NAME OF SPECIES: Rudd (Scardinius erythrophthalmus)

A. CURRENT STATUS AND DISTRIBUTION	
1. In Wisconsin?	a. YES ☒ NO ☐
	b. Abundance: ?
	c. Geographic Range: primarily southeast WI
	d. Type of Waters Invaded (rivers, ponds, lakes, etc): (in WI and elsewhere) lakes, reservoirs, ponds, rivers, streams, brackish waters
	e. Historical Status and Rate of Spread in Wisconsin: Reported to be present and then extirpated several times in Oconomowoc Lake since 1913 - does not appear to be found there now. Additional reports from ponds and lakes in Waukesha area, and collected from Lake Winnebago in 1988. Unclear, however, if there are currently any reproducing populations in the state.
2. Invasive in Similar Climate Zones	YES ☒ NO ☐ Where: northern IL, throughout New York, Vermont, Lake Erie
3. Similar Habitat Invaded Elsewhere	YES ☒ NO ☐ Where: rivers, ponds, and lakes in states mentioned above
4. In Surrounding States	YES ☒ NO ☐ Where: IN, IL
5. Competitive Ability	High: Tolerates a wide variety of habitats and water quality conditions and has a diverse diet Low: Has not established reproducing populations in many parts of the US - unclear if any still exist in WI, so difficult to determine how competitive this species can be in the state
B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS	
1. Temperature:	Range: 2 - 22 deg. C
2. Spawning Temperature:	Range: above 16 deg. C, egg development much more rapid at warmer water temperatures
3. Number of Eggs:	Range: 96,000 - 232,000 per female; may produce 2 batches of eggs per season
4. Preferred Spawning Substrate:	shallow waters, dense vegetation; adhesive eggs stick to vegetation, typically along shoreline; also reported on rocky substrata of reservoir
5. Hybridization Potential:	known to hybridize with other non-native species, including goldfish, common carp, and tench. One report of hybridization with northern pike and reported artificial hybridization with North American golden shiner
6. Salinity Tolerance	Fresh: ☒ Marine: ☐ Brackish: ☒
7. Oxygen Regime	Range:

8. Water Hardness Tolerance	Range:
9. Easily confused for Native Species?	List: may be confused with golden shiner
C. DAMAGE POTENTIAL	
1. Likelihood of Damage	a. Presence of Natural Enemies:
	b. How well introductory and expansion pathways can be described and quantified: Primary methods of introduciton appear to be bait bucket releases and escape from facilities where they were being raised as bait. They were brought to the US in the 1800s and again in the 1900s - thought to be primarily for ornamental purposes and possibly as food fish
2. Environmental Impacts	a. Alteration of ecosystem composition, structure and function: Eat algae/zooplankton when young, then insects, then become omnivorous, eating vegetation, snails, insects, fish eggs, etc. Could compete with native species for invertebrate food sources.
	c. Damage to ecosystem resilience/sustainability: Have the potential to harm native plant populations, since they eat vegetation
	d. Loss of biological diversity: If they hybridize with native shiner species in the wild, could prove detrimental to the survival of those 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: golden color variety used in ornamental fish ponds, was historically sold as bait, may have also been considered possible food fish at one time; some sport fishing for them
2. Direct and indirect effects of the invasive species:	Effect: trout anglers do not like these fish - they will take a fly
3. Type of damage caused by organism:	Effect:
Industries affected by invasive:	Effect:
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	Effect:

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:	Since bait releases and the water gardenig industries appear to be primary mechanisms for further spread, these could be effective groups/activities to target with education
3. Detection Capability:	
4. Control Tactics Effective:	Mechanical: ☐ Biological: ☐ Chemical: ☐
5. Efficacy/Feasibility of Control (effort, # of staff):	
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:	