

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):	Cytisus scoparius (L.) Link.
Synonyms:	Sarathamnus scoparius, Spartium scoparius
Common names:	Scotch broom, English broom, common broom
Evaluation date (mm/dd/yy):	3/18/05
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Section below for list committee use—please leave blank

List committee members:	Carla Bossard, John Randall, Carri Pirosko, Dan Gluesenkamp, Gina Skurka, Brianna Richardson
Committee review date:	7/8/05
List date:	enter text here
Re-evaluation date(s):	enter text here

General comments on this assessment:

Table 2. Criteria, Section, and Overall Scores

<u>1.1</u>	Impact on abiotic ecosystem processes	A	Rev'd, Sci. Pub'n
<u>1.2</u>	Impact on plant community	A	Rev'd, Sci. Pub'n
<u>1.3</u>	Impact on higher trophic levels	A	Rev'd, Sci. Pub'n
<u>1.4</u>	Impact on genetic integrity	D	Other Pub. Mat'l

<p>“Impact”</p> <p><i>Enter four characters from Q1.1-1.4 below:</i></p> <p>AAAD</p> <p><i>Use matrix determine the score; enter below:</i></p> <p>A</p>

<u>2.1</u>	Role of anthropogenic and natural disturbance	B 3	Rev'd, Sci. Pub'n
<u>2.2</u>	Local rate of spread with no management	A 2	Other Pub. Mat'l
<u>2.3</u>	Recent trend in total area infested within state	B 3	Observational
<u>2.4</u>	Innate reproductive potential <u>Wksht A</u>	A 3	Rev'd, Sci. Pub'n
<u>2.5</u>	Potential for human-caused dispersal	B 2	Other Pub. Mat'l
<u>2.6</u>	Potential for natural long-distance dispersal	C 2	Rev'd, Sci. Pub'n
<u>2.7</u>	Other regions invaded	C 1	Rev'd, Sci. Pub'n

<p>“Invasiveness”</p> <p><i>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:</i></p> <p>16</p> <p><i>Use matrix to determine score and enter below:</i></p> <p>B</p>
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<p>“Plant Score”</p> <p><i>Using matrix, determine the Overall Score and Alert Status from the three section scores and enter them below:</i></p> <p>High</p> <p>No Alert</p>
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<u>3.1</u>	Ecological amplitude/Range	A	Observational
<u>3.2</u>	Distribution/Peak frequency <u>Wksht C</u>	B	Anecdotal

<p>“Distribution”</p> <p><i>Use matrix determine the score; enter below:</i></p> <p>A</p>

Table 3. Documentation

Question 1.1 Impact on abiotic ecosystem processes	A Rev'd, Sci. Pub'n back
Identify ecosystem processes impacted: Nitrogen-fixing species. Can acidify the soil. Carries fire to the tree canopy, increasing frequency and duration of fires.	
Rationale:	
Sources of information: 1. Bossard, C. 2000. <i>Cytisus scoparius</i> . pp. 145-150 in Bossard, C., J. Randall, and M. Hochovsky. (eds). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley, CA	
Question 1.2 Impact on plant community composition, structure, and interactions	A Rev'd, Sci. Pub'n back
Identify type of impact or alteration: Lower vegetation dies out beneath mature bushes, leading to widespread loss of herbaceous plants and tree seedlings (1). Displaces native species and forms monospecific stands in California (2).	
Rationale: Native communities are not monospecific	
Sources of information: Smith J.M.B., Halen R.L. 1991. Preliminary Observations on the Seed Dynamics of Broom (<i>Cytisus scoparius</i>) at Barrington Tops, New South Wales. <i>Plant Protection Quarterly</i> 6(2):73-78. 2. Bossard, C. 2000. <i>Cytisus scoparius</i> . pp. 145-150 in Bossard, C., J. Randall, and M. Hochovsky. (eds). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley, CA	
Question 1.3 Impact on higher trophic levels	A Rev'd, Sci. Pub'n back
Identify type of impact or alteration: Seeds are toxic to ungulates. Mature shoots are unpalatable and are not used by forage except by rabbits in the seedling stage.	
Rationale: Less food for native species of animals	
Sources of information: 1. Bossard, C. 2000. <i>Cytisus scoparius</i> . pp. 145-150 in Bossard, C., J. Randall, and M. Hochovsky. (eds). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley, CA	
Question 1.4 Impact on genetic integrity	D Other Pub. Mat'l back
Identify impacts: No native <i>Cytisus</i>	
Rationale: None known	
Sources of information: Hickman, J. C. (ed.) 1993. <i>The Jepson Manual, Higher Plants of California</i> . University of California Press. Berkeley, CA	

