

Assessment date 9 November 2015

| <i>Wisteria x formosa</i> All Zones | | Answer | Score |
|-------------------------------------|--|--------|-------|
| 1.01 | Is the species highly domesticated? | n | 0 |
| 1.02 | Has the species become naturalised where grown? | | |
| 1.03 | Does the species have weedy races? | | |
| 2.01 | Species suited to Florida's USDA climate zones (0-low; 1-intermediate; 2-high) North Zone: suited to Zones 8, 9 Central Zone: suited to Zones 9, 10 South Zone: suited to Zone 10 | 2 | |
| 2.02 | Quality of climate match data (0-low; 1-intermediate; 2-high) | 2 | |
| 2.03 | Broad climate suitability (environmental versatility) | y | 1 |
| 2.04 | Native or naturalized in habitats with periodic inundation North Zone: mean annual precipitation 50-70 inches Central Zone: mean annual precipitation 40-60 inches South Zone: mean annual precipitation 40-60 inches | y | 1 |
| 2.05 | Does the species have a history of repeated introductions outside its natural range? | y | |
| 3.01 | Naturalized beyond native range | y | 2 |
| 3.02 | Garden/amenity/disturbance weed | n | 0 |
| 3.03 | Weed of agriculture | n | 0 |
| 3.04 | Environmental weed | unk | |
| 3.05 | Congeneric weed | y | 2 |
| 4.01 | Produces spines, thorns or burrs | n | 0 |
| 4.02 | Allelopathic | unk | 0 |
| 4.03 | Parasitic | n | 0 |
| 4.04 | Unpalatable to grazing animals | y | 1 |
| 4.05 | Toxic to animals | y | 1 |
| 4.06 | Host for recognised pests and pathogens | unk | 0 |
| 4.07 | Causes allergies or is otherwise toxic to humans | y | 1 |
| 4.08 | Creates a fire hazard in natural ecosystems | unk | 0 |
| 4.09 | Is a shade tolerant plant at some stage of its life cycle | n | 0 |
| 4.10 | Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols. | unk | 0 |
| 4.11 | Climbing or smothering growth habit | y | 1 |
| 4.12 | Forms dense thickets | y | 1 |
| 5.01 | Aquatic | n | 0 |
| 5.02 | Grass | n | 0 |
| 5.03 | Nitrogen fixing woody plant | y | 1 |
| 5.04 | Geophyte | n | 0 |
| 6.01 | Evidence of substantial reproductive failure in native habitat | n | 0 |
| 6.02 | Produces viable seed | y | 1 |

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| 6.03 | Hybridizes naturally | y | 1 |
| 6.04 | Self-compatible or apomictic | ? | |
| 6.05 | Requires specialist pollinators | n | 0 |
| 6.06 | Reproduction by vegetative propagation | y | 1 |
| 6.07 | Minimum generative time (years) | >1 | -1 |
| 7.01 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | ? | |
| 7.02 | Propagules dispersed intentionally by people | y | 1 |
| 7.03 | Propagules likely to disperse as a produce contaminant | | |
| 7.04 | Propagules adapted to wind dispersal | n | -1 |
| 7.05 | Propagules water dispersed | y | 1 |
| 7.06 | Propagules bird dispersed | n | -1 |
| 7.07 | Propagules dispersed by other animals (externally) | n | -1 |
| 7.08 | Propagules dispersed by other animals (internally) | unk | -1 |
| 8.01 | Prolific seed production | | |
| 8.02 | Evidence that a persistent propagule bank is formed (>1 yr) | n | -1 |
| 8.03 | Well controlled by herbicides | | |
| 8.04 | Tolerates, or benefits from, mutilation or cultivation | y | 1 |
| 8.05 | | ? | |
| Total Score | | | 12 |
| Implemented Pacific Second Screening | | | n/a |
| Risk Assessment Results | | | High |

| section | # questions answered | satisfy minimum? |
|---------|----------------------|------------------|
| A | | 10 yes |
| B | | 8 yes |
| C | | 16 yes |
| total | | 34 yes |

