

Family: *Asteraceae*

Taxon: *Rudbeckia hirta*

Synonym: *Rudbeckia bicolor* Nutt. **Common Name:** black-eyed Susan
Rudbeckia floridana T. V. Moore marguerite jaune
Rudbeckia floridana var. *angustifolia* T. V. M
Rudbeckia hirta var. *corymbifera* Fernald

Questionnaire :	current 20090513	Assessor:	Assessor	Designation:	H(HPWRA)
Status:	Assessor Approved	Data Entry Person:	Assessor	WRA Score	7
101	Is the species highly domesticated?		y=-3, n=0		n
102	Has the species become naturalized where grown?		y=1, n=-1		
103	Does the species have weedy races?		y=1, n=-1		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"		(0-low; 1-intermediate; 2-high) (See Appendix 2)		Low
202	Quality of climate match data		(0-low; 1-intermediate; 2-high) (See Appendix 2)		Intermediate
203	Broad climate suitability (environmental versatility)		y=1, n=0		y
204	Native or naturalized in regions with tropical or subtropical climates		y=1, n=0		
205	Does the species have a history of repeated introductions outside its natural range?		y=-2, ?=-1, n=0		y
301	Naturalized beyond native range		y = 1*multiplier (see Appendix 2), n= question 205		y
302	Garden/amenity/disturbance weed		n=0, y = 1*multiplier (see Appendix 2)		y
303	Agricultural/forestry/horticultural weed		n=0, y = 2*multiplier (see Appendix 2)		n
304	Environmental weed		n=0, y = 2*multiplier (see Appendix 2)		n
305	Congeneric weed		n=0, y = 1*multiplier (see Appendix 2)		y
401	Produces spines, thorns or burrs		y=1, n=0		n
402	Allelopathic		y=1, n=0		
403	Parasitic		y=1, n=0		n
404	Unpalatable to grazing animals		y=1, n=-1		n
405	Toxic to animals		y=1, n=0		y
406	Host for recognized pests and pathogens		y=1, n=0		
407	Causes allergies or is otherwise toxic to humans		y=1, n=0		
408	Creates a fire hazard in natural ecosystems		y=1, n=0		n
409	Is a shade tolerant plant at some stage of its life cycle		y=1, n=0		

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	n
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	y
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	y
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	
708	Propagules survive passage through the gut	y=1, n=-1	
801	Prolific seed production (>1000/m2)	y=1, n=-1	
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides	y=-1, n=1	
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: H(HPWRA)

WRA Score 7

Supporting Data:

