

MN NWAC Risk Assessment Worksheet (04-2011)	Common Name	Latin Name
	Giant Knotweed (Sakhalin knotweed, elephant ear bamboo, Mexican bamboo)	<i>Polygonum sachalinense</i> F. Schmidt ex Maxim (Synonyms: <i>Fallopia sachalinensis</i>, <i>Renoutria sachalinensis</i>)<i>m</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 Japan – Sakhalin Island (1, 2).	Go to Box 3
3	Is the plant species, or a related species, documented as being a problem elsewhere?	Yes; introduced as a garden and forage plant and for erosion control in 1894 (5); much less common and less invasive than <i>P. cuspidatum</i> , <i>P. sachalinense</i> is sporadically, but widely, distributed in the northeastern United States and west to Minnesota; also found in a few western states including Oregon, Washington, and Alaska (5).	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. sachalinense</i> is present in landscapes and perhaps other areas in Minnesota and Wisconsin (8, 11, and personal experience).	Go to Box 7
7	Does the plant species have the potential to reproduce and spread in Minnesota?		
	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 (2); rhizome pieces (divisions) are used in commercial production and can produce new plants in the wild (2).	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 (2).	Go to Question I

Box	Question	Answer	Outcome
	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.
	C. Does the plant produce large amounts of viable, cold-hardy seeds? <i>Note – Though not directed to this question by the protocol, included to provide seed production information.</i>	No; only small amounts of viable seeds are produced (5); giant knotweed is gynodioecious (pistillate or perfect flowers on separate plants) and can serve as a pollen source and hybridize with <i>P. cuspidatum</i> resulting in the hybrid species <i>P. × bohemicum</i> (Bohemian Knotweed) which as a low fertility rate (2, 5); insect pollinated and self-incompatible (5).	Go to Question F <i>Note – Research and documentation on seed production and viability is mixed and the reproductive genetics of the species are complicated.</i>
	F. Are sexual propagules – viable seeds – effectively dispersed to new areas?	No; only small numbers of viable seeds are produced (5); primarily spread by rhizomes growth and human activities including moving soil (2, 5); all species produce low amounts of viable seed and germination and seedling survival are low - reproduction by seed is limited (1).	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 (3).	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?	Similar to Japanese knotweed, but much less common; 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

Box	Question	Answer	Outcome
	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 (3); <i>P. cuspidatum</i> has been shown to have allelopathic effects which may influence its ability to outcompete natives (1); particularly problematic in riparian systems (2, 3, 6, 7); less shade tolerant than the Japanese knotweed (1).	Go to Box 9
9	The plant has clearly defined benefits that outweigh associated negative impacts?	Benefits: benefits are similar to those for Japanese knotweed (<i>P. cuspidatum</i>); see risk assessment for Japanese knotweed.	<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. sachalinense</i> was initially introduced as a landscape plant and for erosion control along roadways and embankments (5, 9) and the species present in Minnesota landscapes; no documentation that giant knotweed is currently grown or sold locally in Minnesota could be found.	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; much less information on control available than for Japanese knotweed and all invasive knotweed species are typically lumped together relative to control (1).	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; present in Minnesota landscapes (8, 11, and personal experience).	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 (1); soil steaming and biocontrols involving a leafspot fungus (<i>Mycosphaerella polygoni-cuspidati</i>) and a Japanese psyllid (<i>Aphalara itadori</i>) may be possible (10).	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> NWAC Listing Subcommittee	<p style="text-align: center;">Comments</p> May 24, 2011 - Giant knotweed (<i>Polygonum sachalinense</i>) is present in Minnesota landscapes; requiring eradication and may be met with resistance or simple non-compliance <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> List giant knotweed as a Specially Regulated Plant or as a Prohibited/Eradicate or Prohibited/Control Noxious Weed

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 unadvisable 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 # MDARA00006GKNW_11_30_2011	Specially Regulated Plant	

References:

1. California Department of Food and Agriculture (<http://www.cdffa.ca.gov/phpps/ipc/weedinform/polygonum-knotweeds.htm>).
2. Pennsylvania Department of Conservation and Natural Resources. DCNR Invasive Exotic Plant Tutorial for Natural Lands Managers – Japanese Knotweed (http://www.dcnr.state.pa.us/forestry/invasive_tutorial/japanese_knotweed.htm).

3. King County, Washington. Invasive Knotweeds – *Polygonum* × *bohemicum*, *P. cuspidatum*, *P. sachalinense*; Buckwheat Family (<http://www.kingcounty.gov/environment/animalsAndPlants/noxious-weeds/weed-identification/invasive-knotweeds/knotweed-control-video.aspx>).
4. Quarles, W. 2009. Giant knotweed, plant disease protection and immortality. *The IPM Practitioner* 31:1-6. (<http://www.birc.org/MarApr2009.pdf%20>).
5. Noxious Weed Control Board (Washington State). Giant Knotweed. http://www.nwcb.wa.gov/weed_info/Written_findings/Polygonum_sachalinense%20.html).
6. King County, Washington. Noxious Weeds – Giant Knotweed, *Polygonum sachalinense* (*Fallopia sachalinensis*) Buckwheat Family. <http://www.kingcounty.gov/environment/animalsAndPlants/noxious-weeds/weed-identification/invasive-knotweeds/giant-knotwee.aspx>).
7. Oregon Department of Agriculture/Plant Division. Giant Knotweed. (http://www.oregon.gov/ODA/PLANTWEEDS/profile_giantknotweed.shtml).
8. Great Lakes Indian Fish & Wildlife Commission (http://www.glifwc.org/invasives/Fallopia_spp/distribution.html).
9. Pridham, A.M.S. and A. Bing. 1975. Japanese bamboo (*Polygonum cuspidatum*, *Polygonum sachalinense*). *Plant Garden* 31(2):56-57).
10. Japanese Knotweed Alliance (<http://www.cabi.org/japanseknotweedalliance/default.aspx?site=139&page=52>).
11. United States Department of Agriculture (<http://www.usda.gov>).