

NAME OF SPECIES: <i>Akebia quinata</i> (Houtt.) Decne. (1)	
Synonyms: <i>Rajania quinata</i> Houtt. (2); <i>Akebia micrantha</i> (Nakai) (8)	
Common Name: chocolate vine, fiveleaf, fiveleaf akebia, chocolate-vine,	Cultivars? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
A. CURRENT STATUS AND DISTRIBUTION	
I. In Wisconsin?	1. YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
	2. <u>Abundance:</u> N/A
	3. <u>Geographic Range:</u> No reported naturalized populations in WI.
	4. <u>Habitat Invaded:</u> N/A Disturbed Areas <input type="checkbox"/> Undisturbed Areas <input type="checkbox"/>
	5. <u>Historical Status and Rate of Spread in Wisconsin:</u> N/A
	6. <u>Proportion of potential range occupied:</u> N/A
II. Invasive in Similar Climate Zones	1. YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> <u>Where (include trends):</u> In Mid-Atlantic states, as far west as IL, MI, MO (1). Naturalized as far north as far SE NY and S. MI. (1)
III. Invasive in Which Habitat Types	1. Upland <input type="checkbox"/> Wetland <input checked="" type="checkbox"/> Dune <input type="checkbox"/> Prairie <input type="checkbox"/> Aquatic <input type="checkbox"/> Forest <input checked="" type="checkbox"/> Grassland <input type="checkbox"/> Bog <input type="checkbox"/> Fen <input type="checkbox"/> Swamp <input type="checkbox"/> Marsh <input type="checkbox"/> Lake <input type="checkbox"/> Stream <input type="checkbox"/> Other: Ditches, roadsides, (3) Sunny to partially shaded environs, although is shade and drought tolerant and can invade many types of habitats (4).
IV. Habitat Affected	1. <u>Soil types favored or tolerated:</u> Prefers lighter, well drained soils (4). Prefers moist, fertile, well-drained soils (6).
	2. <u>Conservation significance of threatened habitats:</u>
V. Native Range and Habitat	1. <u>List countries and native habitat types:</u> Central China, Japan, and Korea (4). Forest margins along streams, scrub on mountain slopes; 300-1500m (5).
VI. Legal Classification	1. <u>Listed by government entities?</u> No.
	2. <u>Illegal to sell?</u> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Notes:
B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS	
I. Life History	1. <u>Type of plant:</u> Annual <input type="checkbox"/> Biennial <input type="checkbox"/> Monocarpic Perennial <input type="checkbox"/> Herbaceous Perennial <input type="checkbox"/> Vine <input checked="" type="checkbox"/> Shrub <input type="checkbox"/> Tree <input type="checkbox"/>
	2. <u>Time to Maturity:</u> Difficult to determine. The fruits are rarely produced (3, 4).
	3. <u>Length of Seed Viability:</u> N/A
	4. <u>Methods of Reproduction:</u> Asexual <input checked="" type="checkbox"/> Sexual <input checked="" type="checkbox"/> <u>Notes:</u> Mainly vegetative reproduction from root system. Fruit may be spread by birds. Individuals may require cross pollination between different clones for viable seed set (3). Each fruit has a white inner pulp that encases up to 200 seeds (8).
	5. <u>Hybridization potential:</u>
II. Climate	1. <u>Climate restrictions:</u> Hardy to Zone 4 – deciduous in zones 4-6 (6). Dormant plants hardy to about -20C (7).

	2. <u>Effects of potential climate change:</u> In warmer climates (Louisiana) it remains an evergreen (3, 4).
III. Dispersal Potential	1. <u>Pathways - Please check all that apply:</u> <u>Unintentional:</u> Bird <input checked="" type="checkbox"/> Animal <input type="checkbox"/> Vehicles/Human <input checked="" type="checkbox"/> Wind <input type="checkbox"/> Water <input type="checkbox"/> Other: Long distance spread of akebia is largely through human activities (4). <u>Intentional:</u> Ornamental <input checked="" type="checkbox"/> Forage/Erosion control <input type="checkbox"/> Medicine/Food: <input checked="" type="checkbox"/> Other: Plant is cultivated as ornamental, persists around old homesteads (3). 2. <u>Distinguishing characteristics that aid in its survival and/or inhibit its control:</u> Shade tolerant and grows up to 40' a year (3).
IV. Ability to go Undetected	1. HIGH <input type="checkbox"/> MEDIUM <input checked="" type="checkbox"/> LOW <input type="checkbox"/>
C. DAMAGE POTENTIAL	
I. Competitive Ability	1. <u>Presence of Natural Enemies:</u> Three fungi can attack five-leaf akebia. Three lepidopterans are known to damage five-leaf akebia, <i>Ophideres fullonica</i> (Linnaeus), the most common, is also a serious orchard pest (9). 2. <u>Competition with native species:</u> Displaces native plant species and presumably also displaces insects and other organisms associated with/dependent on those native plants (3). 2. <u>Rate of Spread:</u> -changes in relative dominance over time: -change in acreage over time: HIGH(1-3 yrs) <input type="checkbox"/> MEDIUM (4-6 yrs) <input checked="" type="checkbox"/> LOW (7-10 yrs) <input type="checkbox"/> Notes:
II. Environmental Effects	1. <u>Alteration of ecosystem/community composition?</u> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Notes: Will substantially reduce native herbaceous plants by restricting germination due to shading, but impacts are primarily limited to homestead sites (3). 2. <u>Alteration of ecosystem/community structure?</u> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Notes: Increase density of both shrub and herb layers, can displace native herb layer and smother shrubs and small trees (3). 3. <u>Alteration of ecosystem/community functions and processes?</u> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Notes: 4. <u>Allelopathic properties?</u> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Notes:
D. SOCIO-ECONOMIC EFFECTS	
I. Positive aspects of the species to the economy/society:	Notes: Used and sold as an ornamental vine. Plants have been used as a ground cover. Fruits have an edible pulp. Stems are pliable and can be used in basket making. (7).
II. Potential Socio-Economic Effects of Requiring Controls:	Positive: Since not yet reported in WI, cost is minimal – prevention would require more effort. There are some ornamental plantings.