101	1994. Walsh, R.A.. <i>Rudbeckia hirta</i> . In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Is the species highly domesticated? No. Assessment of wild type] No evidence												
102	2013. WRA Specialist. Personal Communication.	NA												
103	2013. WRA Specialist. Personal Communication.	NA												
201	2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Species suited to tropical or subtropical climate(s) 0-Low] " Native: (links to other web resources are provided for some distributions) NORTHERN AMERICA (Check conservation status in U.S. & Canada in NatureServe Explorer database) Eastern Canada: Canada - New Brunswick, Newfoundland, Nova Scotia, Ontario, Prince Edward Island, Quebec Western Canada: Canada - Alberta, British Columbia, Manitoba, Saskatchewan Northeastern U.S.A.: United States - Connecticut, Indiana, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia North-Central U.S.A.: United States - Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Wisconsin Northwestern U.S.A.: United States - Colorado [e.], Wyoming [e.] Southeastern U.S.A.: United States - Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia South-Central U.S.A.: United States - New Mexico [n.e.], Texas [e.]"												
202	2010. Gardner, H.W>. Tallgrass Prairie Restoration in the Midwestern and Eastern United States: A Hands-On Guide. Springer, New York	[Quality of climate match data 1-Intermediate] "For germination seeds require either no treatment or benefit from 2 months of cool-most stratification[11]."												
203	1994. Walsh, R.A.. <i>Rudbeckia hirta</i> . In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Broad climate suitability (environmental versatility)? Yes. Broad temperate climate suitability and elevation range exceeds 1000 m] "Black-eyed Susan occurs at the following elevations: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Elevation (feet)</th> <th>Elevation (meters)</th> </tr> </thead> <tbody> <tr> <td>CA</td> <td>328-3,937</td> <td>100-1,200</td> </tr> <tr> <td>CO</td> <td>5,000-9,500</td> <td>1,524-2,896</td> </tr> <tr> <td>WY</td> <td>8,200</td> <td>2,500 "</td> </tr> </tbody> </table>		Elevation (feet)	Elevation (meters)	CA	328-3,937	100-1,200	CO	5,000-9,500	1,524-2,896	WY	8,200	2,500 "
	Elevation (feet)	Elevation (meters)												
CA	328-3,937	100-1,200												
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204	2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Native or naturalized in regions with tropical or subtropical climates? Reported to be naturalized in Cuba]												
205	1994. Walsh, R.A.. <i>Rudbeckia hirta</i> . In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Does the species have a history of repeated introductions outside its natural range? Yes] "It has been sporadically introduced into the Pacific Northwest [35]. Black-eyed Susan has also been introduced in Europe as an ornamental and can now be found growing wild in seminatural stands [57]."												
301	1999. Heenan, P.B. et al.. Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 1997–1998. <i>New Zealand Journal of Botany</i> . 37(4): 629-642.	[Naturalized beyond native range? New Zealand] "A casual weed of rough grassland."												
301	2010. Kubešová, M., Moravcová, L., Suda, J., Jarošík, V., Pyšek, P.. Naturalized plants have smaller genomes than their non-invading relatives: a flow cytometric analysis of the Czech alien flora. <i>Preslia</i> . 82: 81–96.	[Naturalized beyond native range? Yes] "Table 1. – List of analyzed species, with their family affiliation, life history, LH (an – annual; mono – monocarpic perennial; per – polycarpic perennial), invasion status..." [Rudbeckia hirta - Invasion status = naturalized]												

