

Australia/New Zealand Weed Risk Assessment adapted for United States.

Data used for analysis published in: Gordon, D.R. and C.A. Gantz. 2008. Potential impacts on the horticultural industry of screening new plants for invasiveness. Conservation Letters 1: 227-235. Available at: <http://www3.interscience.wiley.com/cgi-bin/fulltext/121448369/PDFSTART>

<i>Dillenia reticulata</i>			
Question number	Question	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 U.S. climates (USDA hardiness zones; 0-low, 1-intermediate, 2-high)	1	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)	n	0
2.04	Native or naturalized in regions with an average of 11-60 inches of annual precipitation	n	0
2.05	Does the species have a history of repeated introductions outside its natural range?	?	
3.01	Naturalized beyond native range	n	-1
3.02	Garden/amenity/disturbance weed	n	0
3.03	Weed of agriculture	n	0
3.04	Environmental weed	n	0
3.05	Congeneric weed	n	0
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic		
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals		
4.05	Toxic to animals	n	0
4.06	Host for recognised pests and pathogens		
4.07	Causes allergies or is otherwise toxic to humans	n	0
4.08	Creates a fire hazard in natural ecosystems		
4.09	Is a shade tolerant plant at some stage of its life cycle		
4.1	Grows on one or more of the following soil types: alfisols, entisols, or mollisols	y	1
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	?	

5.01	Aquatic	n	0
5.02	Grass	n	0
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte	n	0
6.01	Evidence of substantial reproductive failure in native habitat	n	0
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally		
6.04	Self-compatible or apomictic		
6.05	Requires specialist pollinators		
6.06	Reproduction by vegetative fragmentation		
6.07	Minimum generative time (years)		
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
7.02	Propagules dispersed intentionally by people	?	
7.03	Propagules likely to disperse as a produce contaminant	n	-1
7.04	Propagules adapted to wind dispersal	n	-1
7.05	Propagules water dispersed		
7.06	Propagules bird dispersed	?	
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)		
8.01	Prolific seed production		
8.02	Evidence that a persistent propagule bank is formed (>1 yr)		
8.03	Well controlled by herbicides		
8.04	Tolerates, or benefits from, mutilation or cultivation		
8.05	Effective natural enemies present in U.S.		
<b>Total Score</b>			<b>-2</b>

<b>Outcome</b>	<b>Accept</b>
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<b>section</b>	<b># questions answered</b>	<b>satisfy minimum?</b>
A	10	Yes
B	6	Yes
C	9	Yes
total	25	yes

