

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):	Delairea odorata Lem.
Synonyms:	Senecio mikanioides
Common names:	Cape ivy, German ivy, Italian ivy, ivy groundsel, parlor ivy, water ivy
Evaluation date (mm/dd/yy):	12/29/04
Evaluator #1 Name/Title:	Gina Skurka, Agricultural Technician
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Section below for list committee use—please leave blank

List committee members:	Joe DiTomaso, John Randall, Carla Bossard
Committee review date:	3/11/05
List date:	enter text here
Re-evaluation date(s):	enter text here

General comments on this assessment:

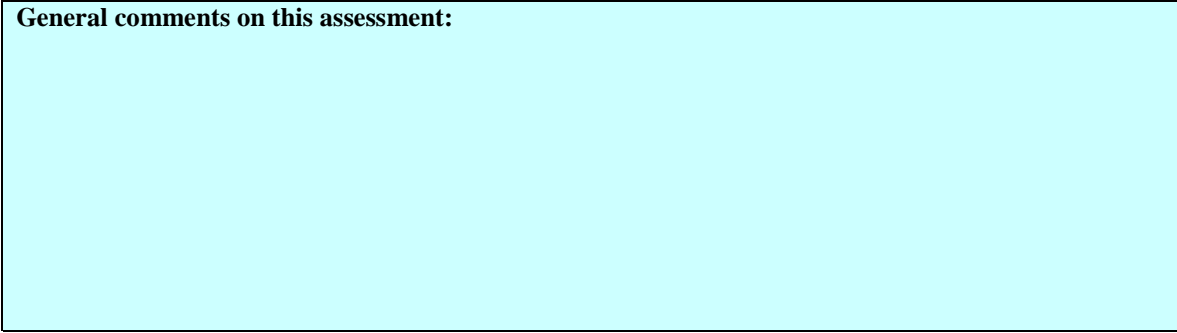


Table 2. Criteria, Section, and Overall Scores

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

Impact

Enter four characters from Q1.1-1.4 below:

AAAD

Using matrix, determine score and enter below:

A

2.1	Role of anthropogenic and natural disturbance	1 (3 pts)	Other Pub. Mat'l
2.2	Local rate of spread with no management	1 (3 pts)	Other Pub. Mat'l
2.3	Recent trend in total area infested within state	1 (3 pts)	Other Pub. Mat'l
2.4	Innate reproductive potential Wksht A	1 (3 pts)	No Information
2.5	Potential for human-caused dispersal	1 (2 pts)	Other Pub. Mat'l
2.6	Potential for natural long-distance dispersal	1 (3 pts)	Other Pub. Mat'l
2.7	Other regions invaded	1 (2 pts)	Other Pub. Mat'l

Invasiveness

Enter the sum total of all points for Q2.1-2.7 below:

19

Use matrix to determine score and enter below:

A

Plant Score

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

**High
No Alert**

3.1	Ecological amplitude/Range	A	Doc'n level
3.2	Distribution/Peak frequency Wksht C	C	Doc'n level

Distribution

Using matrix, determine score and enter below:

B

Table 3. Documentation

<p>Question 1.1 Impact on abiotic ecosystem processes</p>	<p>A Other Pub. Mat'l back</p>
<p>Identify ecosystem processes impacted: Dense canopy blocks sunlight from reaching plants underneath. Contains potent alkaloids including pyrrolizidine, which can be leached into water. Due to its shallow root system, cape ivy can contribute to serious soil erosion problems on hillsides. Flood control function along streams is impacted by infestations</p>	
<p>Rationale: Severe or moderate alteration of ecosystem processes. Decreases light availability and releases toxins into the water.</p>	
<p>Sources of information:</p> <p>Bossard, C. 2000. <i>Delairea odorata</i>. In, <i>Invasive Plants of California's Wildlands</i>. Eds., C. Bossard, J. Randall, and M. Hoshovsky. UC Press, Berkeley.</p> <p>Nelson, D. 1999. Cape Ivy, Another Problem Plant for the Ventana Wilderness. <i>The Double Cone Quarterly</i>. Spring Equinox 1999, Vol II, No I, <<http://www.ventanawild.org/news/se99/capeivy.html>>.</p>	
<p>Question 1.2 Impact on plant community composition, structure, and interactions</p>	<p>A Rev'd, Sci. Pub'n back</p>
<p>Identify type of impact or alteration: Associated with reductions in the species richness and diversity of both native and nonnative species. Abundance of native and nonnative seedlings were each significantly lower in plots invaded by Cape ivy compared to uninvaded plots. It grows rapidly and forms a thick blanket, which not only covers and smothers the other vegetation on the ground, but it clambers over small shrubs, and up trees and other vertical objects to a height of eight meters, frequently killing these as well.</p>	
<p>Rationale: Formation of stands dominated (>75% cover) by this species. Severe alteration of plant community composition and structure.</p>	
<p>Sources of information:</p> <p>Alvarez, M.E and J.H. Cushman. 2002. Community-Level Consequences of a Plant Invasion: Effects on Three Habitats in Coastal California. <i>Ecological Applications</i> 12(5) pp. 1434 - 1444.</p> <p>Balciunas, J, E. Grobbelaar, R. Robison, and S. Naser. Distribution of Cape ivy (<i>Delairea odorata</i> Lem.), a growing threat to western riparian ecosystems. For publication in <i>J. Aquatic Plant Management</i>.</p> <p>Bossard, C. 2000. <i>Delairea odorata</i>. In, <i>Invasive Plants of California's Wildlands</i>. Eds., C. Bossard, J. Randall, and M. Hoshovsky. UC Press, Berkeley.</p>	
<p>Question 1.3 Impact on higher trophic levels</p>	<p>A Other Pub. Mat'l back</p>
<p>Identify type of impact or alteration: Eleven different pyrrolizidine alkaloids, which are potent mammalian hepato-toxins, have been detected in Cape ivy and some of these are consumed and sequestered by migrating monarch butterflies. When dipped into an aquarium, Cape ivy will kill fish and a variety of aquatic insects. Refuges created as reserves for native animal and plant species are rendered worthless when large portions of their acreage are occupied by Cape ivy. Underlying vegetation and pre-invasion microclimates are obliterated. Additional Golden Gate National Recreation Area vegetation communities infested with Cape ivy support two federally endangered butterflies, federally threatened coho salmon and steelhead, and federal endangered freshwater shrimp. Cape ivy's occurrence in habitats used by these species may have some detrimental effects on their declining populations.</p>	

Rationale: Endangerment of existing native species/population. Severe/moderate alteration of higher trophic populations.	
Sources of information: Balciunas, J, E. Grobbelaar, R. Robison, and S. Naser. Distribution of Cape ivy (<i>Delairea odorata</i> Lem.), a growing threat to western riparian ecosystems. For publication in <i>J. Aquatic Plant Management</i> . Archbald, G. (1995) <i>Biology and Control of German Ivy: An Update for California Department of Fish & Game, Pesticide Applicators Seminar</i> . DiTomaso, J. and E. Healy. <i>Weeds of California and Other Western States</i> , (Unpublished). Robison, R. (2000) <i>Distribution, Reproductive Dynamics and Physiology of Cape ivy (Delairea odorata syn Senecio mikanioides), an Invasive Wildland Weed of the Pacific Coast</i> (Unpublished).	
Question 1.4 Impact on genetic integrity	D Observational back
Identify impacts: Cape ivy is not known to reproduce readily by seed in North America; however, viable seed was found in California.	
Rationale: No known hybridization.	
Sources of information: Bossard, C. 2000. <i>Delairea odorata</i> . In, <i>Invasive Plants of California's Wildlands</i> . Eds., C. Bossard, J. Randall, and M. Hoshovsky. UC Press, Berkeley. Robison, R. (2000) <i>Distribution, Reproductive Dynamics and Physiology of Cape ivy (Delairea odorata syn Senecio mikanioides), an Invasive Wildland Weed of the Pacific Coast</i> (Unpublished). Robison, R. E-mail communication. 1/4/2005.	
Question 2.1 Role of anthropogenic and natural disturbance in establishment	A Other Pub. Mat'l back
Describe role of disturbance: Takes over habitats regardless of anthropogenic or natural disturbance. Cape ivy on the west coast prefers and grows vigorously in physically challenging environments such as streamside thickets, willows and poison oak.	
Rationale: Severe invasive potential. This species can establish independent of natural or anthropogenic disturbance.	
Sources of information: Archbald, G and J. Sigg. (1998) <i>A Modified Proposal for Biocontrol of Cape Ivy</i> .	
Question 2.2 Local rate of spread with no management	A Other Pub. Mat'l back
Describe rate of spread: Cape ivy spread in the Marin headlands from 8.8 acres in 1987 to 67.3 acres in 1996 (765% in 9 years). A 1987 survey in a portion of the Golden Gate National Recreation Area located 3.6 hectares	