301	2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Naturalized beyond native range? Yes] "Naturalized: (links to other web resources are provided for some distributions) ASIA-TEMPERATE China: China EUROPE Northern Europe: Norway; United Kingdom Middle Europe: Austria; Belgium; Czech Republic; Germany; Hungary; Poland; Switzerland East Europe: Belarus; Latvia; Moldova; Russian Federation - European part; Ukraine [incl. Krym] Southeastern Europe: Italy; Romania; Slovenia Southwestern Europe: France; Spain NORTHERN AMERICA (Check conservation status in U.S. & Canada in NatureServe Explorer database) Canada United States SOUTHERN AMERICA Caribbean: Cuba"
302	2002. Foote, K.. Black-eyed Susan (<i>Rudbeckia hirta</i> L.). NYFA Newsletter. 13(1): 1-6.	[Garden/amenity/disturbance weed? Disturbance adapted] "Like many other naturalized wildflowers, Blackeyed Susan is found chiefly in disturbed, waste lands, pastures, old fields, roadsides, and meadows."
302	2007. Gilman, E.F./Howe, T.. <i>Rudbeckia hirta</i> Black-Eyed Susan, Gloriosa Daisy. FPS512 (Revised). University of Florida IFAS Extension, http://edis.ifas.ufl.edu/pdf/FP/FP51200.pdf	[Garden/amenity/disturbance weed? Yes] "Plants can become weeds in the garden because seeds germinate readily in nearby beds."
302	2013. Missouri Botanical Gardens. <i>Rudbeckia hirta</i> . http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a109 [Accessed 17 Dec 2013]	[Garden/amenity/disturbance weed? Weedy] "It is a coarse, hairy, somewhat weedy plant that features daisy-like flowers (to 3" across) with bright yellow to orange-yellow rays and domed, dark chocolate-brown center disks."
303	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Agricultural/forestry/horticultural weed? No evidence]
304	2013. WRA Specialist. Personal Communication.	[Environmental weed? No evidence]
305	2001. Francírková, T.. Contribution to the invasive ecology of <i>Rudbeckia laciniata</i> . Pp 89-98 in Plant invasions: species ecology and ecosystem management. Backhuys, Kerkwerf, The Netherlands	[Congeneric weed? Yes] "The presented study clarifies some mechanisms leading to the incorporation of an invasive alien, <i>R. laciniata</i> into natural communities. Seed production was calculated as 1600 viable seeds per plant and 94 000 viable seeds per 1 m ² stand. Seed germination tested in greenhouse experiments was ~40% regardless of the type of winter storage of seeds (room temperature, low temperature, in the field) and florescence order. Seed germination reached 35% under field conditions in Cernousy and Krabonos, Czech Republic during 1997-99. Germination and seedling survival in differently treated plots (control, mowing and removed sods) was checked during three growing seasons (1997 99) showing incapability for recruitment in undisturbed sites. The results of a greenhouse experiment testing the regeneration of rhizome fragments of different lengths (0.5 cm; 1 cm; 1.5 cm; 2 cm; 2.5 cm) with respect to presence/absence of buds and cut direction (longitudinal/transverse) indicate the importance of vegetative spread. Only fragments ≥1 cm regenerated successfully (57% in the presence of buds, 5% in their absence). No differences between cut directions were found. Phenological observation was provided on 50 randomly selected individuals. The species showed two different strategies with regard to light and space competition during the growing seasons. This fact was confirmed by a field experiment testing self-thinning of shoots. To test the possibility of restriction of already established populations, stands of <i>R. laciniata</i> were subjected to mowing of different intensities (once and twice a year). After three growing seasons, there were significant, but only slight changes in the <i>R. laciniata</i> abundance, implying necessity of a long-term management."
401	1994. Walsh, R.A.. <i>Rudbeckia hirta</i> . In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Produces spines, thorns or burrs? No] "Black-eyed Susan is a native, warm season, annual, biennial or short-lived perennial forb [26,34]. It has one to a few stems [4] 12 to 40 inches (0.3-1.0 m) tall [26], which are erect and sometimes sparingly branched [33]. The lower leaves are 2 to 6 inches (5-15 cm) long [28], alternate and petioled [34]. The upper leaves are mostly sessile [26]. The inflorescences are few to many flower heads on peduncles 2 to 8 inches (5-20 cm) long [34]. The fruit is an achene 0.06 inches (1.5 mm) long; there is no pappus [33]. Black-eyed Susan has a taproot or a cluster of fibrous roots [28]. It is a mycorrhizal species [43]."

402	2012. Csiszár, Á. et al.. Allelopathic potential of some invasive plant species occurring in Hungary. In International Scientific Conference on Sustainable Development & Ecological Footprint. March 26-27 2012, Sopron, Hungary.	[Allelopathic? Possibly Yes] "Results have proven a more or less expressed allelopathic potential in case of all species." ... "Treatment with the extracts of Indian pokeweed (<i>Phytolacca esculenta</i> VAN HOUTTE), giant hogweed (<i>Heraclium mantegazzianum</i> SOMM. et LEV.), false indigo (<i>Amorpha fruticosa</i> L.), tree-of heaven (<i>Ailanthus altissima</i> (MILL.) SWINGLE), hackberry (<i>Celtis occidentalis</i> L.), black walnut (<i>Juglans nigra</i> L.), black cherry (<i>Prunus serotina</i> EHRH.), green ash (<i>Fraxinus pennsylvanica</i> MARSH. var. <i>subintegerrima</i> (VAHL) FERN.) Japanese knotweed (<i>Fallopia japonica</i> (HOUTT.) RONSE DECR.), Balfour's touch-me-not (<i>Impatiens balfourii</i> HOOK. F.), small balsam (<i>Impatiens parviflora</i> DC.) and Black-eyed Susan (<i>Rudbeckia hirta</i> L.) reduced extremely significantly the germination rate, shoot and root length, compared to the control."
403	1994. Walsh, R.A.. <i>Rudbeckia hirta</i> . In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Parasitic? No] "Black-eyed Susan is a native, warm season, annual, biennial or short-lived perennial forb..." [Asteraceae]
404	1994. Walsh, R.A.. <i>Rudbeckia hirta</i> . In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Unpalatable to grazing animals? No] "In the western Cross Timbers of northern Texas in 1944, black-eyed Susan was lightly grazed by cattle during the last half of April, heavily grazed during May, and lightly grazed during the first half of June. It was not grazed at any other time [20]. In southeastern Minnesota white-tailed deer grazed black-eyed Susan plants which had been transplanted as seedlings into test plots in the spring of 1983. Thirty-six percent of black eyed Susan plants were grazed in 1983, and 8 percent in 1984. No plant was grazed more than once. Eastern cottontails and thirteen-lined ground squirrels were observed in the study area, but they did not make use of black-eyed Susan [21]."
405	2010. Allred, K.W.. An Annotated Checklist of Poisonous or Injurious Range Plants of New Mexico. Circular 636. New Mexico State University, Las Cruces. nmsu.edu/pubs/_circulars/cr-636.pdf	[Toxic to animals? Yes] " <i>Rudbeckia hirta</i> L. ... Toxin: unknown ... Animals affected: cattle, swine"
405	2012. The Garden Factory Inc.. Plants Toxic to Dogs & Cats. http://www.gardenfactoryny.com/Images_Content/Site1/Files/Articles/ToxicPlants.pdf	[Toxic to animals? Yes] <i>Rudbeckia hirta</i> ... Toxic to dogs and cats
405	2013. Plants for a Future Database. <i>Rudbeckia hirta</i> . http://www.pfaf.org/user/Plant.aspx?LatinName=Rudbeckia+hirta [Accessed 17 Dec 2013]	[Toxic to animals? Possibly] "This plant is reputed to be poisonous to cattle, sheep and pigs[155]."
406	2007. Gilman, E.F./Howe, T.. <i>Rudbeckia hirta</i> Black-Eyed Susan, Gloriosa Daisy. FPS512 (Revised). University of Florida IFAS Extension, http://edis.ifas.ufl.edu/pdf/FP/FP51200.pdf	[Host for recognized pests and pathogens?] "Aphids suck sap from the plants and coat the leaves with sticky honeydew. Goldenglow sawfly may completely defoliate plants. The larvae are gray with dark stripes. Four-lined plant bug causes round, brown, sunken spots on the leaves. The injury is often mistaken for a disease. Pests and Diseases Downy mildew causes seedlings to wilt and die. On older plants the foliage is mottled light yellow. Several leaf spots may be found but are not serious. Remove and destroy infected leaves. Powdery mildew may cause a white, powdery growth on the leaves in late summer. White smut causes light spots on the leaves. Destroy plant residues in the fall and get rid of infected plants as you notice them. Verticillium wilt may kill <i>Rudbeckia</i> spp."
406	2013. Missouri Botanical Gardens. <i>Rudbeckia hirta</i> . http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a109 [Accessed 17 Dec 2013]	[Host for recognized pests and pathogens? No evidence] "No serious insect or disease problems. Susceptible to powdery mildew. Watch for slugs and snails on young plants."
407	1994. Walsh, R.A.. <i>Rudbeckia hirta</i> . In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Causes allergies or is otherwise toxic to humans? No evidence] "Black-eyed Susan is used as a garden ornamental [51]. The leaves of black-eyed Susan are used to make a tea that is said to be a diuretic, with some cardiac stimulation properties [45]. The Forest Potawatomis treated colds with a tea prepared from the roots of black-eyed Susan [4]."
407	1997. Perry, L.P.. Potentially Harmful Perennials OH 63. http://www.uvm.edu/~pass/perry/oh63harm.html [Accessed 17 Dec 2013]	[Causes allergies or is otherwise toxic to humans? Possibly] " <i>Rudbeckia hirta</i> , Black-eyed Susan, Skin irritant"