Question number	Reference	Source data
1.01		used horticulturally, but no evidence of significant modification
1.02		
1.03		
2.01	<p>1. PERAL NAPPFAST Global Plant Hardiness (<a href="http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20Ign.d.tif">http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20Ign.d.tif</a>). 2. Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i>. Pp. 172-184. <i>In</i>: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden. 3. Singapore Government National Parks (<a href="http://floraweb.nparks.gov.sg/search/viewDetail.action;jsessionid=40549B52A204517BA32DF430ADF1E98C?pgId=4959207401046501&amp;key=7">http://floraweb.nparks.gov.sg/search/viewDetail.action;jsessionid=40549B52A204517BA32DF430ADF1E98C?pgId=4959207401046501&amp;key=7</a>). 4. Hoogland, RD (1952) A revision of the genus <i>Dillenia</i>. <i>Blumea</i> 7(1): 1-145. 5. Keßler, PJA and Zainal, A (1992) Checklist for a tree flora of the Balikpapan-Samarinda Area, East Kalimantan, Indonesia. The Tropenbos Foundation, Wageningen, The Netherlands. 6. van Steenis, CGGJ (1948) <i>Flora Malesiana</i>. Series I. Volume 4. P. Noordhoff Ltd., Haarlem, Netherlands.</p>	<p>1. Global hardiness zones 12-13. 2. "Distribution: Peninsular Malaysia, Sumatra and Borneo". 3. Origin: Malaya, Sumatra, Borneo. 4. "Distribution: Sumatra, Malay Peninsula, and Borneo". 5. East Kalimantan, Indonesia. 6. "Distribution: Malaysia: Sumatra, Malay Peninsula, and Borneo."</p>
2.02		
2.03	<p>1. Köppen-Geiger climate map (<a href="http://www.hydro-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf">http://www.hydro-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf</a>). 2. Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i>. Pp. 172-184. <i>In</i>: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden. 3. Singapore Government National Parks (<a href="http://floraweb.nparks.gov.sg/search/viewDetail.action;jsessionid=40549B52A204517BA32DF430ADF1E98C?pgId=4959207401046501&amp;key=7">http://floraweb.nparks.gov.sg/search/viewDetail.action;jsessionid=40549B52A204517BA32DF430ADF1E98C?pgId=4959207401046501&amp;key=7</a>). 4. Hoogland, RD (1952) A revision of the genus <i>Dillenia</i>. <i>Blumea</i> 7(1): 1-145. 5. Keßler, PJA and Zainal, A (1992) Checklist for a tree flora of the Balikpapan-Samarinda Area, East Kalimantan, Indonesia. The Tropenbos Foundation, Wageningen, The Netherlands.</p>	<p>1. Only one climatic region. 2. "Distribution: Peninsular Malaysia, Sumatra and Borneo". 3. Origin: Malaya, Sumatra, Borneo. 4. "Distribution: Sumatra, Malay Peninsula, and Borneo". 5. East Kalimantan, Indonesia. 6. "Distribution: Malaysia: Sumatra, Malay Peninsula, and Borneo."</p>
2.04	<p>1. Atlapedia Online (<a href="http://www.atlapedia.com/online/countries/malaysia">http://www.atlapedia.com/online/countries/malaysia</a>).</p>	<p>1. For peninsular Malaysia: "Average annual precipitation for</p>

	htm). 2. Microsoft Encarta World Precipitation and Average Rainfall ( <a href="http://uk.encarta.msn.com/encnet/RefPages/RefMedia.aspx?refid=461530746&amp;artrefid=761554737&amp;pn=3&amp;sec=-1">http://uk.encarta.msn.com/encnet/RefPages/RefMedia.aspx?refid=461530746&amp;artrefid=761554737&amp;pn=3&amp;sec=-1</a> ).	West Malaysia is 2,540 mm (100 inches)." 2. For Indonesia, average annual precipitation is over 80 inches/year.
2.05	Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: <i>Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2)</i> . Backhuys Publishers, Leiden.	"Uses: The timber is reputed to be used as simpoh. It is suitable for the production of veneer and plywood." [Potentially dispersed intentionally for this purpose?]
3.01		no evidence
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05		no evidence
4.01	Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: <i>Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2)</i> . Backhuys Publishers, Leiden.	no description of these traits
4.02		
4.03	Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: <i>Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2)</i> . Backhuys Publishers, Leiden.	no description of parasitism
4.04		
4.05	Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: <i>Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2)</i> . Backhuys Publishers, Leiden.	no evidence
4.06		
4.07	Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: <i>Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2)</i> . Backhuys Publishers, Leiden.	no evidence
4.08		
4.09		

