Plant Assessment Form

For use with the "Criteria for Categorizing Invasive Non-Native Plants that Threaten Wildlands" by the California Exotic Pest Plant Council and the Southwest Vegetation Management Association (Warner et al. 2003)

Printable version, February 28, 2003
(Modified for use in Arizona, 07/02/04)

Table 1. Species and Evaluator Information

Species name (Latin binomial)**:**	*Rhus lancea* L. f. (not listed in USDA 2005; authority from MBG 2005; also see Gibbs Russell et al. 1987)
Synonyms:	*Rhus viminalis* Aiton (MGB 2005)
Common names:	African sumac, bastard willow, common karee
Evaluation date (mm/dd/yy)**:**	11/21/03; revised 02/16/05
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Committee review date:	11/21/03 and 09/24/04
List date:	09/24/04; revised 02/16/05 in response to Consistency Review Panel comments
Re-evaluation date(s):	

Table 2. Scores, Designations, and Documentation Levels

Question		Score	Documentation Level	Section Scores	Overall Score & Designations
1.1	Impact on abiotic ecosystem processes	**A**	Reviewed scientific publication	**"Impact"** **Section 1 Score:** **B**	**"Plant Score"** **Overall Score:** **Medium** **Alert Status:** **Alert**
1.2	Impact on plant community	**C**	Observational		
1.3	Impact on higher trophic levels	**C**	Observational		
1.4	Impact on genetic integrity	**U**	Other published material		
2.1	Role of anthropogenic and natural disturbance	**B**	Observational	**"Invasiveness"** *For questions at left, an A gets 3 points, a B gets 2, a C gets 1, and a D or U gets=0. Sum total of all points for Q2.1-2.7:* **12 pts** **Section 2 Score:** **B**	
2.2	Local rate of spread with no management	**B**	Observational		
2.3	Recent trend in total area infested within state	**B**	Observational		
2.4	Innate reproductive potential	**C**	Observational		
2.5	Potential for human-caused dispersal	**B**	Other published material		
2.6	Potential for natural long-distance dispersal	**A**	Observational		
2.7	Other regions invaded	**U**	No information		RED FLAG **NO** Something you should know.
3.1	Ecological amplitude	**B**	Observational	**"Distribution"** **Section 3 Score:** **C**	
3.2	Distribution	**D**	Observational		

Table 3. Documentation

Question 1.1 Impact on abiotic ecosystem processes *Score:* **A** *Doc'n Level:* **Rev. sci. pub.**
Identify ecosystem processes impacted: Change in channel flow in streams, produces shade that inhibits growth of sun loving plants.
Rationale: Invades desert washes (Brock and Farkas 1997, Tellman 2002; P. Jenkins, personal communication, 2005) in which its physical presence could divert channel flows during times of peak storm flow (Stromberg 2001). Presence in channel may also enhance potentials for streambank erosion by directing water with more force into the bank.
Sources of information: See cited literature. Also considered personal communication with P. Jenkins (Senior Assistant Curator, Herbarium, University of Arizona, Tucson, Arizona, 2005).

Question 1.2 Impact on plant community composition, structure, and interactions *Score:* **C** *Doc'n Level:* **Obs.**
Identify type of impact or alteration: Through shading and physical presence, African sumac plants can restrict understory vegetation. Although African sumac could supply a canopy micro-site for annuals, some biologists believe the plant may produce allelopathic materials to neighboring plants (P. Jenkins, personal communication, 2005). Allelopathy is always difficult to substantiate and separate from direct competition. The result in any event would be lowered community diversity. May replace mesquite and paloverde in the desert landscape, but this would not change the physical structure of the plant community.
Rationale: Deep shade tends to crowd out natives. Competitive with native species (J. Brock, personal observations, 2004 and P. Jenkins, personal communication, 2005).
Sources of information: Personal observations by J. Brock (Professor, Applied Biological Science, Arizona State University, Phoenix, Arizona, Arizona, 2004), personal communication with P. Jenkins (Senior Assistant Curator, Herbarium, University of Arizona, Tucson, Arizona, 2005), and information from the Saguaro Juniper website (available online at: www.saguaro-juniper.com/i_and_i/invasive_spp/invasive_plants.html).

Question 1.3 Impact on higher trophic levels *Score:* **C** *Doc'n Level:* **Obs.**
Identify type of impact or alteration: African sumac contributes little to higher tropic level life cycle needs except for an abundance of seeds that are used by birds for seed and perhaps javelina in wildland or urban fringe settings. Pollen of African sumac is highly allergenic to some individuals (Chambers and Hawkins 2002) and perhaps to other mammals.
Rationale: Where it establishes, it decreases the diversity of food web material for native species. African sumac produces pollen from late November into February when there is decreased activity by insect pollinators, hence providing little food materials to trophic levels utilized by insects (J. Brock, personal observations, 2004).
Sources of information: See cited literature. Also considered personal observations by J. Brock (Professor, Applied Biological Science, Arizona State University, Phoenix, Arizona, Arizona, 2004) and information from the Saguaro Juniper website (available online at: www.saguaro-juniper.com/i_and_i/invasive_spp/invasive_plants.html).