408	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Creates a fire hazard in natural ecosystems? A component of fire prone ecosystems, but no evidence that it increases fire risk] "Black-eyed Susan is probably top-killed by fire during the growing season. It may survive by sprouting from the root crown [56]."
409	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Is a shade tolerant plant at some stage of its life cycle?] "It has low to moderate water requirements, and grows in full sun to partial shade [51]. It is found in plains and open woods [18,19], sunny roadsides and meadows [57], sandhills and bogs [12], and disturbed places [35]."
409	2002. Hodgson, L.. Annuals for every purpose: choose the right plants for your conditions, your garden, and your taste.. Rodale, Emmaus, PA	[Is a shade tolerant plant at some stage of its life cycle? Not deep shade] "Black-eyed Susan grows just about everywhere, except in deep shade or constantly wet soil."
409	2011. Steiner, L.M.. Landscaping with Native Plants of Minnesota - 2nd Edition. Voyageur Press, Minneapolis	[Is a shade tolerant plant at some stage of its life cycle? Light shade] "Site, Prefers moist, average, well-drained soil in full sun but tolerates light shade and a wide range of soil conditions."
410	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Tolerates a wide range of soil conditions ?] "Black-eyed Susan is found on clayey loam to sandy loam soils."
410	2007. Gilman, E.F./Howe, T.. Rudbeckia hirta Black-Eyed Susan, Gloriosa Daisy. FPS512 (Revised). University of Florida IFAS Extension, http://edis.ifas.ufl.edu/pdffiles/FP/FP51200.pdf	[Tolerates a wide range of soil conditions? Yes] "Soil tolerances: clay; sand; acidic; loam"
410	2011. Steiner, L.M.. Landscaping with Native Plants of Minnesota - 2nd Edition. Voyageur Press, Minneapolis	[Tolerates a wide range of soil conditions? Yes] "...tolerates light shade and a wide range of soil conditions."
411	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Climbing or smothering growth habit? No] "Black-eyed Susan is a native, warm season, annual, biennial or short-lived perennial forb [26,34]. It has one to a few stems [4] 12 to 40 inches (0.3-1.0 m) tall [26], which are erect and sometimes sparingly branched [33]. The lower leaves are 2 to 6 inches (5-15 cm) long [28], alternate and petioled [34]. The upper leaves are mostly sessile [26]. The inflorescences are few to many flower heads on peduncles 2 to 8 inches (5-20 cm) long [34]. The fruit is an achene 0.06 inches (1.5 mm) long; there is no pappus [33]. Black-eyed Susan has a taproot or a cluster of fibrous roots [28]. It is a mycorrhizal species [43]."
412	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Forms dense thickets? Does not exclude other vegetation] "Black-eyed Susan is part of the weed stage of abandoned fields in central Oklahoma and southeastern Kansas [59]. At the establishment of the Curtis Prairie in south-central Wisconsin between 1936 and 1941, black-eyed Susan plants were left intact, as they already occurred in some fields. They persisted a short time, spreading opportunistically into other areas. Areas originally dominated by black-eyed Susan were invaded extensively by various more aggressive species [52]."
501	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Aquatic? No] "Black-eyed Susan is found on clayey loam to sandy loam soils." [Terrestrial]
502	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Grass? No] Asteraceae
503	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Nitrogen fixing woody plant? No] "Black-eyed Susan is a native, warm-season, annual, biennial or short-lived perennial forb"

