Part IV. Plant Assessment Form

For use with "Criteria for Categorizing Invasive Non-Native Plants that Threaten Wildlands" by the California Exotic Pest Plant Council and the Southwest Vegetation Management Association

Electronic version, February 28, 2003

Table 1. Species and Evaluator Information

Species name (Latin binomial)**:**	Acacia melanoxylon R. Br. ex. Aiton
Synonyms:	enter text here
Common names:	Blackwood acacia
Evaluation date (mm/dd/yy)**:**	05/20/04 and 5/17/05
Evaluator #1 Name/Title:	John J. Knapp/ Invasive Plant Program Manager
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Evaluator #2 Name/Title:	Elizabeth Brusati/Project Manager
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Section below for list committee use—please leave blank

List committee members:	Jake Sigg, Peter Warner, Bob Case, John Knapp, Elizabeth Brusati
Committee review date:	7/8/05
List date:	enter text here
Re-evaluation date(s):	enter text here

General comments on this assessment:
Due to the lack of information on A. melanoxylon, a small portion of data from related Acacia species were used to complete this ranking, and were specified when used.

Table 2. Criteria, Section, and Overall Scores

1.1	Impact on abiotic ecosystem processes	C	Rev'd, Sci. Pub'n
1.2	Impact on plant community	C	Rev'd, Sci. Pub'n
1.3	Impact on higher trophic levels	U	No Information
1.4	Impact on genetic integrity	D	Rev'd, Sci. Pub'n

"Impact"

Enter four characters from Q1.1-1.4 below:

CCUD

Use matrix determine the score; enter below:

C

2.1	Role of anthropogenic and natural disturbance	C	1	Observational
2.2	Local rate of spread with no management	B	2	Observational
2.3	Recent trend in total area infested within state	C	1	Other Pub. Mat'l
2.4	Innate reproductive potential Wksht A	B	2	Rev'd, Sci. Pub'n
2.5	Potential for human-caused dispersal	C	1	Other Pub. Mat'l
2.6	Potential for natural long-distance dispersal	C	1	Observational
2.7	Other regions invaded	C	1	Rev'd, Sci. Pub'n

"Invasiveness"

For questions at left, recall that an A gets 3 points, a B gets 2, a C gets 1, and a D or U gets=0. Enter the sum total of all points for Q2.1-2.7 below:

9

Use matrix to determine score and enter below:

C

"Plant Score"

Using matrix, determine the Overall Score and Alert Status from the three section scores and enter them below:

Low

No Alert

3.1	Ecological amplitude/Range	A	Other Pub. Mat'l
3.2	Distribution/Peak frequency Wksht C	D	Observational

"Distribution"

Use matrix determine the score; enter below:

B

Table 3. Documentation

Question 1.1 Impact on abiotic ecosystem processes C Rev'd, Sci. Pub'n back
Identify ecosystem processes impacted: Nutrient levels and distribution are altered within the soil profile, and have long lasting effects. Allelopathic.
Rationale: A. melanoxylon has the ability to fix nitrogen with rates of N-fixation ranging from 0.1 to 32 kg ha-1 year-1. Organic matter and nitrogen levels are increased with a decrease in C:N ratios. Soil nutrient enrichement and nutrient mineralization patterns can persist long after Acacia removal.
Sources of information: Haubensak, K. 1999. Acacia melanoxylon. Channel Island National Park Service Literature Review. Unpublished. Stock, W.D., Wienand, K.T. and Baker, A.C. 1995. Impacts of invading N2-fixing Acacia species on patterns of nutrient cyling in tow Cape ecosystems: evidence from soil incubation studies and 15N natural abundance values. Oecologia. 101(3):375-382. D' Antonio, C. and Meyerson, L.A. 2002. Exotic plant species as problems and solutions in ecological restoration: a synthesis. Restoration Ecology 10(4):703-713. Daehler, C. No date. Acacia melanoxylon; Australian blackwood. Kauluanani Urban Forestry Program and U.S. Forest Service. Australian/New Zealand Weed Risk Assessment adapted for Hawai'i.
Question 1.2 Impact on plant community composition, structure, and interactions C Rev'd, Sci. Pub'n back
Identify type of impact or alteration: A. melanoxylon inhibits the germination and growth of native species in the understory. Acacia spp. form dense monospecific stands in South Africa, but not in Hawai'i nor on Santa Catalina Island. Minor impacts in California.
Rationale: Alleolopathic compounds are released in the decomposition of A. melanoxylon leaf litter.
Sources of information: Souto, X.C., Gonzalez, L. and Reigosa, M.J. 1994. Comparative analysis of allelopathic effects produced by four forestry species durning decompostion prosess in their soils in Galicia (NW Spain). Journal of Chemical Ecology, 20(11):3005-3015. Haubensak, K. 1999. Acacia melanoxylon. Channel Island National Park Service Literature Review. Unpublished. Stock, W.D., Wienand, K.T. and Baker, A.C. 1995. Impacts of invading N2-fixing Acacia species on patterns of nutrient cyling in tow Cape ecosystems: evidence from soil incubation studies and 15N natural abundance values. Oecologia. 101(3):375-382. Knapp, J.J. 2004. Catalina Invasive Plant Ranking Plan for the Catalina Island Conservancy. Unpublished. Elkhorn Slough National Estuarine Research Reserve. 2000. Weed control by species. Elkhorn Slough National Estuarine Research Reserve. Pp. 1-57. Peter Warner, California Dept. of Parks and Recreation, pers. obs. Bob Case, California Native Plant Society, pers. obs.
Question 1.3 Impact on higher trophic levels U No Information back
Identify type of impact or alteration: unknown