Question 2.1 Role of anthropogenic and natural disturbance in establishment	B Rev'd, Sci. Pub'n back
Describe role of disturbance: Soil disturbance from road and home construction; timber harvest; road side machinery (1). Inhabits a wide range of disturbed and undisturbed habitats. Plants establish best after soil or vegetation disturbance, such as fire or herbicide treatment. However, they can invade vegetation without major disturbance if open microsites are available (2). Seedlings in the native range in France survived better in disturbed plots than undisturbed ones (3).	
Rationale: These increase establishment of brooms	
Sources of information: 1. Bossard, C. 2000. <i>Cytisus scoparius</i> . pp. 145-150 in Bossard, C., J. Randall, and M. Hochovsky. (eds). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley, CA 2. Hosking J.R., Smith J.M.B., Sheppard A.W. 1996. The Biology of Australian Weeds 28. <i>Cytisus scoparius</i> (L.) Link subsp. <i>scoparius</i> . <i>Plant Protection Quarterly</i> 11(3):102-108. 3. Paynter Q. et al. 1998. Factors affecting the establishment of <i>Cytisus scoparius</i> in southern France: implication for managing both native and exotic populations.” <i>Journal of Applied Ecology</i> 35:582-595.	
Question 2.2 Local rate of spread with no management	A Other Pub. Mat'l back
Describe rate of spread: 1 to 1.5 m / year in undisturbed annual grasslands	
Rationale: Spreads rapidly especially when many foci of infection are present	
Sources of information: 1. Bossard, C. 2000. <i>Cytisus scoparius</i> . pp. 145-150 in Bossard, C., J. Randall, and M. Hochovsky. (eds). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley, CA	
Question 2.3 Recent trend in total area infested within state	B Observational back
Describe trend: Still spreading but not rapidly	
Rationale: Many suitable habitats are already occupied by broom	
Sources of information: Carla Bossard, St. Mary's College of California, personal observation	
Question 2.4 Innate reproductive potential	A Rev'd, Sci. Pub'n back
Describe key reproductive characteristics: Perennial shrub. Becomes reproductive at two to three years and can live up to 17 years in California, longer than in its native range. Has long-lasting seed bank. A mature plant can produce up to 12,000 seeds that create a seedbank of 2000 seeds/sq ft and remain viable for five years (1). Seeds remain dormant for years (2). Can resprout after cutting or fire (3). Variability in the duration between seed deposition and germination (4, 5) provides <i>C. scoparius</i> with considerable flexibility for coping with the fluctuations in precipitation and temperature that are typical in California (4).	

