

NAME OF SPECIES: <i>Impatiens glandulifera</i> Royale	
Synonyms: <i>Impatiens glandulifera</i> Lindley, <i>Impatiens roylei</i> Walpers	
Common Name: Royle ornamental jewelweed, Policeman's Helmet, Indian balsam, and Himalayan Balsam	Cultivars? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
A. CURRENT STATUS AND DISTRIBUTION	
I. In Wisconsin?	1. YES <input checked="" type="checkbox"/> NO <input checked="" type="checkbox"/>
	2. <u>Abundance:</u> Low
	3. <u>Geographic Range:</u> Menominee County Dane County (9,10)
	4. <u>Habitat Invaded:</u> Disturbed Areas <input checked="" type="checkbox"/> Undisturbed Areas <input checked="" type="checkbox"/>
	5. <u>Historical Status and Rate of Spread in Wisconsin:</u> Naturalized population in Keshena Menominee County reported in 2011
	6. <u>Proportion of potential range occupied:</u> Low
II. Invasive in Similar Climate Zones	1. YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> <u>Where (include trends):</u> CA, CT, ID, MA, ME, MI, MT, NY, OR, VT, WA, and Canada. (2)
III. Invasive in Which Habitat Types	1. Upland <input checked="" 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 checked="" type="checkbox"/> Bog <input type="checkbox"/> Fen <input type="checkbox"/> Swamp <input type="checkbox"/> Marsh <input checked="" type="checkbox"/> Lake <input type="checkbox"/> Stream <input checked="" type="checkbox"/> Other: Urban areas
IV. Habitat Affected	1. <u>Soil types favored or tolerated:</u> Tolerates a pH from 6.1 to 6.5 (mildly acidic), 6.6 to 7.5 (neutral), or 7.6 to 7.8 (mildly alkaline). Prefers moist and ripe soil.
	2. <u>Conservation significance of threatened habitats:</u> appears to be able to spread into relatively undisturbed forests
V. Native Range and Habitat	1. <u>List countries and native habitat types:</u> Himalayas (8)
VI. Legal Classification	1. <u>Listed by government entities?</u> CT: potentially invasive, banned; OR: "B" designated weed, quarantine; WA: Class B noxious weed, Noxious weed seed and plant quarantine (2)
	2. <u>Illegal to sell?</u> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Notes:
B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS	
I. Life History	1. <u>Type of plant:</u> Annual <input checked="" type="checkbox"/> Biennial <input type="checkbox"/> Monocarpic Perennial <input type="checkbox"/> Herbaceous Perennial <input type="checkbox"/> Vine <input type="checkbox"/> Shrub <input type="checkbox"/> Tree <input type="checkbox"/>
	2. <u>Time to Maturity:</u> Mid Summer, Late Summer/Early Fall (8)
	3. <u>Length of Seed Viability:</u> One study found seeds can remain viable for at least 3 years. Most studies have found the ability for a limited seed bank, for up to 18 months (6)
	4. <u>Methods of Reproduction:</u> Asexual <input type="checkbox"/> Sexual <input checked="" type="checkbox"/> <u>Notes:</u> One study found an upper level of 1700 seeds per plant under the most favorable growing conditions (5)
	5. <u>Hybridization potential:</u> n/a
II. Climate	1. <u>Climate restrictions:</u> Prefers dense patches on the banks of rivers and other water bodies, as well as in wet woodlands, and on waste ground (7) Needs sun to partial shade (8)

