NAME OF SPECIES: Bighead carp (Hypophthalmichthys nobilis)

A. CURRENT STATUS AND DISTRIBUTION	
1. In Wisconsin?	a. YES ☐ NO ☒
	b. Abundance:
	c. Geographic Range:
	d. Type of Waters Invaded (rivers, ponds, lakes, etc): (in other states) large rivers, lakes
	e. Historical Status and Rate of Spread in Wisconsin: no known reproducing populations in WI; a couple of individuals have been caught in the Mississippi and St Croix Rivers
2. Invasive in Similar Climate Zones	YES ☒ NO ☐ Where: Northern IL, IN, Iowa, Lake Erie
3. Similar Habitat Invaded Elsewhere	YES ☒ NO ☐ Where: Mississippi River, Ohio River, Illinois River, Lake Erie
4. In Surrounding States	YES ☒ NO ☐ Where: See above
5. Competitive Ability	High: These fish rely on a highly available food source (plankton) and rapidly grow to a large size, they also rapidly reproduce, making them highly competitive with other planktonic organisms, including larval fish. Low:
B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS	
1. Temperature:	Range: max. ~39 deg. C, prefered ~25 deg. C
2. Spawning Temperature:	Range: in the range of 19 - 29 deg. C
3. Number of Eggs:	Range: average eggs/female between 660,000 and 870,000
4. Preferred Spawning Substrate:	prefered environment - large riverine systems
5. Hybridization Potential:	hybridize with silver carp - resulting hybrids likely have impacts similar to both parent species; also may hybridize with grass carp - hybrids of these species thought to be sterile
6. Salinity Tolerance	Fresh: ☒ Marine: ☐ Brackish: ☒
7. Oxygen Regime	Range: juveniles can tolerate oxygen levels below 0.5 mg/L
8. Water Hardness Tolerance	Range:

9. Easily confused for Native Species?	List: juveniles may be confused with other juvenile or small adult fish (some of which are commonly used for bait)
C. DAMAGE POTENTIAL	
1. Likelihood of Damage	a. Presence of Natural Enemies:
	b. How well introductory and expansion pathways can be described and quantified: Brought to the US in 1972 to remove algae from aquaculture ponds and other contained waters - some escaped and first started appearing in the Ohio and Mississippi River systems in the early 1980s, in 1994 several thousand escaped into the Osage River in Missouri when high waters flooded hatchery ponds in an aquaculture facility; there were likely other intentional introductions, possibly for algae control or to attempts to establish populations for food; were also brought to US to be sold as food fish
2. Environmental Impacts	a. Alteration of ecosystem composition, structure and function: Bighead carp are planktivorous and attain large size, so they have the potential to deplete zooplankton populations. Reduced availability of plankton could lead to reductions in populations of native animals that eat the plankton, including all larval fish, some adult fish, and native mussels
	c. Damage to ecosystem resilience/sustainability:
	d. Loss of biological diversity: Might decrease populations of filter feeding fish - those most at risk include paddlefish, bigmouth buffalo, and gizzard shad
	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: May help to control algae in aquaculture facilities; used for food mostly in Asian countries/communities
2. Direct and indirect effects of the invasive species:	Effect:
3. Type of damage caused by organism:	Effect: Potential to impact commercial and recreational fishing industries
Industries affected by invasive:	Effect: Fishing
4. Loss of aesthetic value affecting recreation and tourism:	Effect:
5. Increased cost to a sector (monitoring, inspection, control, public education,	Effect:

modifying practices, damage 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: Electric barriers are currently in use in northern IL to prevent these fish from entering Lake Michigan. The recently constructed permanent barrier cost $9.1 million and was paid for by state and federal funds. Funding must continue to pay for electricty. Similar barriers have been proposed on the upper Mississippi River, but again, cost would be an issue.
7. Cost at different levels of invasion:	Effect:
E. CONTROL AND PREVENTION POTENTIAL	
1. Costs of Prevention (including Education):	See dicussion of electric barrier.
2. Responsiveness to Prevention Efforts:	Once fish enter a system, they are very difficult to control because they can swim large distances. However, they could be included in other public education efforts aimed at preventing the release of live bait and preventing other intentional releases/stocking.
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:	no control found that selects for only this species
8. Threshold at which control would be attempted:	
9 Efficacy of Monitoring:	