Question 1.4 Impact on genetic integrity *Score:* **U** *Doc'n Level:* **Other pub.**
Identify impacts: None known.
Rationale: There are native *Rhus* species in Arizona (Kearney and Peebles 1960). It is not known if non-native *Rhus* hybridizes with native *Rhus*.
Sources of information: See cited literature.

Question 2.1 Role of anthropogenic and natural disturbance in establishment *Score:* **B** *Doc'n Level:* **Obs.**
Describe role of disturbance: Humans began planting African sumac in Arizona in the late 1920s (see question 2.7). Humans have continued to spread this tree by direct planting. It is also spreading naturally through the action of birds, since seedlings are observed under nest or perching sites, and establishing without human action along stream channels (Tellman 2002; J. Brock, personal observations, 2004 and P. Jenkins, personal communication, 2005). For example, it has been found several miles from residential areas along Skunk Creek in Maricopa County and is observed to be moving along washes in Pima County.
Rationale: Humans are establishing African sumac by direct planting and now it is in the early stages of invading natural sites on its own.
Sources of information: See cited literature. Also considered personal observations by J. Brock (Professor, Applied Biological Science, Arizona State University, Phoenix, Arizona, Arizona, 2004) and personal communication with P. Jenkins (Senior Assistant Curator, Herbarium, University of Arizona, Tucson, Arizona, 2005).

Question 2.2 Local rate of spread with no management *Score:* **B** *Doc'n Level:* **Obs.**
Describe rate of spread: Is spreading from urbanized/human settlements into desert habitats, especially along streams/washes and arroyos (Baker 1997). Spread is estimated to be 0.5 mile per year (J. Brock, personal observations, 2004). Phil Jenkins (personal communication, 2005) has observed that in 10 years this species has spread from the Tucson urban area into the Tucson Mountains and Saguaro National Park.
Rationale: Is being observed spreading in wildland settings adjacent to urban areas and downstream from Boyce Thompson Arboretum by Superior, Arizona.
Sources of information: See cited literature. Also considered personal observations by J. Brock (Professor, Applied Biological Science, Arizona State University, Phoenix, Arizona, Arizona, 2004) and personal communication with P. Jenkins (Senior Assistant Curator, Herbarium, University of Arizona, Tucson, Arizona, 2005).

Question 2.3 Recent trend in total area infested within state *Score:* **B** *Doc'n Level:* **Obs.**
Describe trend: Invasion into wildlands is in its initial stages. Areas of urban desert lands (Baker 1997), plus several thousand acres in the urban fringes would describe its current extent of invasion.
Rationale: This plant seems to be emerging from its lag phase and has the potential to spread rapidly (consensus opinion by J. Brock, 2004 and P. Jenkins, 2005).
Sources of information: See cited literature. Also considered personal observations by J. Brock (Professor, Applied Biological Science, Arizona State University, Phoenix, Arizona, Arizona, 2004) and personal communication with P. Jenkins (Senior Assistant Curator, Herbarium, University of Arizona, Tucson, Arizona, 2005).

Question 2.4 Innate reproductive potential *Score:* **C** *Doc'n Level:* **Obs.**
Describe key reproductive characteristics: Relatively profilic seed producer and sprouts from basal stems and roots.
Rationale: African sumac was the second most invasive plant, after Bermudagrass (*Cynodon dactylon*), in a "plants-out-of-place" survey conducted as a field laboratory on the Arizona State University, Tempe Campus, by students in a landscape architecture course (PLA 240) in the fall of 2003 (J. Brock, personal observations, 2004). African sumac is now commonly seen growing with other horticultural plantings in urban areas indicating a high reproductive potential. See Worksheet A.
Sources of information: See cited literature. Also considered personal observations by J. Brock (Professor, Applied Biological Science, Arizona State University, Phoenix, Arizona, Arizona, 2004) and

information from the Saguaro Juniper website (available online at: www.saguaro-juniper.com/i_and_i/invasive_spp/invasive_plants.html).

Question 2.5 Potential for human-caused dispersal *Score:* **B** *Doc'n Level:* **Other pub.**
Identify dispersal mechanisms: Humans continue to plant this species in landscape/horticultural settings (Pima County Board of Supervisors 2002, Duffield and Jones 2003).
Rationale: Is highly related to sites with human activities. People continue to plant this species into new landscaping schemes, including plantings along urban freeways.
Sources of information: See cited literature.