of Cape ivy, which when resurveyed 9 years later, had expanded nearly nine-fold to 27.2 hectares.	
Rationale: Increases rapidly, doubling in less than 10 years.	
Sources of information: Nelson, D. 1999. Cape Ivy, Another Problem Plant for the Ventana Wilderness. The Double Cone Quarterly. Spring Equinox 1999, Vol II, No I, <<http://www.ventanawild.org/news/se99/capeivy.html>>. Balciunas, J, E. Grobbelaar, R. Robison, and S. Nesor. Distribution of Cape ivy (<i>Delairea odorata</i> Lem.), a growing threat to western riparian ecosystems. For publication in J. Aquatic Plant Management.	
Question 2.3 Recent trend in total area infested within state	A Other Pub. Mat'l back
Describe trend: <i>D. odorata</i> ranges along the entire California coast and some mesic areas of the Central Valley. Over 500,000 acres are infested in California, and on Catalina Island, 13 populations were detected with 6 in riparian habitats and 1 in island scrub oak chaparral near a riparian area. All populations were small with sparse cover. Many of the plants were less than 2 feet long, indicating new establishment. <i>D. odorata</i> has been targeted for control at the Catalina Island Conservancy, Marin Headlands, Golden Gate National Park, Parks within Santa Cruz County, Dos Palmas Reserve, Lake Mead National Recreational Area, Elkhorn Slough National Estuarine Research Reserve, Big Sur and San Luis Creek and San Simeon in San Luis Obispo. It can tolerate both freezing and drought, indicating a wide range of climatic preferences. On Catalina Island, 13 populations were recorded in 2003 totalling 13,825 square feet.	
Rationale: enter text here	
Sources of information: Bossard, T. 2000. <i>Delairea odorata</i> . In, Invasive Plants of California's Wildlands. Eds., C. Bossard, J. Randall, and M. Hoshovsky. UC Press, Berkeley Knapp, J.J. 2004. Catalina Invasive Plant Ranking Plan for the Catalina Island Conservancy. Unpublished. Starr, F., Starr, K. and Loope, L. 2003. <i>Delairea odorata</i> . Nature Conservancy Stewardship Element Abstract. United States Geological Survey- Biological Resources Division. Hakeakala Field Station, Maui, Hawai'i. Skinner, M. 2003. Personal communication. Sigg, J. 1994. Invasive exotics report. Bulletin of the California Native Plant Society 24(3): 6. Paraphrased in: Restoration and Management Notes 13(1): 132. Shoulders, C., Hatch, D. and Holmes, A.L., Scoggin, S.E. and Geupel, G.R. 2002. Songbird monitoring in the Golden Gate National Recreation Area: a multifaceted tool for guiding the restoration of Redwood Creek. Park Science 21(1):28-32. Elliot, W. 1994. German ivy engulfing riparian forests and heading for the uplands. CalEPPC News 2(1): 9. Alvarez, M.E. and J.H. Cushman. 2002. Community-level consequences of a plant invasion: effects on three habitats in coastal California. Ecological Applications 12(5): 1434-1444. Elkhorn Slough National Estuarine Research Reserve. 2000. Weed control by species. Elkhorn Slough National Estuarine Research Reserve. Pp. 1-57..	
Question 2.4 Innate reproductive potential	A Other Pub. Mat'l back
Describe key reproductive characteristics: Cape ivy spreads primarily by vegetative means, breaks apart easily	

<p>and both stem nodes and leaf petioles are capable of rooting. Insect-pollinated. Reproduces vegetatively from rhizomes, stolons, and fragments of rhizomes, stolons and stems and in some locations, by seed. While most seeds produced are not viable, some viable seeds develop in most sites throughout California and Oregon</p> <p>D. odorata is a perennial that reproduces mainly by the proliferation of stolons in California, but produces viable seed in its native range and areas invaded in Australia; however, until recently in California no viable seed was thought to be produced. Flowering occurs extensively during December to February, and the flowers are self-incompatible. 95% of all stolons containing only 1 node establish. