NAME OF HYBRID: Typha x glauca Godr., pro sp.	
Synonyms: Typha glauca, T. latifolia x, T. angustifolia (2).	
Common Name: Hybrid Cat-tail.	
A. CURRENT STATUS AND DISTRIBUTION	
I. In Wisconsin?	1. YES ☒ NO ☐
	2. Abundance: 28 Counties (3).
	3. Geographic Range: Distributed in scattered locations throughout Wisconsin (3).
	4. Habitat Invaded: Emergent Aquatic Disturbed Areas ☒ Undisturbed Areas ☒
	5. Historical Status and Rate of Spread in Wisconsin: Arose after introduction and establishment of T. angustifolia (4) (5). Rapid, long-distance spread may be restricted by preponderance of asexual propagation.
	6. Proportion of potential range occupied: Minimal.
II. Invasive in Similar Climate Zones	1. YES ☒ NO ☐ Where (include trends): Distributed throughout Europe and Eurasia (1).
III. Invasive in Similar Habitat Types	1. Upland ☐ Wetland ☒ Dune ☐ Prairie ☐ Aquatic ☒ Forest ☐ Grassland ☐ Bog ☐ Fen ☒ Swamp ☐ Marsh ☒ Lake ☒ Stream ☒ Other: Microtopographic lows in sedge meadows, disturbed areas with fluctuating water levels (roadside ditches, reservoirs, stormwater retention zones), lake and pond margins, riparian backwaters, shallow ponds, damp depressions in rural or suburban locations and agricultural fields.
IV. Habitat Effected	1. Soil types favored (e.g. sand, silt, clay, or combinations thereof, pH): Grows on a wide variety of substrates, including wet sand, peat, clay and loamy soils. Tolerant of basic or calcareous soils. Not as tolerant of salt as T. angustifolia. Cat-tails are tolerant to high concentrations of lead, zinc, copper, and nickel (6)
	2. Conservation significance of threatened habitats: Wetlands provide billions of dollars annually in ecosystems services. Simplified and homogenized systems do not exhibit congruent magnitude of nutrient and carbon sequestration and retention.
V. Native Habitat	1. List countries and native habitat types: Cryptogenic species. Hybrid between Typha latifolia (native to North America and Eurasia) and T. angustifolia (native to Eurasia).
VI. Legal Classification	1. Listed by government entities? No.
	2. Illegal to sell? YES ☐ NO ☒ Notes:

B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS	
I. Life History	1. Type of plant: Annual ☐ Biennial ☐ Monocarpic Perennial ☐ Herbaceous Perennial ☒ Vine ☐ Shrub ☐ Tree ☐
	2. Time to Maturity: If maturity is defined as time to first sexual reproduction, some populations of T. x glauca could be considered permanently immature.
	3. Length of Seed Viability: Seed viability near zero percent. Predominantly propagates vegetatively.
	4. Methods of Reproduction: Asexual ☒ Sexual ☐ Please note abundance of propagules and and other important information: Hybrid is a putative F1, effectively sterile, producing few or no seeds or viable pollen gains (2). However, fertile intermediaries between T. x glauca and T. angustifolia occasionally arise (2). More aggressive by rhizomes.
	5. Hybridization potential: This taxon is a hybrid (2) (5).
II. Climate	1. Climate restrictions: Largely restricted to climate where barents are sympatric.
	2. Effects of potential climate change: Will probably spread northward.
III. Dispersal Potential	1. Pathways - Please check all that apply: Intentional: Ornamental ☒ Forage/Erosion control ☐ Medicine/Food: Other: Unintentional: Bird ☒ Animal ☒ Vehicles/Human ☒ Wind ☒ Water ☒ Other: Flooding waters can disperse vegetative propagule fragments to new locales.
	2. Distinguishing characteristics that aid in its survival and/or inhibit its control: Phenotypically plastic responses to flooding and nutrient availability (1). Spreads vegetatively (phalanx invasion strategy).
IV. Ability to go Undetected	1. HIGH ☒ MEDIUM ☐ LOW ☐