504	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Black-eyed Susan has a taproot or a cluster of fibrous roots [28]. It is a mycorrhizal species [43]."
601	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Evidence of substantial reproductive failure in native habitat? No evidence]
602	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Produces viable seed? Yes] "Black-eyed Susan reproduces sexually by seed [4,28]."
603	2002. Foote, K.. Black-eyed Susan (Rudbeckia hirta L.). NYFA Newsletter. 13(1): 1-6.	[Hybridizes naturally? Possibly Yes] "Some of the observed variations may have involved confusion with a closely related species (or variety), Rudbeckia serotina, a yellow daisy in which the leaves range from ½ to 1 inch in width, with smooth edges (Core, 1962). That species also has spread aggressively into the eastern states from midwestern North America, giving rise to a number of variants. It is now thoroughly naturalized and has become the commoner of the two in some areas. There is also the possibility that hybridization has occurred (Core, 1962), and both taxa have the same chromosome number of 2n = 38 (Mulligan, 1959; Battaglia, 1947)."
604	1940. East, E.M.. The distribution of self-sterility in the flowering plants. Proceedings of the American Philosophical Society. 82: 449-518.	[Self-compatible or apomictic? No] "In the other subtribes, information that there is variable, but on the whole a highly developed self-sterility reaction, has been obtained for the cultivated Zinnias (Burpee), Rudbeckia hirta L.,..."
604	1945. Blakeslee, A.F.. Removing Some of the Barriers to Crossability in Plants. Proceedings of the American Philosophical Society. 89(4): 561-574.	[Self-compatible or apomictic? No] "Not only may plants be prevented from crossing on account of being too distantly related, but also on account of being too closely related. Thus, many plants are self-sterile and will not set seed when pollinated with their own pollen. This is true in our experience with the Yellow Daisy (Rudbeckia hirta)"
604	2002. Foote, K.. Black-eyed Susan (Rudbeckia hirta L.). NYFA Newsletter. 13(1): 1-6.	[Self-compatible or apomictic? No] "Rudbeckia hirta is reported to be an obligate outcrosser (East, 1940; Abrahamson & McCrea, 1977). Therefore florets do not self-pollinate or pollinate neighboring florets within the flower head (geitonogamy). For pollination to be successful, the pollen must be transferred to a different Black eyed Susan genet (i.e. a plant with a different genetic makeup)."
605	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Requires specialist pollinators? No] "It is pollinated by bees and flies [15,22]."
605	2002. Foote, K.. Black-eyed Susan (Rudbeckia hirta L.). NYFA Newsletter. 13(1): 1-6.	[Requires specialist pollinators? No evidence] "The flower head (or capitulum) is borne singly, or two to several, each with a long peduncle. Beneath the head are involucrel bracts: 18-24 small, hairy, reflexed, leaf-like structures in two series. Each flower head has an outside ring of 8-30 (often 10- 14) yellow ray flowers surrounding the dark brown to purple, cone-shaped disk. The rays are 1 1.5 inches long, orange to yellow, with the color often darker at the base. The cone is ½ to ¾ inches wide and ½ to ¾ inches high (Gleason and Cronquist, 1991)."
605	2005. Townsend, P. A., & Levey, D. J.. An experimental test of whether habitat corridors affect pollen transfer. Ecology. 86(2): 466-475.	[Requires specialist pollinators? No] "Pollen transfer by bees and wasps.—Rudbeckia hirta is most frequently pollinated by bees and wasps, although butterflies visit it occasionally (P. Townsend, personal observation)." ... "At our site, R. hirta flowers were most commonly visited by several species of bees and wasps (e.g., Campsomeris pluipias, Xylocopa virginica, Cerceris fumipennis, Polistes sp.), which were similar or identical to those observed on other flowering plants in the patches."
606	1994. Walsh, R.A.. Rudbeckia hirta. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Reproduction by vegetative fragmentation? No. Resprouts from root crown] "Black-eyed Susan reproduces sexually by seed [4,28]. It is pollinated by bees and flies [15,22]. It also reproduces vegetatively [56] by sprouting from the root crown [48]." ... "By the end of the first year it may begin vegetative reproduction, and show a distinct "bunching" effect with 2 or more shoots [46]. Topgrowth dies back each year [36,42]."