	Negative:
III. Direct and indirect Socio-Economic Effects of Plant :	Notes: Sold ornamentally.
IV. Increased Costs to Sectors Caused by the Plant:	Notes:
V. Effects on human health:	Notes: Fruit can be eaten raw. Skin of fruit is fried and eaten. Soft young shoots are used in salads or pickled. Leaves are used as a tea substitute. The roots, stems, and fruits are used medicinally. (7)
VI. Potential socio-economic effects of restricting use:	Positive: Negative: This would require nurseries to no longer sell five-leaf akebia in WI or sell to residents of WI
E. CONTROL AND PREVENTION	
I. Costs of Prevention (please be as specific as possible):	Notes: This would require nurseries to no longer sell five-leaf akebia in WI or sell to residents of WI.
II. Responsiveness to prevention efforts:	Notes:
III. Effective Control tactics: (provide only basic info)	Mechanical <input checked="" type="checkbox"/> Biological <input type="checkbox"/> Chemical <input checked="" type="checkbox"/> Times and uses: For small or scattered infestations manual and mechanical methods may suffice. Systemic herbicides (triclopyr) or a combination of manual, mechanical, and chemical are probably more effective and practical for large infestations. Whenever possible and especially for vines climbing up trees or buildings, a combination of cutting followed by application of concentrated systemic herbicide to rooted, living cut surfaces is likely to be the most effective approach. For large infestations spanning extensive areas of ground, a foliar herbicide may be the best choice to minimize soil disturbance that could lead to reinfestation (4).
IV. Costs of Control:	Notes: Cost of herbicide, labor, cutting tools.
V. Cost of prevention or control vs. Cost of allowing invasion to occur:	Notes: Since akebia is not yet reported in WI, it is much better to prevent than to do nothing and work with expanding infestations.
VI. Non-Target Effects of Control:	Notes: Foliar applications on heavy sprawling infestations may harm native vegetation if there is any surviving being smothered.
VII. Efficacy of monitoring:	Notes: Monitoring for akebia is essential due to no known reports in WI and fairly easily done since the leaves are fairly distinctive. Monitoring any infestation found is essential since akebia has a large root system and can easily resprout.
VIII. Legal and landowner issues:	Notes:
F. HYBRIDS AND CULTIVARS AND VARIETIES	
I. Known hybrids?	Name of hybrid:
YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Names of hybrid cultivars: Akebia x pentaphylla (Makino) [A. quinata x A. trifoliata] (8)

II. Species cultivars and varieties	Names of cultivars, varieties and any information about the invasive behaviors of each: All are cultivated by softwood cuttings: 'Alba'; 'Leucantha'; 'Purple Bouquet'; 'Rosea'; 'Variegata' (6) 'Compacta'; 'Shirobara'; 'Amethyst Glow'
	Notes: Subspecies (8) Akebia quinata var. polyphylla (Nakai) Akebia quinata var. yiehii (W.C. Cheng)

G. REFERENCES USED:

- UW Herbarium (Madison or Stevens Point)
- WI DNR
- Bugwood (Element Stewardship Abstracts)
- Native Plant Conservation Alliance
- IPANE
- USDA Plants

Number	Reference
1	USDA, NRCS. 2011. The PLANTS Database (http://plants.usda.gov , 19 December 2011). National Plant Data Team, Greensboro, NC 27401-4901 USA.
2	USDA, ARS, National Genetic Resources Program. <i>Germplasm Resources Information Network - (GRIN)</i> [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?2103 (19 December 2011)
3	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/Akebia.quinata.NYS.pdf
4	Swearingen, J.M.; Adrienne Reese, Robert E. Lyons. 07-Jul-2009. Plant Conservation Alliance's Alien Plant Working Group: Least Wanted – Fiveleaf Akebia. http://www.nps.gov/plants/alien/fact/akqu1.htm
5	Flora of China. <i>Akebia quinata</i> (Thunb.) Decne. http://www.efloras.org/florataxon.aspx?flora_id=3&taxon_id=200008288
6	UConn Database of Trees, Shrubs, and Vines. <i>Akebia quinata</i> . http://www.hort.uconn.edu/plants/a/akequi/akequi1.html
7	Plants for a Future. [Online Database] URL: http://www.pfaf.org/user/plant.aspx?latinname=Akebia+quinata
8	Sonday, ReBecca, University of Michigan: Plant diversity Website. http://www-personal.umich.edu/~rburnham/SpeciesAccountspdfs/AkebquinLARDFINAL.pdf
9	Invasive Plants of Asian Origin Established in the US and Their Natural Enemies. http://wiki.bugwood.org/uploads/Akebia.pdf

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