	2. <u>Effects of potential climate change:</u> N/a
III. Dispersal Potential	<p>1. <u>Pathways - Please check all that apply:</u></p> <p><u>Unintentional:</u> Bird <input checked="" type="checkbox"/> Animal <input checked="" type="checkbox"/> Vehicles/Human <input checked="" type="checkbox"/> Wind <input checked="" type="checkbox"/> Water <input checked="" type="checkbox"/> Other: evidence that many seeds disperse greater than 100 meters from the parent Plant (6)</p> <p><u>Intentional:</u> Ornamental <input checked="" type="checkbox"/> Forage/Erosion control <input type="checkbox"/> Medicine/Food: _____ Other: _____</p>
	2. <u>Distinguishing characteristics that aid in its survival and/or inhibit its control:</u> Abundant reproduction with vegetative asexual spread documented as one of the plants prime reproductive means (6) The seed capsule splits open explosively, scattering the seeds widely. Each plant can produce as many as 2,500 seeds. The plant has a germination rate of 80%. (7) One study found an upper level of 1700 seeds per plant under the most favorable growing conditions (5)
IV. Ability to go Undetected	1. HIGH <input type="checkbox"/> MEDIUM <input checked="" type="checkbox"/> LOW <input type="checkbox"/> easily detected when in bloom, more difficult when not flowering
C. DAMAGE POTENTIAL	
I. Competitive Ability	<p>1. <u>Presence of Natural Enemies:</u> N/a</p> <p>2. <u>Competition with native species:</u> Fast growth and competes for pollinators (7)</p> <p>2. Rate of Spread: - changes in relative dominance over time: - change in acreage over time: HIGH (1-3 yrs) <input checked="" type="checkbox"/> MEDIUM (4-6 yrs) <input type="checkbox"/> LOW (7-10 yrs) <input type="checkbox"/> Notes: _____</p>
II. Environmental Effects	<p>1. <u>Alteration of ecosystem/community composition?</u> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Notes: However, Reported to form dense monospecific stands in other locations outside of its native range, displacing native species. Recent European studies conclude that <i>Impatiens glandulifera</i> exerts negligible effects on the characteristics of invaded riparian communities and that many of the species negatively influenced by <i>Impatiens</i> are widespread ruderal species. No studies done on material in the northeastern U.S. Only one small escape in a ditch in Adirondacks has been observed in NY State. (5)</p> <p>2. <u>Alteration of ecosystem/community structure?</u> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Notes: However in Europe it has been shown to form dense stands changing the density in the herb layer and preventing the development of shrub and tree layers. (5)</p> <p>3. <u>Alteration of ecosystem/community functions and processes?</u> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Notes: No studies have been done but a noticeable impact has not occurred (5)</p>

	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: Sold as garden plant Based on the 2011 WNA Economic Impact Survey, the following information was reported for this plant. Out of the 204 nurseries responding, 0 reported selling this plant (11).
II. Potential Socio-Economic Effects of Requiring Controls:	Positive: Negative:
III. Direct and indirect Socio-Economic Effects of Plant :	Notes:
IV. Increased Costs to Sectors Caused by the Plant::	Notes: Causes increased erosion during high winter flows, Rapidly clogs streams and wetlands. (5)
V. Effects on human health:	Notes:
VI. Potential socio-economic effects of restricting use:	Positive: Negative:
E. CONTROL AND PREVENTION	
I. Costs of Prevention (please be as specific as possible):	Notes:
II. Responsiveness to prevention efforts:	Notes: Easy to spot and hand pull. Should be easy to contain in several years if not allowed to go to seed
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: Pulling and cutting is effective in small quantities. Control by spraying with glyphosate from boat using lightweight telescopic lances is effective. (1)
IV. Costs of Control:	Notes: Identify types of control methods and time-term required: Herbicidal; complete eradication requires several years; once <i>I. glandulifera</i> is removed, communities recover without any consequences for species diversity. Larger infestations might be more difficult to control, but herbicide may still be needed. (6)
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: Should be effective. Postcards asking for reports are being sent to all landowners within several miles of the Keshena population
VIII. Legal and landowner issues:	Notes:
F. HYBRIDS AND CULTIVARS AND VARIETIES	
I. Known hybrids? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Name of hybrid: Names of hybrid cultivars:

II. Species cultivars and varieties	Names of cultivars, varieties and any information about the invasive behaviors of each: Wine Red (no information listed, for sale)
	Notes:

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	Ecology and Management of Invasive Riverside Plants. John Wiley and Sones
2	United States Department of Agriculture. Natural Resources Conservation Services. < http://plants.usda.gov >
3	Invasive.org. Center for Invasive Species and Ecosystem Health. < http://www.invasive.org >
4	Farm Industry News. < http://farministrynews.com >
5	Cornell University Cooperative Extension and Sea Grant New York. Funded by NYS and USDA APHIS. < http://nyis.info/PlantAssessments/Impatiens.glandulifera.NYS.pdf >
6	Nature Reserve. Invasive Species Impact Ranks for the United States. < http://www.natureserve.org/library/invasives_species_list_Jan1005.xls >
7	Arkive. Plants and Algae. < http://www.arkive.org/himalayan-balsam/impatiens-glandulifera/#text=Habitat >
8	Dave's Garden. Guides and Information. < http://davesgarden.com/guides/pf/go/67658/ >
9	Hylinski, Zachary, Keshena area DNR Forester, Personal communication. 2009-11
10	Kearns, Kelly. Invasive plant coordinator, DNR. Personal communication re: Oakwood Village population. 2011
11	Wiegrefe, Susan. 2011. Wisconsin Nursery Association Survey of the Economic impact of potentially invasive species in Wisconsin

Author(s), Draft number, and date completed: Stephanie Lind, draft two, October 6, 2011

Reviewer(s) and date reviewed: Kelly Kearns, Dec. 6, 2011

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