Question 2.6 Potential for natural long-distance dispersal *Score:* **A** *Doc'n Level:* **Obs.**
Identify dispersal mechanisms: Flooding and wildlife, especially birds, can distribute seeds to natural sites.
Rationale: Birds relish the fruit of African sumac and excrete the seeds under roost trees or perching sites, as seedlings of this species often are found under established trees (J. Brock, personal observations, 2004). Seeds are dispersed primarily by birds and with flood flows in invaded channels. Fruit/seeds are a food source for birds and perhaps small mammals that subsequently can disperse the seeds to new locales (J. Brock, personal observations, 2004)
Sources of information: Personal observations by J. Brock (Professor, Applied Biological Science, Arizona State University, Phoenix, Arizona, Arizona, 2004) and information from the Saguaro Juniper website (available online at: www.saguaro-juniper.com/i_and_i/invasive_spp/invasive_plants.html).

Question 2.7 Other regions invaded *Score:* **U** *Doc'n Level:* **No info.**
Identify other regions: Not known if African sumac is invasive in these states, but it is present in California, Nevada, New Mexico, and Texas (Duffield and Jones 2003).
Rationale: No information is available from other regions to determine if *R. lancea* is invasive in other ecological types not already invaded in Arizona.
Sources of information: Duffeld and Jones (2003) identify the presence of *R. lancea* in other states but not whether in occurs in wildlands.

Question 3.1 Ecological amplitude *Score:* **B** *Doc'n Level:* **Obs.**
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: In warm desert plantings, said to be hardy to 12°F. Occurs in Western Garden Zones 8–9 and 12–24, which includes most of the warm deserts of the southwestern U.S., except the Chihuahuan desert (Brexzel 2001). Introduced to Arizona in the 1920s. Seeds were collected in North Pretoria, South Africa in 1919, germinated in Chico, California, and seedlings first planted at the Boyce Thompson SW Arboretum near Superior, Arizona and then on the University of Arizona campus in 1928 (Campus Arboretum, University of Arizona website).
Rationale: Invades two major ecological types and four minor ecological types (see Worksheet B).
Sources of information: See cited literature. Also considered observations by Working Group members and information from the Campus Arboretum, University of Arizona website (available online at: http://arboretum.arizona.edu/heritage_trees.html).

Question 3.2 Distribution *Score:* **D** *Doc'n Level:* **Obs.**
Describe distribution: Is localized in distribution to areas of human habitation, especially the larger cities and towns in the Sonoran Desert and the Mohave Desert of Las Vegas, Nevada.

Rationale: Still largely planted as a landscape tree, but is spreading from the urban areas of the hot deserts into adjacent wildlands.
Sources of information: Observations by Working Group members.

Worksheet A. Reproductive Characteristics

Complete this worksheet to answer Question 2.4.

Reaches reproductive maturity in 2 years or less	**Yes**	**No**	**1 pt.**
Dense infestations produce >1,000 viable seed per square meter	**Yes**	**No**	**2 pt.**
Populations of this species produce seeds every year.	**Yes**	**No**	**1 pt.**
Seed production sustained for 3 or more months within a population annually	**Yes**	**No**	**1 pt.**
Seeds remain viable in soil for three or more years	**Yes**	**No**	**2 pt.**
Viable seed produced with *both* self-pollination and cross-pollination	**Yes**	**No**	**1 pt.**
Has quickly spreading vegetative structures (rhizomes, roots, etc.) that may root at nodes	**Yes**	**No**	**1 pt.**
Fragments easily and fragments can become established elsewhere	**Yes**	**No**	**2 pt.**
Resprouts readily when cut, grazed, or burned	**Yes**	**No**	**1 pt.**

Total pts: 2 Total unknowns: 2

Score : C

Note any related traits:

Worksheet B. Arizona Ecological Types

(*sensu* Brown 1994 and Brown et al. 1998)

Major Ecological Types	Minor Ecological Types	Code*
Dunes	dunes	
Scrublands	Great Basin montane scrub	
	southwestern interior chaparral scrub	
Desertlands	Great Basin desertscrub	
	Mohave desertscrub	**D**
	Chihuahuan desertscrub	**D**
	Sonoran desertscrub	**D**
Grasslands	alpine and subalpine grassland	
	plains and Great Basin shrub-grassland	
	semi-desert grassland	
Freshwater Systems	lakes, ponds, reservoirs	
	rivers, streams	
Non-Riparian Wetlands	Sonoran wetlands	
	southwestern interior wetlands	
	montane wetlands	
	playas	
Riparian	Sonoran riparian	**D**
	southwestern interior riparian	
	montane riparian	
Woodlands	Great Basin conifer woodland	
	Madrean evergreen woodland	
Forests	Rocky Mountain and Great Basin subalpine conifer forest	
	montane conifer forest	
Tundra (alpine)	tundra (alpine)	

*A means >50% of type occurrences are invaded; B means >20% to 50%; C means >5% to 20%; D means present but ≤5%; U means unknown (unable to estimate percentage of occurrences invaded).

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