

MN NWAC Risk Assessment Worksheet (04-2011)	Common Name	<i>Latin Name</i>
	Japanese Knotweed (Mexican Bamboo, Japanese Bamboo, Japanese fleece flower, American bamboo, fleece flower, elephant ears, pea shooters, donkey/gypsy/sally/wild rhubarb, Renoutria, crimson beauty, monkey weed, Hancock's curse, itadori, and others)	<i>Polygonum cuspidatum</i> Seib. & Zucc. (Synonyms: <i>Fallopia japonica</i> , <i>Pleuropterus cuspidatus/zuccarinii</i> , <i>Polygonum zucarrinii</i> , <i>Reynoutria japonica</i> , <i>Tiniaria cuspidata/japonica</i>)
Reviewer	Affiliation/Organization	Date (mm/dd/yyyy)
Jim Calkins	Minnehaha Creek Watershed District Minnesota Nursery & Landscape Association	05/24/2011

Box	Question	Answer	Outcome
1	Is the plant species or genotype non-native?	Yes; native to eastern Asia – Japan, China, Korea, and Taiwan (1).	Go to Box 3
3	Is the plant species, or a related species, documented as being a problem elsewhere?	Yes; <i>P. cuspidatum</i> was first introduced in Europe in the mid 1800's (1840's) and in North America in the late 1800's (before 1890) (1, 2, 4) and has been classified as a noxious weed in the United Kingdom (4); <i>P. cuspidatum</i> is regulated as a problem weed in at least 11 states including AL, CA, CT, ID, MA, MT, NH, OR, WA, WV, and VT (15); by 1966, was considered "one of the most persistent and aggressive of all perennial weeds" (2) and has been ranked as one of the Top 100 invasive plants (14).	Go to Box 6
6	Does the plant species have the capacity to establish and survive in Minnesota?		
	A. Is the plant, or a close relative, currently established in Minnesota?	Yes; <i>P. cuspidatum</i> is widely distributed in the United States (41 states), including Minnesota, and Canada (1, 3); primarily found in riparian areas, old and abandoned homesites, and railroad rights-of-way (2, 3, 4).	Go to Box 7
7	Does the plant species have the potential to reproduce and spread in Minnesota?		

Box	Question	Answer	Outcome
	A. Does the plant reproduce by asexual/vegetative means?	Yes; plants are rhizomatous and colony-forming and spread through the growth and fragmentation of rhizomes (6); rhizome pieces (divisions) are used in commercial production and can produce new plants in the wild (6).	Go to Question B
	B. Are the asexual propagules – vegetative parts having the capacity to develop into new plants – effectively dispersed to new areas?	Yes; rhizomes including very small rhizome sections; dispersed by human activities and rhizome fragments from existing colonies can be deposited and establish new infestations downstream in riparian communities (1, 6).	Go to Question I
	I. Do natural controls exist, species native to Minnesota, that are documented to effectively prevent the spread of the species in question?	No; none found.	Go to Box 8.
	<p>C. Does the plant produce large amounts of viable, cold-hardy seeds?</p> <p><i>Note – Though not directed to this question by the protocol, included to provide seed production information.</i></p>	<p>No; many references state that <i>P. cuspidatum</i> is effectively dioecious and that all plants outside the native range are male-sterile and derived from a single female plant and, thus, comprise a single female clone; some references indicate that giant knotweed (monecious) can serve as a pollen source and hybridize with <i>P. cuspidatum</i> resulting in the hybrid species <i>P. × bohemicum</i> (Bohemian Knotweed); a few more recent reports question the theory that all populations of <i>P. cuspidatum</i> in the United States are male-sterile, female clones and suggest that viable seed is produced (6, 9, 10, 11, 12).</p>	<p>Go to Question F</p> <p><i>Note – Research and documentation on seed production and viability is mixed and the reproductive genetics of the species are complicated.</i></p>

Box	Question	Answer	Outcome
	F. Are sexual propagules – viable seeds – effectively dispersed to new areas?	No; plants are dioecious and only female plants have been introduced outside the species native range so viable seeds are not produced; within the native range, large amounts of viable seed are produced and may be dispersed by water, human activities including moving soil, and perhaps wind (2, 6); alternatively, other references indicate that all species produce low amounts of viable seed and that germination and seedling survival are low such that reproduction by seed is limited (5, 7).	Go to Question I <i>Note –Again, research and documentation on seed production and viability is mixed.</i>
	I. Do natural controls exist, species native to Minnesota, that are documented to effectively prevent the spread of the plant in question?	No (16).	Go to Box 8
8	Does the plant species pose significant human or livestock concerns or has the potential to significantly harm agricultural production, native ecosystems, or managed landscapes?	Forms dense thickets that shade out and displace native vegetation, degrade fish/wildlife habitat, alter waterways facilitating erosion and flooding, interfere with landscaping, and damage pavements.	
	A. Does the plant have toxic qualities, or other detrimental qualities, that pose a significant risk to livestock, wildlife, or people?	No; plant is edible and eaten by humans and livestock (often preferentially).	Go to Question B
	B. Does, or could, the plant cause significant financial losses associated with decreased yields, reduced crop quality, or increased production costs?	No; no documentation found and unlikely to become established in agricultural systems.	Go to Question C
	C. Can the plant aggressively displace native species through competition (including allelopathic effects)?	Yes; colonies can outcompete and displace native grasses, forbs, shrubs, and young trees (1, 2, 3, 4); <i>P. cuspidatum</i> has been shown to have allelopathic effects which may influence its ability to outcompete natives (5); particularly problematic in riparian systems (4, 7).	Go to Box 9

Box	Question	Answer	Outcome
9	The plant has clearly defined benefits that outweigh associated negative impacts?	Benefits: initially introduced as a landscape plant and for erosion control (2); young shoots are edible and a good source of vitamins and minerals (3, 5); also an excellent source of resveratrol (3) which may lower LDL cholesterol (resveratrol), delay or slow alzheimer’s disease, Lyme disease, and have anti-cancer and viral properties (18, 19, 20); a concentrated source of emodin (laxative) (3); extracts may have potential as an organic fungicide (biopesticide; powdery mildew, botrytis, & others; bacterial blight) (21); considered an excellent nectar source for honeybees when little else is flowering (monofloral, bamboo honey) (3).	<i>Note – Not sure about this question as the answer depends on how important these benefits are considered.</i>
	A. Is the plant currently being used or produced and/or sold in Minnesota or native to Minnesota?	Yes; <i>P. cuspidatum</i> was initially introduced as a landscape plant and for erosion control along roadways and embankments (1) and the species and several cultivars are common in Minnesota landscapes and are currently produced and sold in the United States including MN; locally produced by Bailey Nurseries (Newport, MN; ‘Variegata’, Cook Water Farms (Askov, MN).	Go to Question B <i>No – Go to Box 10</i>
	B. Is the plant an introduced species and can its spread be effectively and easily prevented or controlled, or its negative impacts minimized, through carefully designed and executed management practices?	Yes; (1, 3, 17).	Go to Box 11 = Specially Regulated Plants <i>No – Go to Question B and ultimately Box 10</i>
10	Should the plant species be enforced as a noxious weed to prevent introduction &/or dispersal; designate as prohibited or restricted?		
	A. Is the plant currently established in Minnesota?	Yes; common in Minnesota landscapes and “multiple isolated infestations” in unmanaged landscapes have been documented in MN (1).	Go to Question B
	B. Does the plant pose a serious human health threat?	No.	Go to Question C.

Box	Question	Answer	Outcome
	C. Can the plant be reliably eradicated (entire plant) or controlled (top growth only to prevent pollen dispersal and seed production as appropriate) on a statewide basis using existing practices and available resources?	Yes; small populations can be removed manually (grubbing) and large populations can be controlled with appropriate and repeated applications of products with glyphosate or tryclopyr as the active ingredient as a foliar spray or cut stump treatment (2, 3, 17); soil steaming and biocontrols involving a leafspot fungus (<i>Mycosphaerella polygوني-cuspidati</i>) and a Japanese psyllid (<i>Aphalara itadori</i>) may be possible (3, 18).	Enforce control as a noxious weed – List the plant as a Prohibited/Eradicate Noxious Weed (eradication possible and reasonable) or Prohibited/Control Noxious Weed (eradication not possible or reasonable).
Final Results of Risk Assessment			
	<p style="text-align: center;">Review Entity</p> <p>NWAC Listing Subcommittee</p> <p>May 24, 2011</p>	<p style="text-align: center;">Comments</p> <p>Japanese knotweed (<i>Polygonum cuspidatum</i>) is distributed widely in Minnesota landscapes; requiring eradication and may be met with resistance or simple non-compliance</p> <ul style="list-style-type: none"> - Not thought to be a good candidate enforcement as a Prohibited Noxious Weed because it is a very hard species to control or eradicate and it would be difficult for landowners to comply with the law. 	<p style="text-align: center;">Outcome</p> <p>List Japanese knotweed as a Specially Regulated Plant or as a Prohibited/Eradicate or Prohibited/Control Noxious Weed</p>

Box	Question	Answer	Outcome
	NWAC Full-group	<p>11/30/2011 - Tony and Tim will work in 2012 to determine if MNLA would be in favor of providing information at the time of sale indicating that "This plant is listed under the MN Noxious Weed Law as a Specially Regulated Plant. Planting in a riparian area, wetland, stream side, lake shore, or other landscape subjected to flooding or high water is prohibited".</p> <p>5/10/2013 – Tim reported that MNLA would be supportive of the Specially Regulated category where the regulation would be that anyone selling or transferring this species to another person must include information with the plant materials stating it is not advisable to plant in a designated flood plain as defined by MN DNR.</p> <p>12/18/2013 - The official regulation/management plan being recommended: <i>“Any person, corporation, business or other retail entity distributing giant knotweed for sale within the state, must have information directly affixed to the plant or container packaging that it is being sold with, indicating that it is inadvisable to plant this species within 100 feet of a water body or its designated flood plain as defined by Minnesota Statute 103F.111, Subdivision 4.”</i></p>	<p>11/30/2011 – Voted to be placed on the Specially Regulated Plants List - Pending discussions with MNLA in 2012</p> <p>12/18/2013 – Vote 13 – 0 to recommend to the commissioner as a Specially Regulated Plant with the agreed upon management plan.</p>
	MDA Commissioner	2/24/2014	Approved as a Specially Regulated Plant and approved the recommended management plan.
	File # MDARA00006JAKNW_02_24_2014	Specially Regulated Plant	

References:

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