C. DAMAGE POTENTIAL	
I. Competitive Ability	1. Presence of Natural Enemies: Typha leaves and stems are mined by caterpillars of the moths Arzama obliqua and Nonagria oblonga. Aphids and a snout beetle (Colandra pertinaux) eat leaves and stems. Rhizomes provide food and substrate for muskrats, birds, deer and other mammals.
	2. Competition with native species: Strong competitor, particularly aggressive under nutrient-enriched conditions. Capable of forming dense monocultures.
	3. Rate of Spread: HIGH(1-3 yrs) ☒ MEDIUM (4-6 yrs) ☐ LOW (7-10 yrs) ☐ Notes: Hybrid cat-tail expansions are enhanced by nutrient enrichment, wildfire suppression, and hydrological alterations. High investment in asexual reproduction enhances its ability to form monocultures to the exclusion of other species. May expand at a faster rate than T. angustifolia (1).
II. Environmental Effects	1. Alteration of ecosystem/community composition? YES ☒ NO ☐ Notes: Relationships between cat-tail invasions and declines in species density, richness, and diversity have been extensively documented.
	2. Alteration of ecosystem/community structure? YES ☒ NO ☐ Notes: Replaces native species that are more desirable to wildlife (7).
	3. Alteration of ecosystem/community functions and processes? YES ☒ NO ☐ Notes: Ecosystem service capacity is reduced in monotypic vegetation stands.
	4. Allelopathic properties? YES ☒ NO ☐ Notes: Typha litter inhibits seed germination.
D. SOCIO-ECONOMIC Effects	
I. Positive aspects of the species to the economy/society:	Notes: Stabilizes shore lines from wave action, erosion, and ice heaving. Filters nutrients in aquatic systems, but probably not as effeciently as a diverse native species community. Food source, substrate, and cover for muskrats, and occassionally ducks and deer.
II. Potential socio-economic effects of restricting use:	Notes: Hunting and trapping communities may not react positively to cat-tail removal.
III. Direct and indirect effects :	Notes:
IV. Increased cost to a sector:	Notes: N/A
V. Effects on human health:	Notes: None known.

F. REFERENCES USED:

E. CONTROL AND PREVENTION	
I. Costs of Prevention (including education; please be as specific as possible):	Notes:
II. Responsiveness to prevention efforts:	Notes: Invasions are concordant with disturbance (1). Control appears to be most effective when background disturbances (nutrient and stormwater inputs, sedimentation, hydrological alterations) are abated prior to administering treatments. Control and suppression are most effective when treatments are coupled to water level manipulations.
III. Effective Control tactics:	Mechanical ☒ Biological ☒ Chemical ☒ Times and uses: Coupling mowing and muskrat grazing to flooding is effective. Typha are not shade tolerant, and tarping for 6 months can reduce the diameter of scattered stands in high-quality natural areas. Starch reserves in Typha rhizomes are at a minimum in late spring. Herbicide applications (with glyphosate, amitrole-T, amino-triazole, or MCPA) at flowering, or mid-late summer or autumn (6) (8). Herbicide applications are more effective on mature leaves as opposed to regrowth (e.g., following mowing), and should be followed up with flooding. However, some genotypes of T. x glauca may be more resistant to prolonged flooding than others (1).
IV. Minimum Effort:	Notes: Mow aboveground stems then flood 3 - 5 inches above cut stems for two to four consecutive growing seasons. Muskrat grazing (stocking rate = 10 muskrats/acre) can provide biological control (8).
V. Costs of Control:	Notes:
VI. Cost of prevention or control vs. Cost of allowing invasion to occur:	Notes: Salinification of wetland soils resulting from road salt applications may encourage cattail invasions.
VII. Non-Target Effects of Control:	Notes: Control may require the use of herbicides and additives. Use of prescribed fire may result in peat fires.
VIII. Efficacy of monitoring:	Notes: It can be difficult to distinguish among T. angustifolia, T. latifolia, T. x glauca, and their introgressive hybrids.
IX. Legal and landowner issues:	Notes: DNR approval and permitting may be required for control in some wetland projects.

☒ UW Herbarium
☒ WI DNR
☒ TNC
☐ Native Plant Conservation Alliance
☐ IPANE
☒ USDA Plants

Number	Reference
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Author(s), Draft number, and date completed: Craig A. Annen, Draft 1, April 1, 2007.

Reviewer(s) and date reviewed: Galen Smith, September 20, 2007.

Approved and Completed Date: