Species Dataform and Scoresheet for *Vitex rotundifolia* L. f. (Beach Vitex)

Species Dataform and Scoresheet		
***Vitex rotundifolia* L. f. (Beach Vitex)**		
Native range: Eastern Asia Date evaluated: February 26, 2009		
	Answer Choices	**Response**
Introductory Questions		
1. Current federal and state regulations	Y/N	Y
Comments: Class B state noxious weed in North Carolina (NCDA).		
2. Occurrence in the horticultural trade	Y/N	Y
Comments: Introduced in the mid 1980s as an ornamental and for dune stabilization (Westbrooks and Madsen 2006)		
3. North Carolina nativity	Y/N	N
Comments: Native to Eastern Asia.		
4. Presence in natural areas	Y/N	Y
Comments: Coastal areas of North Carolina.		
5. Non-invasive cultivars	Y/N	N
Comments:		
	Maximum Point Value	Number of Points Assigned
Section 1. Ecological Impact		
1a. Impact on abiotic ecosystem processes	10	10
Comments: Beach vitex produces a chemical that prevents the establishment of sea oats and other native species (Tibbetts 2007). Produces substance that reduces soil moisture and soil's capacity to absorb water (Tibbetts 2007). Waxy leaves create a coating in the leaf litter that further reduces soil moisture absorption (Tibbetts 2007). In the long-term, Beach vitex could disrupt the beach ecosystem (Tibbetts 2007).		
1b. Impact on plant community structure	20	20
Comments: Forms monocultures that completely crowd out native dune plants [Sea oats (*Uniola paniculata*)] and federally endangered sea beach amaranth (*Amaranthus pumilus*) (Westbooks and Madsen, 2006). Outcompetes and inhibits establishment of native species by blocking light (Smith 208).		
1c. Impact on species of special concern	5	5
Comments: Impacts native dune vegetation and federally endangered sea beach amaranth (*Amaranthus pumilus*) (Westbrooks and Madsen, 2006)		
1d. Impact on higher trophic levels	5	5
Comments: Tangles of vegetation alter sea turtle nesting areas (Carolinas Beach Vitex Task Force). Degrades sea turtle habitat with dense foliage and impenetrable, wiry roots (Westbrooks and Madsen 2006).		
Section 1. Subrank	***40***	***40***
Section 2. Current Distribution and Potential for Expansion		
2a. Local range expansion	7	1

Comments: Occupies a fairly small amount of land, approximately 17 acres, along the coast of North Carolina and South Carolina (Westbrooks and Madsen 2006). In North Carolina, Beach vitex has been documented in New Hanover, Pender, and Onslow Counties (Westbrooks and Madsen 2006).		
2b. Long-distance dispersal potential	13	13
Comments: Viable seeds and vegetative runners spread easily by near shore waves and currents (Westbrooks and Madsen 2006). Storms may wash seeds and shoots great distances (Smith 2008)		
2c. Reproductive characteristics	8	8
Comments: Prolific seed producer, produces vegetative runners, roots at leaf nodes (Westbrooks and Madsen 2006). Produces dry bluish purple berries. Fragments easily and fragments may become established elsewhere.		
2d. Range of communities	6	6
Comments: Coastal dunes (Weakley, 2008). Salt marshes (Carolina Beach Vitex Task Force) = Communities of the coastal zone, Estuarine system, and Marine system (Shafale and Weakley, 1990). Has not naturalized areas of North Carolina beyond the Coastal Plain.		
2e. Similar habitats invaded elsewhere	6	2
Comments: High habitat suitability and expected to grow in at least 5 U.S. hardiness zones (Westbrooks and Madsen 2006). Occupies small percentage of potential ecological range in the U.S. and could grow well in coastal communities throughout the southeastern U.S. (Westbrooks and Madsen 2006).		
Section 2. Subrank	***40***	***30***
Section 3. Management Difficulty		
3a. Herbicidal control	5	0
Comments: Controlled with glyphosate after cutting-back to the stump (Smith 2008).		
3b. Nonchemical control methods	2	2
Comments: Young seedlings should be removed by hand-pulling (Smith 2008). Seeds and broken shoot fragments that may easily regenerate the plant must be removed entirely from management area (Smith 2008).		
3c. Necessity of individual treatments	2	2
Comments: Plants may be controlled with cut-stem applications of glyphosate after being cut back as close to the ground as possible (Smith 2008).		
3d. Average distribution	2	0
Comments: Monoculture (Smith 2008).		
3e. Likelihood for reestablishment	2	2
Comments: Seeds and vegetative runners spread easily by near shore waves and currents (Westbrooks and Madsen 2006). Cut and treated stumps must be monitored monthly for re-sprouting and necessary retreatment (Smith 2008).		
3f. Accessibility of invaded areas	2	2
Comments: Removal of plants in many areas requires landowner permission (SC Native Plant Society)		
3g. Impact on native species and environment	5	5
Comments: Removing plants by herbicides or hand-pulling may disturb fragile beach dune ecosystems (SC Native Plant Society). Native dune species should be re-established		

following management techniques (Smith 2008).		
Section 3. Subrank	***20***	***13***
Section 4. Benefits and Value		
4a. Estimated wholesale value	-7	-2
Comments: The annual estimated wholesale value attributed to this species is $2,346,600 (Trueblood 2009).		
4b. Percentage of total sales	-5	0
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% (Trueblood 2009).		
4d. Ecosystem services	-1	0
Comments: Planted for dune stabilization but spread aggressively as an invasive species (Weakley 2008). Beach vitex lacks the fibrous root system of native plants that are better-suited for erosion control (Carolinas Beach Vitex Task Force). Economic value in dune stabilization outweighed by economic cost in the lost value and marketing of ocean front properties and negative impact on multi-million dollar federal beach renourishment projects (Westbrooks and Madsen 2006)		
4e. Wildlife habitat	-1	0
Comments:		
4f. Cultural and social benefits	-1	0
Comments:		
Section 4. Subrank	***-15***	***-2***
Overall Score	**100**	**81**
Overall Recommendation: Highly invasive in coastal areas and not recommended for horticultural use in coastal areas – These species present relatively high ecological impact, distribution and invasive potential, and management difficulty in relation to economic value. (Overall Score: 67 – 100)		
Summary: *Vitex rotundifolia* (Beach vitex) is highly invasive in coastal areas of North Carolina and may not be recommended for horticultural use by the North Carolina Nursery and Landscape Association in coastal areas. Beach Vitex has some of the most severe environmental impacts among all species examined in the assessment process, but these impacts are limited to coastal areas. Beach Vitex seriously impacts ecosystem processes, plant community structure, native plant species, and higher trophic levels in coastal areas of North Carolina. Beach Vitex has high invasive potential on the coast. The difficulty of managing Beach Vitex is moderate to high considering the availability of control methods and time and labor required to effectively treat this species. Beach Vitex has low economic value to the nursery industry.		
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