| | Reference | Source data |
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| 1.01 | | cultivated, but no evidence of selection for reduced weediness |
| 1.02 | | |
| 1.03 | | |
| 2.01 | 1. PERAL NAPPFAST Global Plant Hardiness (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgnd.tif). 2. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (11/9/2015). 3. USDA Plants Database (http://plants.usda.gov/core/profile?symbol=WIFO2 accessed 11/9/2015) | No computer analysis was performed. 1. Global hardiness zone: 5, 6, 7, 8, 9, 10; equivalent to USDA Hardiness zones: USDA Zone 5a: to -28.8 °C (-20 °F) USDA Zone 5b: to -26.1 °C (-15 °F) USDA Zone 6a: to -23.3 °C (-10 °F) USDA Zone 6b: to -20.5 °C (-5 °F) USDA Zone 7b: to -14.9 °C (5 °F) USDA Zone 8a: to -12.2 °C (10 °F) USDA Zone 8b: to -9.4 °C (15°F) USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zon. 2. This species is a hybrid of two species, one native to China (Guangxi, Guizhou, Hebei, Henan, Hubei, Shaanxi, Yunnan) and one native to Japan. |
| 2.02 | | |
| 2.03 | 1. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf). | See source data above: 1. Distribution in the native/cultivated range occurs in Cfa, Cwa, Bsk, Dwa |
| 2.04 | 1. USDA Plants Database (http://plants.usda.gov/core/profile?symbol=WIFO2 accessed 11/9/2015). 2. PRISM Climate maps (http://www.wrcc.dri.edu/precip.html accessed 11/9/2015) | Native status of this hybrid is questionable. Naturalized in regions (Louisiana) receiving 50-70 Inches of rain annually. |
| 2.05 | 1. Mississippi State University Invasive Plant Atlas of the Mid-South https://www.gri.msstate.edu/ipams/species.php?CName=Hybrid%20wisteria (11-2-2015) | 1. widely cultivated in the MidSouth as ornamentals. |
| 3.01 | 1. Trusty JL, Zipperer WC, Lockaby BG, Goertzen LR. Identity of naturalized exotic Wisteria in the Southeastern United States. Weed Res 2007. in press. | This species is a hybrid of two invasive species of geographically distinct origin. Therefore, it has no native range. However, as it grows naturally in the United States, we will score a yes for this answer. |
| 3.02 | | no evidence |
| 3.03 | | no evidence |
| 3.04 | Mississippi State University Invasive Plant Atlas of the Mid-South https://www.gri.msstate.edu/ipams/species.php?CName=Hybrid%20wisteria (11-2-2015) | Once established, wisteria can be difficult to eradicate and can persist for years strangling native trees and shrubs trying to colonize the site. They can also kill, or disfigure, desirable trees in the landscape. |
| 3.05 | 1. Kaufman, S. R., and W. Kaufman. 2007. Invasive Plants: Guide to Identification and the Impacts and Control of Common North American Species. Stackpole Books, Mechanisburg, PA. 221 pp 2. Brochure from The Flint River Conservation Association and the Monte Sano State Park working with the Alabama Invasive Plant Council (ALIPC) http://www.montesano.org/wp-content/uploads/MSDirtyDozenInvasivePlants.pdf (3-25-2015) | 1. Wisteria floribunda and sinensis are considered invasive weeds. 2. Wisteria floribunda and sinensis kills trees by girdling them. |
| 4.01 | Flora of China http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200012368 (2-23-2015) | The species description does not include these features. |
| 4.02 | | no evidence |
| 4.03 | | no evidence |
| 4.04 | 1. Deer Resistance Rating for Landscape Plants, Ohio University (http://gardeningindeercountry.com/home.php accessed 11/9/2015). 2. Master Gardeners, El Dorado County, Deer Resistant Plants. University of California Cooperative Extension (http://ucanr.edu/sites/EDC_Master_Gardeners/files/165239.pdf accessed 11/9/2015) | Both Wisteria sinensis and W. floribunda classified as "never browsed" in the deer-resistance database |