Rationale:
Sources of information:
Question 1.4 Impact on genetic integrity D Rev'd, Sci. Pub'n back
Identify impacts: There is only one native Acacia in California, A. greggii (catclaw acacia) and it is an uncommon species of desert washes. Hybridization seems unlikely.
Rationale:
Sources of information: (1) Hickman, J.C. (ed.). 1993. The Jepson manual of higher plants of California. Pp. 581-582. University of California Press, Berkeley.
Question 2.1 Role of anthropogenic and natural disturbance in establishment C Observational back
Describe role of disturbance: In California, present in sites with human disturbance (1, 3). Germination follows disturbance (2).
Rationale:
Sources of information: (1) Hickman, J. C. (ed.) 1993. The Jepson Manual, Higher Plants of California. University of California Press. Berkeley, CA (2) Tunison, T. 1991. Element Stewardship Abstract for Acacia melanoxylon. The Nature Conservancy. Arlington, Virginia. Available: http://tncweeds.ucdavis.edu (3) Peter Warner, California Dept. of Parks and Recreation, pers. obs.
Question 2.2 Local rate of spread with no management B Observational back
Describe rate of spread: Controlled in the past on Catalina Island, and many seedlings were detected in 2003 (1). Limited invasiveness on the north coast (2)
Rationale: enter text here
Sources of information: (1) Knapp, J.J. 2004. Catalina Invasive Plant Ranking Plan for the Catalina Island Conservancy. Unpublished (2) Warner, Peter, California State Parks, Mendocino. pers. comm. E-mail 5/18/05
Question 2.3 Recent trend in total area infested within state C Other Pub. Mat'l back
Describe trend:

Rationale: Because Peter Warner reports it as being rarely invasive, it is probably not spreading appreciably in the state.

Sources of information: (1) Warner, Peter, California State Parks, Mendocino. pers. comm. E-mail 5/18/05

Question 2.4 Innate reproductive potential B Other Pub. Mat'l back

Describe key reproductive characteristics: Large long lived soil-seed bank. Reaches reproductive maturity between two to five years. Has coppice resprouts and suckers after disturbance, and germinates readily following fire. Reproduces by seed and root sprouts. In Hawai'i, A. melanoxylon mainly reproduces from root sprouting, but viable seeds are produced from forestry plantings. In California, fruits ripen from July to November.

Rationale: Seeds remain viable for over 50 years in the soil. Seed bank of a related invasive Acacia (A. longifolia), was 50 times larger in the invaded habitat than in the native one. On Catalina Island- numerous seedlings and several large adults were recorded within and just outside Avalon Valley where most recorded populations were planted in private yards and as street tree plantings. Mature naturalized plants were in fruit; however, the viablity of these seeds are unknown, but due to the frequent seedlings detected, seeds are presumed viable.

Sources of information: Haubensak, K. 1999. Acacia melanoxylon. Channel Island National Park Service Literature Review. Unpublished.

Schierenbeck, K.A., Gallagher, K.G. and Holt, J.N. 1998. The genetics and demography of invasive plant species. Fremontia 26(4):19-23.

Brown, K. and Brooks, K. 2002. Bushland Weeds: a practical guide to their management with case studies from the Swan Coastal Plain and beyond. Environmental Weeds Action Network, Greenwood Australia.

Young, J.A. and C.G. Young. 1992. Seeds of woody plants in North America. Portland, Oregon: Dioscorides Press. Pp. 356-357.

Question 2.5 Potential for human-caused dispersal C Other Pub. Mat'l back

Identify dispersal mechanisms: Acacia species are commonly planted for landscaping and commercial purposes. No information on how often it escapes (1, 2). In Mendocino County, usually seen along old fencelines or at homestead sites. This species is rarely planted (3).

Rationale:

Sources of information: (1) Brenzel, K. N. 2001. Sunset Western Garden Book. Sunset Publishing Company, Menlo Park, CA.

(2) Pemberton, R.W. 1985. Naturalized weeds and the prospects for their biological control in California. Fremontia 13(2):3-9.

