NAME OF SPECIES: *Phellodendron amurense* Rupr.		
Synonyms: *P. amurense* var. *sachalinense* F. Schmidt, *P. japonicum* Maxim., *P. lavalleei* Dode, *P. sachalinense* (F. Schmidt) Sarg., *P. wilsonii* Hayata & Kaneh.		
Common Name: Amur corktree, Chinese corktree, phellodendron, phellodendron-bark, huang bai, huang bo	**Cultivars?** YES ☒ NO ☐	
A. CURRENT STATUS AND DISTRIBUTION		
I. In Wisconsin?	1. YES ☒	NO ☐
	2. Abundance:	
	3. Geographic Range: Adams and Waukesha Counties	
	4. Habitat Invaded: Quickly invades disturbed forest areas (3), but once established, can move into undisturbed forest areas. Disturbed Areas ☒ Undisturbed Areas ☒	
	5. Historical Status and Rate of Spread in Wisconsin: Introduced into the U.S. around 1856 (2). It is unclear as to when it was introduced in WI	
	6. Proportion of potential range occupied:	
II. Invasive in Similar Climate Zones	1. YES ☒ NO ☐ Where (include trends): Illinois (1,2), Ohio (1) New York, Pennsylvania (2, 3), Massachusetts, and Virginia (2)	
III. Invasive in Which Habitat Types	1. Upland ☐ Wetland ☒ Dune ☐ Prairie ☐ Aquatic ☐ Forest ☒ Grassland ☒ Bog ☐ Fen ☐ Swamp ☐ Marsh ☐ Lake ☐ Stream ☐ Other: Urban fringe forests, oak-hickory hardwood forests (2, 3), mesic forests (5)	
IV. Habitat Affected	1. Soil types favored or tolerated: Adaptable to different soil types (clays to light sands), prefers moist soils (3). Clay, sand, loam, alkaline, acidic, occasionally wet, well-drained. (7)	
	2. Conservation significance of threatened habitats:	
V. Native Range and Habitat	1. List countries and native habitat types: Eastern Asia including Northern China (Manchuria Ussuri, Amur) Korea, and Japan (2, 3, 4). Montane forests and thickets, river valleys (5)	
VI. Legal Classification	1. Listed by government entities? Massachusetts: Prohibited(1)	
	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: 3-5 years (2) or 7-13 years (4)	
	3. Length of Seed Viability: a number of years (2) Seeds may remain viable for more than one year; no evidence for more than ten years (10).	
	4. Methods of Reproduction: Asexual ☒ Sexual ☒ Notes: Reproduces by seed and by sprouting form stumps. (2, 4) Produces 1000's of seeds per female tree (10).	
	5. Hybridization potential:	

II. Climate	1. Climate restrictions: Zones 4-7 (1,2) Zones 3B – 8B (7).
	2. Effects of potential climate change:
III. Dispersal Potential	1. Pathways - Please check all that apply: Unintentional: Bird ☒ Animal ☒ Vehicles/Human ☐ Wind ☐ Water ☒ Other: Birds eat the fruit; robins may prefer Phellodendron fruit over other fruits. Fruits might also be water dispersed (10). Intentional: Ornamental ☒ Forage/Erosion control ☐ Medicine/Food: Other: Uses include shade/street tree, urban tolerant, parking lots, golf courses, highway medians (7). Bark is used in herbal medicines as detoxicant, antibacterial, and many other properties(9)
	2. Distinguishing characteristics that aid in its survival and/or inhibit its control: Is able to grow in full sun or under dense canopy. Is advertised as a street tree, but results are variable (2) 1000s of seeds produced per female tree (10).
IV. Ability to go Undetected	1. HIGH ☒ MEDIUM ☐ LOW ☐
C. DAMAGE POTENTIAL	
I. Competitive Ability	1. Presence of Natural Enemies: Wood rots and fungus (6) Virticillium wilt susceptibility (7)
	2. Competition with native species: Suppresses regeneration of overstory canopy trees (2) Alters soil microorganisms due to presence of secondary compounds; also reduces abundance of nut-producing trees (10).
	2. Rate of Spread: -changes in relative dominance over time: -change in acreage over time: HIGH(1-3 yrs) ☐ MEDIUM (4-6 yrs) ☐ LOW (7-10 yrs) ☒ Notes:
II. Environmental Effects	1. Alteration of ecosystem/community composition? YES ☒ NO ☐ Notes: Suppresses regeneration of overstory canopy trees, which encourages it's own seedlings(2)
	2. Alteration of ecosystem/community structure? YES ☒ NO ☐ Notes: Suppresses regeneration of overstory canopy trees (2) Increases density in tree layer; reduces shrub and herb layers; evidence for the elimitation and creation of other layers (10).
	3. Alteration of ecosystem/community functions and processes? YES ☒ NO ☐ Notes: Decresases acorn and hickory nut production by limiting regeneration and provides berries high in sugar which provide low nutritional value to birds and mammals. Populations of acorn-dependent species are lower in forests where Amur corktree is well established (2) Phellodendron has been shown to be allelopathic with effects reported on microorganisms in the soils.