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| 4.05 | 1. Mississippi State University Invasive Plant Atlas of the Mid-South https://www.gri.msstate.edu/ipams/species.php?CName=Hybrid%20wisteria (11-2-2015) 2. Cornell University Department of Animal Science http://www.ansci.cornell.edu/plants/php/plants.php?action=indiv&byname=scientific&keynum=93 (3-25-2015) | 1. However, fruit are poisonous and most likely not dispersed frequently by wildlife. 2. This plant is poisonous to livestock |
| 4.06 | | no evidence |
| 4.07 | 1. Mississippi State University Invasive Plant Atlas of the Mid-South https://www.gri.msstate.edu/ipams/species.php?CName=Hybrid%20wisteria (11-2-2015) 2. Stone, Katharine R. 2009. <i>Wisteria floribunda</i> , <i>W. sinensis</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2015, March 23]. | 1. <i>Wisteria</i> leaves, fruit, and seed are toxic. 2. A number of reviews list <i>wisteria</i> flowers, leaves, fruits, and seeds as poisonous |
| 4.08 | | no evidence |
| 4.09 | 1. Missouri Botanical Garden http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=265643&isprofile=0& (3-20-2015) 2. Plants For A Future http://www.pfaf.org/user/Plant.aspx?LatinName=Wisteria+sinensis (3-20-2015) 3. Stone, Katharine R. 2009. <i>Wisteria floribunda</i> , <i>W. sinensis</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2015, March 23]. 4. Edward F. Gilman, professor, Environmental Horticulture Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611. | 1. Full sun is needed for best flowering. 2. It cannot grow in the shade. 3. <i>Wisterias</i> grow best in full sun but are tolerant of shade 4. Chinese <i>wisteria</i> is a shade-tolerant vine |
| 4.10 | | no evidence |
| 4.11 | 1. Gardening EU http://www.gardening.eu/plants/Climber-plants/Wisteria-x-formosa/1176/ (11-2-2015) 2. Maryland Department of Agriculture January 29, 2015 Weed Risk Assessment for <i>Wisteria sinensis</i> (Sims) DC., <i>W. floribunda</i> (Willd.) DC., and <i>W. x formosa</i> Rehder (Fabaceae) – Chinese and Japanese <i>wisteria</i> and hybrids | 1. Climbing plant 2. Climbing and smothering |
| 4.12 | 1. Mississippi State University Invasive Plant Atlas of the Mid-South https://www.gri.msstate.edu/ipams/species.php?CName=Hybrid%20wisteria (11-2-2015) 2. Maryland Department of Agriculture January 29, 2015 Weed Risk Assessment for <i>Wisteria sinensis</i> (Sims) DC., <i>W. floribunda</i> (Willd.) DC., and <i>W. x formosa</i> Rehder (Fabaceae) – Chinese and Japanese <i>wisteria</i> and hybrids | 1. It can form dense thickets, replacing the surrounding native vegetation. 2. Forms dense thickets |
| 5.01 | | Family: Fabaceae |
| 5.02 | | Family: Fabaceae |
| 5.03 | 1. Maryland Department of Agriculture January 29, 2015 Weed Risk Assessment for <i>Wisteria sinensis</i> (Sims) DC., <i>W. floribunda</i> (Willd.) DC., and <i>W. x formosa</i> Rehder (Fabaceae) – Chinese and Japanese <i>wisteria</i> and hybrids | 1. Woody nitrogen fixing plant. |
| 5.04 | Flora of China http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200012368 (2-23-2015) | The species description does not include these features. |
| 6.01 | | no evidence |
| 6.02 | 1. Mississippi State University Invasive Plant Atlas of the Mid-South https://www.gri.msstate.edu/ipams/species.php?CName=Hybrid%20wisteria (11-2-2015) | <i>Wisteria</i> if dispersed vegetatively by stem growth or sexually by seed. |

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| 6.03 | 1. Trusty JL, Zipperer WC, Lockaby BG, Goertzen LR. Identity of naturalized exotic Wisteria in the Southeastern United States. Weed Res 2007. in press. | It is possible that hybridisation of the floribunda and sinensis genomes has occurred many times in different locations or, alternatively, that Wisteria hybrids are commonly propagated and spread through horticulture...Our study has found that nearly all naturalised Wisteria sampled are hybrids...Our data suggest that hybridisation may be playing a key role in its invasiveness. |
| 6.04 | 1. Temperate Climate Permaculture (http://tcpermaculture.blogspot.com/2012/08/permaculture-plants-wisteria.html accessed 11/9/2015) | 1. Wisteria (genus level data) "Self-Pollinating/Self-Fertile" |
| 6.05 | 1. Temperate Climate Permaculture (http://tcpermaculture.blogspot.com/2012/08/permaculture-plants-wisteria.html accessed 11/9/2015) 2. Stone, Katharine R. 2009. Wisteria floribunda, W. sinensis. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2015, November 9]. | 1. Wisteria (genus level data) "Self-Pollinating/Self-Fertile" 2. Hummingbirds observed visiting flowers |
| 6.06 | 1. Mississippi State University Invasive Plant Atlas of the Mid-South https://www.gri.msstate.edu/ipams/species.php?CName=Hybrid%20wisteria (11-2-2015) 2. Maryland Department of Agriculture January 29, 2015 Weed Risk Assessment for Wisteria sinensis (Sims) DC., W. floribunda (Willd.) DC., and W. x formosa Rehder (Fabaceae) – Chinese and Japanese wisteria and hybrids1. | 1. Wisteria is dispersed vegetatively by stem growth or sexually by seed. 2. Propagated vegetatively 3. "Wisteria is spread primarily by human activity, such as landscape planting, and vegetative growth of vines |
| 6.07 | 1. Dana and Lerner (2002) A Guide to Flowering and Why Plants Fail to Bloom HO-173-W (https://www.hort.purdue.edu/ext/HO-173.pdf accessed 11/9/2015) | 1. Plants often experiencing a lack of flowering due to juvenility include century plant, crabapple, flowering cherry, Wisteria, and tulip tree |
| 7.01 | 1. Mississippi State University Invasive Plant Atlas of the Mid-South https://www.gri.msstate.edu/ipams/species.php?CName=Hybrid%20wisteria (11-2-2015) | 1. Because wisteria reproduces vegetatively, cuttings in garden waste can lead to new infestations |
| 7.02 | 1. Mississippi State University Invasive Plant Atlas of the Mid-South https://www.gri.msstate.edu/ipams/species.php?CName=Hybrid%20wisteria (11-2-2015) 2. Maryland Department of Agriculture January 29, 2015 Weed Risk Assessment for Wisteria sinensis (Sims) DC., W. floribunda (Willd.) DC., and W. x formosa Rehder (Fabaceae) – Chinese and Japanese wisteria and hybrids | 1. Wisteria is spread primarily by human activity, such as landscape planting, and vegetative growth of vines. 2. Wisteria is extensively used as an ornamental |
| 7.03 | | no evidence |
| 7.04 | 1. Stone, Katharine R. 2009. Wisteria floribunda, W. sinensis. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2015, March 23]. | Wisteria pods and seeds are large and heavy |
| 7.05 | 1. Maryland Department of Agriculture January 29, 2015 Weed Risk Assessment for Wisteria sinensis (Sims) DC., W. floribunda (Willd.) DC., and W. x formosa Rehder (Fabaceae) – Chinese and Japanese wisteria and hybrids 2. Stone, Katharine R. 2009. Wisteria floribunda, W. sinensis. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2015, March 23]. | 1. Seeds can travel via waterways 2. Seeds are water-dispersed along riparian areas and can travel great distances this way |
| 7.06 | 1. Stone, Katharine R. 2009. Wisteria floribunda, W. sinensis. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2015, March 23]. | Wisteria pods and seeds are large and heavy, which limits dispersal by birds and mammals (also poisonous--see source data above) |