4.1	USDA, National Resources Conservation Services (NRCS), Soil Survey Division, World Soil Resources ( <a href="http://soils.usda.gov/use/worldsoils/mapindex/order.html">http://soils.usda.gov/use/worldsoils/mapindex/order.html</a> ).	Malaysia: almost entirely ultisols, with very small amounts of alfisols, entisols and inceptisols (and also very small amounts of histisols and oxisols); Indonesia: primarily ultisols with small amounts of alfisols, entisols, inceptisols, and mollisols (also with small amounts of andisols, histisols, oxisols, and spodosols).
4.11	1. Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden. 2. Hoogland, RD (1952) A revision of the genus <i>Dillenia</i> . <i>Blumea</i> 7(1): 1-145. 3. van Steenis, CGGJ (1948) <i>Flora Malesiana</i> . Series I. Volume 4. P. Noordhoff Ltd., Haarlem, Netherlands.	1. "A fairly large deciduous tree up to 40 m tall, with straight bole branchless for up to 30 m and up to 70 cm in diameter, conspicuous stilt roots up to 2 m high present". 2. "Large deciduous trees up to 40 m high, 70 cm thick, with straight bole, up to 30 m, with conspicuous stilt-roots to ca 2 m high." 3. "Deciduous tree, up to 40 m high, 17 cm diam., with conspicuous stilt-roots."
4.12	1. Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden. 2. Hoogland, RD (1952) A revision of the genus <i>Dillenia</i> . <i>Blumea</i> 7(1): 1-145. 3. van Steenis, CGGJ (1948) <i>Flora Malesiana</i> . Series I. Volume 4. P. Noordhoff Ltd., Haarlem, Netherlands.	1. "A fairly large deciduous tree up to 40 m tall, with straight bole branchless for up to 30 m and up to 70 cm in diameter, conspicuous stilt roots up to 2 m high present". 2. "Large deciduous trees up to 40 m high, 70 cm thick, with straight bole, up to 30 m, with conspicuous stilt-roots to ca 2 m high." 3. "Deciduous tree, up to 40 m high, 17 cm diam., with conspicuous stilt-roots."
5.01		terrestrial
5.02	Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden.	Dilleniaceae
5.03	Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys	Dilleniaceae

	Publishers, Leiden.	
5.04	1. Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden. 2. Hoogland, RD (1952) A revision of the genus <i>Dillenia</i> . <i>Blumea</i> 7(1): 1-145. 3. van Steenis, CGGJ (1948) <i>Flora Malesiana</i> . Series I. Volume 4. P. Noordhoff Ltd., Haarlem, Netherlands.	1. "A fairly large deciduous tree up to 40 m tall, with straight bole branchless for up to 30 m and up to 70 cm in diameter, conspicuous stilt roots up to 2 m high present". 2. "Large deciduous trees up to 40 m high, 70 cm thick, with straight bole, up to 30 m, with conspicuous stilt-roots to ca 2 m high." 3. "Deciduous tree, up to 40 m high, 17 cm diam., with conspicuous stilt-roots."
6.01	Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden.	no evidence
6.02	Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden.	"60% germination of <i>D. reticulata</i> in 2-12 months" [in cultivation?]; "seedling with epigeal germination" [genus description].
6.03		
6.04		
6.05		
6.06		
6.07		
7.01		
7.02	Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden.	"Uses: The timber is reputed to be used as simpoh. It is suitable for the production of veneer and plywood." [Potentially dispersed intentionally for this purpose?]
7.03		no evidence
7.04	1. Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i> . Pp. 172-184. In: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden. 2. Hoogland, RD (1952) A revision of the genus <i>Dillenia</i> . <i>Blumea</i> 7(1): 1-145. 3. van Steenis, CGGJ (1948) <i>Flora Malesiana</i> . Series I. Volume 4. P. Noordhoff Ltd., Haarlem, Netherlands.	1. "Fruit indehiscent; seed with rudimentary aril" [species description]; "fruit consisting of several follicles and enclosed by the enlarged fleshy sepals (a pseudocarp), remaining closed or splitting open as a star. Seeds...with dark brown to black, leathery or bony seed-coat, thick