606	2002. Foote, K.. Black-eyed Susan (<i>Rudbeckia hirta</i> L.). NYFA Newsletter. 13(1): 1-6.	[Reproduction by vegetative fragmentation? No] "Unlike the grasses, this species does not reproduce vegetatively."
607	1994. Walsh, R.A.. <i>Rudbeckia hirta</i> . In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Minimum generative time (years)? 1+] "Black-eyed Susan is a native, warm-season, annual, biennial or short-lived perennial forb [26,34]." ... "Black-eyed Susan is able to flower its first year [28], but flowers more prolifically its second year."
701	2002. Foote, K.. Black-eyed Susan (<i>Rudbeckia hirta</i> L.). NYFA Newsletter. 13(1): 1-6.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? Yes] "It may have been transported by wagons and trains, moved purposely as an ornamental, or it may have first come as a contaminant of grass seed or grain fodder." ... "The achenes may be spread by humans in their agricultural activities, physically distributed by animals or wind gusts that dislodge and catapult them, or they may simply drop and establish near the parent plant."
702	1994. Walsh, R.A.. <i>Rudbeckia hirta</i> . In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Propagules dispersed intentionally by people? Yes] "Black-eyed Susan is used as a garden ornamental"
703	1987. Webb, C. J.. Checklist of dicotyledons naturalised in New Zealand 18. Asteraceae (Compositae) subfamily Asteroideae. New Zealand Journal of Botany. 25(4): 489-501.	[Propagules likely to disperse as a produce contaminant? Yes] "Previously recorded as a seed impurity."
703	1988. Webb, C. J./Sykes, W.R./Garnock-Jones, P.J.. Flora of New Zealand, Volume IV: Naturalised pteridophytes, gymnosperms, dicotyledons. Botany Division, DSIR, Christchurch, New Zealand http://FloraSeries.LandcareResearch.co.nz	[Propagules likely to disperse as a produce contaminant? Yes] "An escape from cultivation and recorded as a seed impurity."
703	2002. Foote, K.. Black-eyed Susan (<i>Rudbeckia hirta</i> L.). NYFA Newsletter. 13(1): 1-6.	[Propagules likely to disperse as a produce contaminant? Yes] "It may have been transported by wagons and trains, moved purposely as an ornamental, or it may have first come as a contaminant of grass seed or grain fodder."
704	2002. Foote, K.. Black-eyed Susan (<i>Rudbeckia hirta</i> L.). NYFA Newsletter. 13(1): 1-6.	[Propagules adapted to wind dispersal? No] "An interesting feature of this species is the lack of a pappus on its seed-like fruit (achene), It does not disperse in the wind like those of many asters, such as bull thistles, dandelions, and hawkweeds, for example."
705	2002. Foote, K.. Black-eyed Susan (<i>Rudbeckia hirta</i> L.). NYFA Newsletter. 13(1): 1-6.	[Propagules water dispersed? No evidence] "An interesting feature of this species is the lack of a pappus on its seed-like fruit (achene), It does not disperse in the wind like those of many asters, such as bull thistles, dandelions, and hawkweeds, for example. The achenes may be spread by humans in their agricultural activities, physically distributed by animals or wind gusts that dislodge and catapult them, or they may simply drop and establish near the parent plant."
706	1999. Howe, H. F., & Brown, J. S.. Effects of Birds and Rodents on Synthetic Tallgrass Communities. Ecology. 80(5): 1776-1781.	[Propagules bird dispersed? Granivores depredate seeds] "As predicted, bird granivory suppressed two species with seeds of intermediate size, switchgrass (<i>Panicum virgatum</i> ; seed 0.57 mg) and black-eyed Susan (<i>Rudbeckia hirta</i> ; seed 0.51 mg), with a substantially stronger effect on <i>R. hirta</i> at high than low planting densities."
707	2002. Foote, K.. Black-eyed Susan (<i>Rudbeckia hirta</i> L.). NYFA Newsletter. 13(1): 1-6.	[Propagules dispersed by other animals (externally)? Possibly, although achenes lack means of external attachment] "An interesting feature of this species is the lack of a pappus on its seed-like fruit (achene), It does not disperse in the wind like those of many asters, such as bull thistles, dandelions, and hawkweeds, for example. The achenes may be spread by humans in their agricultural activities, physically distributed by animals or wind gusts that dislodge and catapult them, or they may simply drop and establish near the parent plant."
708	1999. Howe, H. F., & Brown, J. S.. Effects of Birds and Rodents on Synthetic Tallgrass Communities. Ecology. 80(5): 1776-1781.	[Propagules survive passage through the gut? Unknown if any seeds survive consumption] "As predicted, bird granivory suppressed two species with seeds of intermediate size, switchgrass (<i>Panicum virgatum</i> ; seed 0.57 mg) and black-eyed Susan (<i>Rudbeckia hirta</i> ; seed 0.51 mg), with a substantially stronger effect on <i>R. hirta</i> at high than low planting densities."
801	2002. Foote, K.. Black-eyed Susan (<i>Rudbeckia hirta</i> L.). NYFA Newsletter. 13(1): 1-6.	[Prolific seed production (>1000/m ²)? Possibly] "The fruit is quite small, with an average weight of 0.26 milligrams (Stevens, 1932; Abrahamson, 1979) equivalent to 1,745,000 seeds per pound. Many fruits can be produced in a single flower head, but these are often subject to weevil infestation. Stevens (1932), in North Dakota, observed an entire plant which produced only 1615 seeds due to infestation."