Rationale: enter text here	
<p>Sources of information: 1. Bossard, C. 2000. <i>Cytisus scoparius</i>. pp. 145-150 in Bossard, C., J. Randall, and M. Hochovsky. (eds). <i>Invasive Plants of California's Wildlands</i>. University of California Press, Berkeley, CA.</p> <p>2. Smith J.M.B., Halen R.L. 1991. Preliminary Observations on the Seed Dynamics of Broom (<i>Cytisus scoparius</i>) at Barrington Tops, New South Wales. <i>Plant Protection Quarterly</i> 6(2):73-78.</p> <p>3. Bossard C.C., Rejmanek M. 1994. Herbivory, Growth, Seed Production, and Resprouting of an Exotic Invasive Shrub, <i>Cytisus scoparius</i>. <i>Biological Conservation</i> 67:193-200.</p> <p>4. Bossard C. 1993. Seed Germination in the Exotic Shrub <i>Cytisus scoparius</i> (Scotch Broom) in California. <i>Madrono</i> 40(1):47-61.</p> <p>5. Sheppard A.W., et al. 2002. Factors affecting the invasion and persistence of broom <i>Cytisus scoparius</i> in Australia. <i>Journal of Applied Ecology</i> 39: 721-734.</p>	
Question 2.5 Potential for human-caused dispersal	B Other Pub. Mat'l back
Identify dispersal mechanisms: Seeds attach to road equipment (1). Sold as an ornamental (2).	
Rationale:	
<p>Sources of information: 1. Bossard, C. 2000. <i>Cytisus scoparius</i>. pp. 145-150 in Bossard, C., J. Randall, and M. Hochovsky. (eds). <i>Invasive Plants of California's Wildlands</i>. University of California Press, Berkeley, CA.</p> <p>2. Isaacson, D. L. 2000. Impacts of broom (<i>Cytisus scoparius</i>) in western North America. <i>Plant Protection Quarterly</i> 15(4): 145-148.</p>	
Question 2.6 Potential for natural long-distance dispersal	C Rev'd, Sci. Pub'n back
Identify dispersal mechanisms: Ants and ballistic seeds disperse short distances (1). Seeds also disperse with rainwash (2), but long distance movement is probably very uncommon.	
Rationale:	
<p>Sources of information: 1. Bossard C.C. 1991. The Role of Habitat Disturbance, Seed Predation and Ant Dispersal on Establishment of the Exotic Shrub <i>Cytisus scoparius</i> in California. <i>American Midland Naturalist</i> 126: 1-13.</p> <p>2. Bossard, C. 2000. <i>Cytisus scoparius</i>. pp. 145-150 in Bossard, C., J. Randall, and M. Hochovsky. (eds). <i>Invasive Plants of California's Wildlands</i>. University of California Press, Berkeley, CA</p>	
Question 2.7 Other regions invaded	C Rev'd, Sci. Pub'n back
Identify other regions: Canada, Australia (Smith), New Zealand and India	
Rationale: Scoring as C because many suitable habitats already occupied by broom (see 2.3).	

Sources of information: Bossard, C. 2000. <i>Cytisus scoparius</i> . pp. 145-150 in Bossard, C., J. Randall, and M. Hochovsky. (eds). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley, CA	
Smith J.M.B., Halen R.L. 1991. Preliminary Observations on the Seed Dynamics of Broom (<i>Cytisus scoparius</i>) at Barrington Tops, New South Wales. <i>Plant Protection Quarterly</i> 6(2):73-78.	
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: As of 2000, occupied >700,000 acres in central to northwest coastal and Sierra Foothill regions. Present along the coast from Monterey to the Oregon border, prevalent in interior mountains of northern California on lower slopes and very prevalent in Eldorado, Nevada, and Placer counties in the Sierra Nevada foothills (2).	
Rationale: enter text here	
Sources of information: 1. Bossard, C. 2000. <i>Cytisus scoparius</i> . pp. 145-150 in Bossard, C., J. Randall, and M. Hochovsky. (eds). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley, CA.	
Question 3.2 Distribution/Peak frequency	B Observational back
Describe distribution: See table	
Rationale: enter text here	
Sources of information: Carla Bossard, St. Mary's College of California, personal observation	

Worksheet A[back](#)

Reaches reproductive maturity in 2 years or less	No: 0 pt
Dense infestations produce >1,000 viable seed per square meter	Yes: 2 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 <i>both</i> self-pollination and cross-pollination	No: 0 pt
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
	6 pts Total Unknowns
	A (6+ 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	B. 21-50%
	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	D. presen
	riparian woodland	score
	riparian scrub (incl. desert washes)	score
Woodland	cismontane woodland	C. 5-20%
	piñon and juniper woodland	score
	Sonoran thorn woodland	score
Forest	broadleaved upland forest	score
	North Coast coniferous forest	B. 21-50%
	closed cone coniferous forest	score
	lower montane coniferous forest	D. presen
	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).