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| 7.07 | 1. Stone, Katharine R. 2009. <i>Wisteria floribunda</i> , <i>W. sinensis</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2015, March 23]. | Wisteria pods and seeds are large and heavy, which limits dispersal by birds and mammals (also no attachment mechanism) |
| 7.08 | 1. Mississippi State University Invasive Plant Atlas of the Mid-South https://www.gri.msstate.edu/ipams/species.php?CName=Hybrid%20wisteria (11-2-2015) | However, seeds are poisonous and most likely not dispersed frequently by wildlife. |
| 8.01 | | no evidence |
| 8.02 | 1. Sakai, A., H. Nomiya, and W. Suzuki. 2002. Horizontal distribution of stolons of a temperate liana <i>Wisteria floribunda</i> DC. and its ecological significance. <i>Journal of Forest Research</i> 7:125-130. | No evidence, Parent species <i>W. floribunda</i> is documented to not produce a seed bank as seed lose viability in one year |
| 8.03 | 1. UF/IFAS CAIP (http://plants.ifas.ufl.edu/plant-directory/wisteria-sinensis/ accessed 11/9/2015) 2. Miller (2006) Non-native wisteria control with herbicides. <i>Wildland Weeds</i> 19-21 | 1. "in areas with established wisteria, a cut stump treatment is effective. Cut stems as close to the ground as possible and immediately apply a 25% solution of glyphosate or triclopyr to the stem. A foliar application of glyphosate may be necessary for sprouts. For larger infestations of wisteria foliar herbicide applications may be necessary...The best time to apply an herbicide is in the spring and summer when wisteria is actively growing." 2. "test found that a range of herbicides can be effectively used (up to 90% control) for wisteria control depending upon the situation and the necessary safety to surrounding vegetation and revegetation. It should be recognized that invasive plants demand high levels of efficacy by any treatment to be successful in eradication and rehabilitation. High rates and/or repeated applications of Tordon K, Garlon, Transline, and Accord (a.k.a., Roundup, glyphosate and others) in mid- to late summer and Arsenal in late summer gave near eradication with two applications 12 months a part. |
| 8.04 | 1. Maryland Department of Agriculture January 29, 2015 Weed Risk Assessment for <i>Wisteria sinensis</i> (Sims) DC., <i>W. floribunda</i> (Willd.) DC., and <i>W. x formosa</i> Rehder (Fabaceae) – Chinese and Japanese wisteria and hybrids | 1. Wisterias resprout after cutting, and control recommendations state to reduce suckers every two weeks during the growing seasons; assuming resources are not limiting, incomplete removal of the parent plant will likely release many younger stolons and ramets that remain in the soil. |
| 8.05 | | no evidence |