802	1994. Walsh, R.A.. <i>Rudbeckia hirta</i> . In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Evidence that a persistent propagule bank is formed (>1 yr)?] "In remnant tallgrass prairie in central Illinois, black-eyed Susan seeds made up 2.4 percent of germinable seeds found in the seedbank. Fifty percent of black-eyed Susan seeds were in the upper 0.8 inches (2 cm) of soil; the rest were in the next 3 inches (8 cm) of soil. The seeds occurred in high-density clumps rather than being randomly dispersed. Black-eyed Susan was a very minor component of the vegetational cover. There were more black-eyed Susan seeds in the seedbank than would be predicted by its importance value [38]." ... "However, no information was available on seed tolerance to heat or length of seed viability in the seedbank."
802	2002. Foote, K.. Black-eyed Susan (<i>Rudbeckia hirta</i> L.). NYFA Newsletter. 13(1): 1-6.	[Evidence that a persistent propagule bank is formed (>1 yr)? Yes] "The achene is long-lived. In a long-term, buried fruit experiment, 31% of those placed at eight inches depth had germinated at the end of 31 years (Toole and Brown, 1946)."
803	1983. Klingman,, D.L./Bovey, R.W. /Knake, E.L./Lange, A.H./Meade, J.A./Skroach, W.A./Stewart, R.E./Wyse, D.L.. USDA Weed Control Compendium. AD-BU-2281. Extension Service, U.S. Department of Agriculture, Washington, DC	[Well controlled by herbicides? Probably Yes. Related taxa controlled effectively with herbicides] "Table 1. Susceptibility of common weeds to control by phenoxy and other systemic herbicides." [<i>Rudbeckia serotina</i> - Excellent control with Dicamba, Picloram and Glyphosate; <i>Rudbeckia occidentalis</i> Excellent control with Dicamba & Picloram]
804	1994. Walsh, R.A.. <i>Rudbeckia hirta</i> . In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, http://www.fs.fed.us/database/feis/ [Accessed 17 Dec 2013]	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "It also reproduces vegetatively [56] by sprouting from the root crown [48]." ... "Black-eyed Susan is probably top-killed by fire during the growing season. It may survive by sprouting from the root crown [56]."
805	2013. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m
- Widely naturalized
- A garden weed
- Related Rudbeckia species have become invasive
- Toxic to cattle and other animals
- Sap can cause dermatitis and may be poisonous if ingested
- Tolerates many soil types
- Able to reach maturity in as little as one year
- Seeds dispersed accidentally & intentionally by people and as a seed contaminant
- Forms a persistent seed bank
- Can resprout from the root crown

Low Risk Traits

- Grows in temperate climates (may only threaten higher elevations in tropical ecosystems)
- Browsed by animals
- Ornamental
- Self-incompatible