(3) Warner, Peter, California State Parks, Mendocino. pers. comm. E-mail 5/18/05

Question 2.6 Potential for natural long-distance dispersal	C Rev'd, Sci. Pub'n back
Identify dispersal mechanisms: Birds such as European starlings disperse A. cyclops in South Africa (1). On Catalina Island, present three miles from nearest human habitatation (2).	
Rationale: enter text here	
Sources of information: (1) Richardson, D.M., Allsopp, N., D'Antonio, C.M., Milton, S.J. and Rejmanek, M. 2000. Plant invasions- role of mutualisms. Biological Reviews, 75:65-93 (2) John Knapp, Catalina Island Conservancy, pers. obs..	
Question 2.7 Other regions invaded	C Rev'd, Sci. Pub'n back
Identify other regions: Native to Australia. Invades South Africa (fynbos), Spain, and New Zealand.	
Rationale: Already inhabits several different habitats in California, although at low levels (see 3.1).	
Sources of information: Brown, K. and Brooks, K. 2002. Bushland Weeds: a practical guide to their management with case studies from the Swan Coastal Plain and beyond. Environmental Weeds Action Network, Greenwood Australia. Stock, W.D., Wienand, K.T. and Baker, A.C. 1995. Impacts of invading N2-fixing Acacia species on patterns of nutrient cyling in tow Cape ecosystems: evidence from soil incubation studies and 15N natural abundance values. Oecologia. 101(3):375-382.	
Question 3.1 Ecological amplitude/Range	A Other Pub. Mat'l back
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: Present in Mendocino, Sonoma, Marin, Solano, San Mateo, Santa Cruz, Santa Clara, Santa Barbara, and San Diego counties (1). Planted on Catalina Island prior to 1923 and fruiting luxuriantly, but showed no signs of naturalization (2). By 1966, several populations had become naturalized around Avalon (3). Present in chaparral and coastal prairie on Catalina Island (4), and occasionally spreads into scrub, riparian zones, closed cone pine forest, mixed evergreen forest, andn cismontane woodlands in northern California (5).	
Rationale:	
Sources of information: (1) USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA. (2) Millspaugh, C.F. and Nuttall, L.W. 1923. Flora of Santa Catalina Island. P. 154. Field Museum of Natural History, Botany v.5. Chicago. (3) Thorne, R.F. 1967. A flora of Santa Catalina Island, California. Aliso, 6(3):1-77. (4) Knapp, J.J. 2004. Catalina Invasive Plant Ranking Plan for the Catalina Island Conservancy. Unpublished. (5) Warner, Peter, California State Parks, Mendocino. pers. comm. E-mail 5/18/05	

Question 3.2 Distribution/Peak frequency	D Observational back
Describe distribution: Very low occurrence in all habitat types.	
Rationale: enter text here	
Sources of information: (1) Warner, Peter, California State Parks, Mendocino. pers. comm. E-mail 5/18/05	

Worksheet A

back

Reaches reproductive maturity in 2 years or less	**No: 0 pt**
Dense infestations produce >1,000 viable seed per square meter	**No: 0 pts**
Populations of this species produce seeds every year.	**Yes: 1 pt**
Seed production sustained over 3 or more months within a population annually	**No: 0 pt**
Seeds remain viable in soil for three or more years	**Yes: 2 pts**
Viable seed produced with *both* self-pollination and cross-pollination	**Unknown: 0 pts**
Has quickly spreading vegetative structures (rhizomes, roots, etc.) that may root at nodes	**No: 0 pt**
Fragments easily and fragments can become established elsewhere	**No: 0 pts**
Resprouts readily when cut, grazed, or burned	**Yes: 1 pt**
	4 pts **1 unknown**
	B (4-5 pts)

Note any related traits: enter text here

Worksheet C - California Ecological Types

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(*sensu* Holland 1986)

Major Ecological Types	Minor Ecological Types	Code*
Marine Systems	marine systems	**score**
Freshwater and Estuarine Aquatic Systems	lakes, ponds, reservoirs	**score**
	rivers, streams, canals	**score**
	estuaries	**score**
Dunes	coastal	**score**
	desert	**score**
	interior	**score**
Scrub and Chaparral	coastal bluff scrub	**score**
	coastal scrub	**D. presen**
	Sonoran desert scrub	**score**
	Mojavean desert scrub (incl. Joshua tree woodland)	**score**
	Great Basin scrub	**score**
	chenopod scrub	**score**
	montane dwarf scrub	**score**
	Upper Sonoran subshrub scrub	**score**
	chaparral	**D. presen**
Grasslands, Vernal Pools, Meadows, and other Herb Communities	coastal prairie	**D. presen**
	valley and foothill grassland	**score**
	Great Basin grassland	**score**
	vernal pool	**score**
	meadow and seep	**score**
	alkali playa	**score**
	pebble plain	**score**
Bog and Marsh	bog and fen	**score**
	marsh and swamp	**score**
Riparian and Bottomland	riparian forest	**score**
	riparian woodland	**D. presen**
	riparian scrub (incl.desert washes)	**score**
Woodland	cismontane woodland	**D. presen**
	piñon and juniper woodland	**score**
	Sonoran thorn woodland	**score**
Forest	broadleaved upland forest	**score**
	North Coast coniferous forest	**score**
	closed cone coniferous forest	**D. presen**
	lower montane coniferous forest	**score**
	upper montane coniferous forest	**score**
	subalpine coniferous forest	**score**
Alpine Habitats	alpine boulder and rock field	**score**
	alpine dwarf scrub	**score**

* 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).