

Species Dataform and Scoresheet for *Mahonia bealei* (Fortune) Carr. (Leatherleaf Mahonia)

Species Dataform and Scoresheet		
<i>Mahonia bealei</i> (Fortune) Carr. (Leatherleaf Mahonia)		
Native range: China Date evaluated: April 2, 2009		
	Answer Choices	Response
Introductory Questions		
1. Current federal and state regulations	Y/N	N
Comments: Appears on several invasive species lists (not laws) in the Southeastern U.S., including South Carolina (Significant threat) and Tennessee (Rank 2, Significant threat) (Invasive.org 2009).		
2. Occurrence in the horticultural trade	Y/N	Y
Comments: Popular ornamental plant in the Southeastern United States (Allen et al. 2006).		
3. North Carolina nativity	Y/N	N
Comments: Native of China (Weakley 2008).		
4. Presence in natural areas	Y/N	Y
Comments: In deciduous forests in suburban areas, spread from plantings in North Carolina (Weakley 2008). Naturalizing widely in the southeastern United States (Weakley 2008).		
5. Non-invasive cultivars	Y/N	N
Comments: Researchers at North Carolina State University are working on developing new, seedless, noninvasive cultivars for landscape applications.		
	Maximum Point Value	Number of Points Assigned
Section 1. Ecological Impact		
1a. Impact on abiotic ecosystem processes	10	4
Comments: Woody shrubs, like <i>M. bealei</i> , that invade forest areas may create a shift in under- and mid-story composition that may in turn alter primary production, nutrient cycling, and carbon storage (Allen et al. 2006).		
1b. Impact on plant community structure	20	10
Comments: Invades the forest under- and mid-story and produces dense populations and canopy cover in these layers (Allen et al. 2006).		
1c. Impact on species of special concern	5	0
Comments: Unknown impact on species of special concern.		
1d. Impact on higher trophic levels	5	0
Comments: Unknown impact on higher trophic levels.		
Section 1. Subrank	40	14
Section 2. Current Distribution and Potential for Expansion		
2a. Local range expansion	7	4
Comments: Naturalizing widely in the southeastern United States (Weakley 2008). Likely to continue to spread in the Southeastern U.S. (Allen et al. 2006). Rapid population growth		

of <i>M. bealei</i> can be expected in the Southeastern U.S. (Allen et al. 2006).		
2b. Long-distance dispersal potential	13	13
Comments: Fruits consumed by birds (Gilman 1999). Spread from plantings in North Carolina (Weakley 2008).		
2c. Reproductive characteristics	8	6
Comments: <i>Mahonia bealei</i> can grow well in very low light conditions (Allen et al. 2006). Reproduces by seed and clonal ramets (Allen et al. 2006). Fleshy fruits consumed by birds (Gilman 1999). Seeds from bird-dispersed seeds can immediately germinate (Miller and Manning 2008).		
2d. Range of communities	6	2
Comments: Occurs in bottomland forests in North Carolina (Cook 2009). Natural communities of North Carolina (Shafale and Weakley 1990) = River floodplains		
2e. Similar habitats invaded elsewhere	6	4
Comments: Invades woodlands in the southern United States (Invasive.org 2009b). Natural communities of North Carolina (Shafale and Weakley 1990) = Low elevation mesic forests, low elevation dry and dry-mesic forest and woodlands.		
Section 2. Subrank	40	24
Section 3. Management Difficulty		
3a. Herbicidal control	5	0
Comments: A glyphosate herbicide or Garlon 3A may be applied in a cut stem treatment or foliar application (Miller and Manning 2008).		
3b. Nonchemical control methods	2	2
Comments: Herbicide application is the recommended control procedure (Miller and Manning 2008).		
3c. Necessity of individual treatments	2	2
Comments: Large stems or tall individuals should be cut and treated with herbicides (Miller and Manning 2008).		
3d. Average distribution	2	1
Comments: Shrub, up to 4 m tall, density of invasion is variable (Allen et al. 2006).		
3e. Likelihood for reestablishment	2	1
Comments: Fleshy fruits consumed by birds (Gilman 1999), which may reestablish populations.		
3f. Accessibility of invaded areas	2	1
Comments: In a study by Allen et al. (2006) in South Carolina, <i>M. bealei</i> distribution was not restricted to the edge of woodlots and populations were found approximately 60 m from the edge. Fleshy fruits consumed by birds (Gilman 1999), which may facilitate dispersion to inaccessible areas.		
3g. Impact on native species and environment	5	2
Comments: Nontarget plants may be killed or injured by root uptake of herbicides (Miller and Manning 2008).		
Section 3. Subrank	20	9
Section 4. Benefits and Value		
4a. Estimated wholesale value	-7	-4

Comments: The annual estimated wholesale value attributed to this species is \$11,823,800 (Trueblood 2009).		
4b. Percentage of total sales	-5	-1
Comments: Among the producers that sell this species, the highest percentage of total sales attributed to this species from any one grower is estimated to be 1-5% (Trueblood 2009).		
4d. Ecosystem services	-1	0
Comments:		
4e. Wildlife habitat	-1	0
Comments:		
4f. Cultural and social benefits	-1	0
Comments:		
Section 4. Subrank	-15	-5
Overall Score	100	42
<p>Overall Recommendation: Moderately weedy and recommended for use with specific guidance – These species have less than high ecological impact, distribution and invasive potential, and management difficulty in relation to economic value. These plants should not be grown in close proximity to natural areas that have communities similar to those where this plant has been found to naturalize or near natural areas that have sensitive or threatened plants and/or natural communities. (Overall Score: 34 – 66)</p>		
<p>Summary: <i>Mahonia bealei</i> (Leatherleaf mahonia) is moderately weedy in North Carolina and may be recommended for horticultural use with specific guidance by the North Carolina Nursery and Landscape Association. The ecological impacts of <i>Mahonia bealei</i> are largely unknown, but dense thickets of this species may shade out native herbs and displace native vegetation. There is potential for the additional invasion of Leatherleaf mahonia to natural areas due to the high potential for natural dispersal from ornamental plantings. The difficulty of managing <i>M. bealei</i> is moderate considering the availability of control methods, but management may be costly considering the time and labor required to effectively treat stands of this species. <i>Mahonia bealei</i> is economically valuable to the nursery industry. Researchers at North Carolina State University are working on developing new, seedless, noninvasive cultivars for landscape applications. Use of seedless cultivars would be desirable when they become available.</p>		
<p>References:</p> <p>Allen, C.R., Garmestani, A.S., LaBram, J.A., Peck, A.E., and L.B. Prevost. (2006) When landscaping goes bad: the incipient invasion of <i>Mahonia bealei</i> in the southeastern United States. <i>Biological Invasions</i> 8: 169-176.</p> <p>Cook, W. (2009) Leatherleaf mahonia (<i>Mahonia bealei</i>) Duke University. (http://www.duke.edu/~cwcook/trees/mabe.html) Accessed: April 2, 2009.</p> <p>Gilman, E.F. (1999) <i>Mahonia bealei</i>, Fact Sheet FPS-376. Environmental Horticulture Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. (http://hort.ufl.edu/shrubs/MAHBEAA.PDF) Accessed: April 2, 2009.</p>		

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