NAME OF SPECIES: *Morus alba* L.		
Synonyms: *M. alba* var. *constantinopolitana* Loudon; *M. alba* var. *multicaulis* (Perr.) Loudon; *M. alba* f. *tatarica* Ser.; *M. indica* L.; *M. multicaulis* Perr. (6)		
Common Name: White Mulberry Chinese white mulberry, common mulberry, Russian mulberry, silkworm mulberry, chi sang, chin sang, moral blanco	**Cultivars?** YES ☒ NO ☐	
A. CURRENT STATUS AND DISTRIBUTION		
I. In Wisconsin?	1. YES ☒	NO ☐
	2. Abundance: Very widespread throughout southern Wisconsin and parts of central Wisconsin.	
	3. Geographic Range: 31 Wisconsin counties have reported this species present, mostly in southern and central Wisconsin.	
	4. Habitat Invaded: White mulberry occurs naturally in sparse forests on hillsides at a wide range of elevations. **(1)** Disturbed Areas ☒ Undisturbed Areas ☐	
	5. Historical Status and Rate of Spread in Wisconsin: Earliest Wisconsin Herbarium record dates to 1893.	
	6. Proportion of potential range occupied: Moderate	
II. Invasive in Similar Climate Zones	1. YES ☒ NO ☐ Where (include trends): White mulberry is found throughout the United States, where it invades old fields, urban lots, roadsides, forest edges, and other disturbed areas. (4) In all states except NV.	
III. Invasive in Which Habitat Types	1. Upland ☒ Wetland ☒ Dune ☐ Prairie ☒ Aquatic ☐ Forest ☒ Grassland ☒ Bog ☒ Fen ☒ Swamp ☒ Marsh ☒ Lake ☒ Stream ☒ Other: Forested floodplain	
IV. Habitat Affected	1. Soil types favored or tolerated: White mulberry grows well on a wide variety of soils. It prefers a warm, moist, well-drained loamy soil in a sunny position. It withstands drought once well established. *Morus alba* is quite salt tolerant. This species is also fairly wind-resistant. **(3)**	
	2. Conservation significance of threatened habitats: Impacts include hybridization with and replacement of native mulberry.	
V. Native Range and Habitat	1. List countries and native habitat types: Central and Northern China. **(2)**	
VI. Legal Classification	1. Listed by government entities?	
	2. Illegal to sell? YES ☐ NO ☒ Notes: Seeds are readily available from online retailers.	
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. Length of Seed Viability: Seeds may take over 12 months to germinate indicating they remain viable for over a year; evidence not available that they remain viable for 10 years or more (5).	
	4. Methods of Reproduction: Asexual ☐ Sexual ☒ Notes: Reproduction is by seed and a single plant can produce copious fruit with 1000s seed per individual (5)	

	5. Hybridization potential: Can possibly hybridize with native red mulberry. (4, 5)
II. Climate	1. Climate restrictions:
	2. Effects of potential climate change:
III. Dispersal Potential	1. Pathways - Please check all that apply: Unintentional: Bird ☒ Animal ☒ Vehicles/Human ☒ Wind ☐ Water ☒ Other: Fruit are readily eaten by birds and other small animals (5). Intentional: Ornamental ☒ Forage/Erosion control ☐ **Medicine/Food:** Has many medicinal and food uses **(2).** Other:
	2. Distinguishing characteristics that aid in its survival and/or inhibit its control: Produces large amounts of fruit and also is able to sucker and resprout after being cut (5).
IV. Ability to go Undetected	1. HIGH ☐ MEDIUM ☒ LOW ☐
C. DAMAGE POTENTIAL	
I. Competitive Ability	1. Presence of Natural Enemies: Fifty four species of fungi infect white mulberry; approximately 263 arthropods occur on this species. **(1)**
	2. Competition with native species: It transmits a harmful root disease to red mulberry **(1, 5)**
	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: When stands are dense, they can prevent forest regeneration. **(2)**
	2. Alteration of ecosystem/community structure? YES ☒ NO ☐ Notes: Occasionally dense stands are observed clearly, therefore, impacting the density of one layer (5)
	3. Alteration of ecosystem/community functions and processes? YES ☒ NO ☐ Notes:
	4. Allelopathic properties? YES ☒ NO ☐ Notes:
D. SOCIO-ECONOMIC EFFECTS	
I. Positive aspects of the species to the economy/society:	Notes: The wood, leaves, and berries have many useful properties. Based on the 2011 WNA Economic Impact Survey, the following information was reported for this plant. Out of the 204 nurseries

