NAME OF SPECIES: Ruffe (Gymnocephalus cernuus)

A. CURRENT STATUS AND DISTRIBUTION	
1. In Wisconsin?	a. YES ☒ NO ☐
	b. Abundance: variable, can be very abundant (most abundant fish in the St. Louis River)
	c. Geographic Range: Great Lakes and tributaries
	d. Type of Waters Invaded (rivers, ponds, lakes, etc): lakes, rivers, streams
	e. Historical Status and Rate of Spread in Wisconsin: Entered Great Lakes in 1985, first found in western Lake Superior in 1986. Has since spread to Lakes Michigan and Huron, as well as several WI rivers connected to the Great Lakes
2. Invasive in Similar Climate Zones	YES ☒ NO ☐ Where: Great Lakes
3. Similar Habitat Invaded Elsewhere	YES ☒ NO ☐ Where: Great Lakes, connected rivers in MI, MN, Ontario
4. In Surrounding States	YES ☒ NO ☐ Where: MI, MN
5. Competitive Ability	High: Have affected fish populations in other areas where introduced. Exhibit rapid growth and high reproductive output and adapt to a wide range of habitat types and water quality conditions. Low:
B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS	
1. Temperature:	Range: prefer 10 - 20 deg C, young tolerate 7 - 30 deg. C
2. Spawning Temperature:	Range: late April to mid-June, 5 - 20 deg. C
3. Number of Eggs:	Range: average female can produce 130,000 - 200,000 eggs per season
4. Preferred Spawning Substrate:	spawn on variely of substrates. Prefered habitat - turbid lakes with soft bottoms and little to no vegetation, also prefer rivers with slow-moving water
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: young native fish like yellow perch or walleye
C. DAMAGE POTENTIAL	
1. Likelihood of Damage	a. Presence of Natural Enemies: Naitve fish will eat them but prefer to eat other native fish instead - likley due to the ruffe's spiny fin. Ruffe are also very slimy.
	b. How well introductory and expansion pathways can be described and quantified: introduced to and spread within the Great Lakes via ballast water
2. Environmental Impacts	a. Alteration of ecosystem composition, structure and function: Diet becomes more benthic in nature with increase in size - large fish prefer soft-bodied macroinvertebrates, also eat eggs
	c. Damage to ecosystem resilience/sustainability: potential to disrupt delicate predator/prey balance vital to sustaining healthy fisheries, have advantage over native fish due to foraging ability (can feed in darkness)
	d. Loss of biological diversity: Impacting fish populationsin other places where they've been introduced - concern that they wll negatively impact North American fish populations, as well, including competing with young walleye and yellow perch for food or by eating the young of these species
	e. Abiotic modifications (affects on turbidity, H2O chemistry, etc.):
	f. Biotic effects on other species (loss of cover, nesting sites, forage, changing competitive relationships:
D. NET SOCIO/ECONOMIC IMPACT	
1. Positive aspects of the species to the economy/society:	Effect:
2. Direct and indirect effects of the invasive species:	Effect:
3. Type of damage caused by organism:	Effect: potential to negatively impact native fish populations
Industries affected by invasive:	Effect: considered potentail threat to commercial and sport 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 repair, lower yield, loss of export markets due to quarantine:	Effect:

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:	Anglers are most likely candidates to transport ruffe to inland waters, so education concerning proper bait/fish disposal could be effective in helping to prevent the spread.
3. Detection Capability:	
4. Control Tactics Effective:	Mechanical: ☐ Biological: ☐ Chemical: ☐
5. Efficacy/Feasibility of Control (effort, # of staff):	there is current research looking for chemicals to selectively control ruffe
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:	