	Phellodendron also decreases light availabiltiy (10)
	4. Allelopathic properties? YES ☒ NO ☐ Notes:
D. SOCIO-ECONOMIC EFFECTS	
I. Positive aspects of the species to the economy/society:	Notes: Strong rot resistant wood that is used by woodworkers and is also used for creating railings and bollarods for erosion control. Encouraged as a street tree able to withstand pollutants, variable soil pH, and periods of drought (2). Male trees and varieties are recommended to reduce messiness of berries (2) Based on the 2011 WNA Economic Impact Survey, the following information was reported for this plant. Out of the 204 nurseries responding, 12 reported selling this plant. 11 reported it comprised <1% of their gross plant sales. 1 reported it comprised 1 – 2.9% of their gross plant sales. The estimated total dollar amount contributed to Wisconsin's economy by this plant is $35,083. It ranks 28th among the 63 taxa surveyed. The estimated wholesale value of plants in production is $21,000. The majority of respondents said it took over 5 years to produce this plant. The trend for the 2011 season was to remain unchanged (12).
II. Potential Socio-Economic Effects of Requiring Controls:	Positive: Negative:
III. Direct and indirect Socio-Economic Effects of Plant :	Notes: Increase cost for road construction due to plants shallow, spreading root system that can cause damage to streets and sidewalks (6). Increased cost for utility companies needing to trim around powerlines due to growth structure of plant (6).
IV. Increased Costs to Sectors Caused by the Plant::	Notes:
V. Effects on human health:	Notes: Used in herbal medicine (8)
VI. Potential socio-economic effects of restricting use:	Positive: By restricting the sale of P. amurense (including male-only cultivars) it will limit the reproducing population by not adding to it since male-only cultivars can still pollinate female trees. Negative: Cultivars are used by local municipalities as a street tree. If cultivars are restricted, municipalities will have to remove tree from inventories; possibly have to find replacement tree.
E. CONTROL AND PREVENTION	
I. Costs of Prevention (please be as specific as possible):	Notes:
II. Responsiveness to prevention efforts:	Notes: Ed Hasselkus removed all female trees from the UW Arboretum in the late 1990s after witnessing seedlings were developing. No further reports of infestation in the arboretum (11).
III. Effective Control tactics:	Mechanical ☒ Biological ☐ Chemical ☒ Times and uses: Female trees should be removed first by girdling, hack and squirt, cut stump treatments, or basal bark treatments. Vigorous resprouts if not treated after cutting back. Follow up with replanted with desirable species. Systemic herbicides include triclopyr and glyphosate (2).
IV. Costs of Control:	Notes:

V. Cost of prevention or control vs. Cost of allowing invasion to occur:	Notes:
VI. Non-Target Effects of Control:	Notes: Chemicals can produce unintended kill of desirable species if not applied according to the label. Some should not be applied near water sources, wetlands, or near high water tables as they can be toxic to fish and aquatic invertebrates and can also affect water quality for humans. (2)
VII. Efficacy of monitoring:	Notes:
VIII. Legal and landowner issues:	Notes:
F. HYBRIDS AND CULTIVARS	
I. Known hybrids? YES ☒ NO ☐	Name of hybrid: P. sachalinense and P. amurense (8)
	Names of hybrid cultivars: Eyestopper, Macho, His Majesty, and undisclosed male cultivars were reported. Five of 12 respondents reported growing exclusively male cultivars, although females are needed for rootstock. One grower of males reported that they are "not observed to spread on 20-yr old plantings, including females." Three growers report carrying species.(12)
II. Species cultivars	Names of cultivars: 'His Majesty' and 'Macho' are male-only cultivars that can still pollinate female P. amurense plants (3). 'Macho' has a more upright-spreading growth form which makes it better for street planting. (7) 'Shademaster' male cultivar (6,7,8)
	Notes:

G. REFERENCES USED:

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

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11	Hasselkus, Ed, Professor Emeritus of Horticulture and past Curator of the Longnecker Horticultural Gardens. Personal communications with Sue Weigrefe
12	Wiegrefe, Susan. 2011. Wisconsin Nursery Association Survey of the Economic impact of potentially invasive species in Wisconsin

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