	responding, 8 reported selling this plant. 8 reported it comprised <1% of their gross plant sales. 0 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 $22,965. It ranks 34th among the 63 taxa surveyed. The estimated wholesale value of plants in production is $9,250. The majority of respondents said it took 6 months to 2 years or 3 to 5 years to produce this plant. The trend for the 2011 season was to remain unchanged (7).
II. Potential Socio-Economic Effects of Requiring Controls:	Positive: Negative: It would be expensive to try and contain since it is already very widespread in the United States.
III. Direct and indirect Socio-Economic Effects of Plant :	Notes: The wood is valued for sporting goods due to its durability, flexibility, and elasticity. It is used mainly for tennis and badminton rackets, hockey sticks, furniture, agricultural implements, and house and boat building materials. The stem is fibrous and is used in Europe and China for making paper. **(3)**
IV. Increased Costs to Sectors Caused by the Plant:	Notes: None
V. Effects on human health:	Notes: Has many medicinal uses. See above.
VI. Potential socio-economic effects of restricting use:	Positive: Negative: Restricting its use would affect select industries mentioned above.
E. CONTROL AND PREVENTION	
I. Costs of Prevention (please be as specific as possible):	Notes:
II. Responsiveness to prevention efforts:	Notes:
III. Effective Control tactics:	Mechanical ☒ Biological ☒ Chemical ☒ Times and uses: Hand pulling or digging for smaller plants, girdling and chemical treatment for larger plants. Stems can resprout if not disposed (5)
IV. Costs of Control:	Notes: Since the distribution of the tree is so widespread, its complete removal would be very expensive.
V. Cost of prevention or control vs. Cost of allowing invasion to occur:	Notes:
VI. Non-Target Effects of Control:	Notes:
VII. Efficacy of monitoring:	Notes:
VIII. Legal and landowner issues:	Notes:
F. HYBRIDS AND CULTIVARS	
I. Known hybrids? YES ☒ NO ☐	Name of hybrid: Names of hybrid cultivars:

II. Species cultivars or varieties	Names of cultivars or varieties and any information about the invasive behaviors of each: 'Charparral', 'Pendula', 'Teas', 'Bellaire', and 'Lingan' Chaparral is a male cultivar. Others found by the nursery survey include Northrop (fruit crop) and Weeping. (7) Male cultivars have reduced/no invasive tendencies. (7) "If male cultivars are to be grown–especially if they need to be grafted high on a standard because they are weepers, some seedlings MAY be needed. Clonal male rootstock is likely, but not necessarily, cost prohibitive.Tissue culture propagation is possible for this. Rootstock has also been known to out-survive its scion." (7) One grower remarked that this tree is too weedy. (7) From the pre-screen assessment: "Male cultivar (Chaperral) sold - weeping form, Generally the straight species not sold as an ornamental. May need to see if sold as furit tree. I thought we reviewed this one already, horrible weed, but cultivar 'Chaparral' is not invasive as is a weeping male cultivar with no fruit. Allergies are a problem further south. I have this in my area, but I have not seen it aggressively invade any natural habitats." (8)
	Notes:

G. REFERENCES USED:

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

Number	Reference
1	http://www.invasive.org/weedcd/pdfs/wow/white_mulberry.pdf
2	http://www.natureserve.org/explorer/servlet/NatureServe?sourceTemplate=tabular_report.wmt&loadTemplate=species_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular_report.wmt&elKey=145482&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=145482&offPageSelectedElType=species&offPageYesNo=true&post_processes=&radiobutton=radiobutton&selectedIndexes=145482
3	http://plants.usda.gov/plantguide/pdf/pg_moal.pdf
4	http://www.invasiveplantatlas.org/subject.html?sub=6050
5	Jordan, M.J., G. Moore and T.W. Weldy. 2008. Invasiveness ranking system for non-native plants of New York. Unpublished. The Nature Conservancy, Cold Spring Harbor, NY; Brooklyn Botanic Garden, Brooklyn, NY; The Nature Conservancy, Albany, NY. http://www.newyorkinvasivespecies.org/PlantAssessments/Morus.alba.NYS.pdf
6	USDA, ARS, National Genetic Resources Program. *Germplasm Resources Information Network - (GRIN)* [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?24607 (08 December 2011)

7	Wiegrefe, Susan. 2011. Wisconsin Nursery Association Survey of the Economic impact of potentially invasive species in Wisconsin
8	Tree, shrub, vine species assessment group pre-screen meeting.

Author(s), Draft number, and date completed: Scott Lee, Draft #1, 8/15/2011

Reviewer(s) and date reviewed: Tom Boos, 11/22/11

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