		<p>endosperm" [genus description]. 2. "Carpels 9-10, arranged around conical receptacle, lanceolate, ca. 6 × 1 1/2 mm...Pseudocarps indehiscent, greenish yellow, about globular, ca. 3 1/2 cm diam., 3 cm high...carpels ca. 16 × 8 1/2 mm, 1-3-seeded. Seeds ovoid, ca. 3 1/2 × 2 1/2 mm, glossy black, with ca. 0.2 mm long aril. 3. "Fruit indehiscent, greenish yellow, slightly flattened-globular, ca 35 mm diam, 30 mm high including the enclosing sepals, which are up to 45 by 42 mm, at the base 6 mm thick. Carpels 16 by 18 1/2 mm, 1-3-seeded. Seeds 3 1/2 by 2 1/2 mm, with a rudimentary, ca 0.2 mm long aril." [no evidence of adaptations to wind dispersal]</p>
7.05		
7.06	<p>1. Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i>. Pp. 172-184. In: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden. 2. Hoogland, RD (1952) A revision of the genus <i>Dillenia</i>. <i>Blumea</i> 7(1): 1-145. 3. van Steenis, CGGJ (1948) <i>Flora Malesiana</i>. Series I. Volume 4. P. Noordhoff Ltd., Haarlem, Netherlands.</p>	<p>1. "Fruit indehiscent; seed with rudimentary aril" [species description]; "fruit consisting of several follicles and enclosed by the enlarged fleshy sepals (a pseudocarp), remaining closed or splitting open as a star. Seeds...with dark brown to black, leathery or bony seed-coat, thick endosperm" [genus description]. 2. "Carpels 9-10, arranged around conical receptacle, lanceolate, ca. 6 × 1 1/2 mm...Pseudocarps indehiscent, greenish yellow, about globular, ca. 3 1/2 cm diam., 3 cm high...carpels ca. 16 × 8 1/2 mm, 1-3-seeded. Seeds ovoid, ca. 3 1/2 × 2 1/2 mm, glossy black, with ca. 0.2 mm long aril. 3. "Fruit indehiscent, greenish yellow, slightly flattened-globular, ca 35 mm diam, 30 mm high including the enclosing sepals, which are up to 45 by 42 mm, at the base 6 mm thick. Carpels 16 by 18 1/2 mm, 1-3-seeded. Seeds 3 1/2 by 2 1/2 mm, with a rudimentary, ca 0.2 mm</p>

		long aril."
7.07	<p>1. Lemmens, RHMJ, Soerianegara, I, and Wong, WC (Editors) (1995) <i>Dillenia reticulata</i>. Pp. 172-184. In: Plant Resources of South-East Asia. Timber trees: Minor commercial timbers. No 5(2). Backhuys Publishers, Leiden. 2. Hoogland, RD (1952) A revision of the genus <i>Dillenia</i>. <i>Blumea</i> 7(1): 1-145. 3. van Steenis, CGGJ (1948) <i>Flora Malesiana</i>. Series I. Volume 4. P. Noordhoff Ltd., Haarlem, Netherlands.</p>	<p>1. "Fruit indehiscent; seed with rudimentary aril" [species description]; "fruit consisting of several follicles and enclosed by the enlarged fleshy sepals (a pseudocarp), remaining closed or splitting open as a star. Seeds...with dark brown to black, leathery or bony seed-coat, thick endosperm" [genus description]. 2. "Carpels 9-10, arranged around conical receptacle, lanceolate, ca. 6 × 1 1/2 mm...Pseudocarps indehiscent, greenish yellow, about globular, ca. 3 1/2 cm diam., 3 cm high...carpels ca. 16 × 8 1/2 mm, 1-3-seeded. Seeds ovoid, ca. 3 1/2 × 2 1/2 mm, glossy black, with ca. 0.2 mm long aril. 3. "Fruit indehiscent, greenish yellow, slightly flattened-globular, ca 35 mm diam, 30 mm high including the enclosing sepals, which are up to 45 by 42 mm, at the base 6 mm thick. Carpels 16 by 18 1/2 mm, 1-3-seeded. Seeds 3 1/2 by 2 1/2 mm, with a rudimentary, ca 0.2 mm long aril." [no evidence of adaptations to external dispersal]</p>
7.08		
8.01		
8.02		
8.03		
8.04		
8.05		