resting eggs that can survive adverse conditions, even after adults are dead Low: May be limited in some waterbodies where the entire lake is warmer than 77 deg. F in the summer
B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS	
1. Temperature:	Range: Active from late spring until fall, sensitive to to temps > 25 deg. C (77 deg. F), lowest mortality at temps 5 - 30 deg. C
2. Spawning Temperature:	Range: resting eggs can over winter - hatch at temps > 4 deg. C; reproduction is most rapid in warm summer conditions - development time maximized at 20 - 25 deg. C
3. Number of Eggs:	Range: Parthenogenic - females can produce asexually without males. Females with full clutch can be twice normal weight, producing 1 - 10 eggs asexually as often as every 2 weeks.
4. Preferred Spawning Substrate:	n/a
5. Hybridization Potential:	none found
6. Salinity Tolerance	Fresh: ☒ Marine: ☒ Brackish: ☒
7. Oxygen Regime	Range:
8. Water Hardness Tolerance	Range:

9. Easily confused for Native Species?	List: none found, resembles invasive fishhook waterflea
C. DAMAGE POTENTIAL	
1. Likelihood of Damage	a. Presence of Natural Enemies: Larger fish eat them - some have even shown a preference for them. Fish predators include alewife, herring, perch, shiners, walleye, chub, and others
	b. How well introductory and expansion pathways can be described and quantified: Entered Great Lakes in ballast water, further spread in ballast water and on boats and fishing and other recreational gear and equipment and via bilge and bait water, some avian dispersal also possible
2. Environmental Impacts	a. Alteration of ecosystem composition, structure and function: They are predators, eating smaller zooplankton, putting them in direct competition with other large zooplankton and juvenille fish for food. Young fish have difficulty eating them because of their long spiny tails.
	c. Damage to ecosystem resilience/sustainability: see answer below
	d. Loss of biological diversity: Some native plankton species have disappeared from lakes following their introduction, could lead to decline in young sportfish populations
	e. Abiotic modifications (affects on turbidity, H2O chemistry, etc.):
	f. Biotic effects on other species (loss of cover, nesting sites, forage, changing competitive relationships: Native Daphnia and Leptodora populations have been shown to decline with the appearance of this species
D. NET SOCIO/ECONOMIC IMPACT	
1. Positive aspects of the species to the economy/society:	Effect: Are a prefered food for some large fish, including perch and bass
2. Direct and indirect effects of the invasive species:	Effect: decrease in native zooplankton could lead to decrease in sport fish, which could impact the sport fishing industry
3. Type of damage caused by organism:	Effect: Large groups of these waterfleas clump together and foul fishing lines and downrigger cables, possibly resulting in loss of hooked fish
Industries affected by invasive:	Effect: Have the potential to impact recreational and commercial fishing industries
4. Loss of aesthetic value affecting recreation and tourism:	Effect:
5. Increased cost to a sector (monitoring, inspection, control, public education, modifying practices, damage	Effect:

repair, lower yield, loss of export markets due to quarantine:	
6. 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):	Effect:
7. Cost at different levels of invasion:	Effect:
E. CONTROL AND PREVENTION POTENTIAL	
1. Costs of Prevention (including Education):	
2. Responsiveness to Prevention Efforts:	Recreational fishing and boating are the primary means of transport to new waters, so this is a good species to target with prevetion of spread education
3. Detection Capability:	
4. Control Tactics Effective:	Mechanical: ☐ Biological: ☐ Chemical: ☐
5. Efficacy/Feasibility of Control (effort, # of staff):	no known control option
6. Cost of Control:	High: ☐ Medium: ☐ Low: ☐
7. Non-Target Effects of Control:	
8. Threshold at which control would be attempted:	
9 Efficacy of Monitoring:	There is active monitoring by the DNR and UW for this species in Wisconsin. Monitoring can be effective in detecting this species, though adult populations can vary widely throughout the year. Sediment can also be collected to look for resting eggs.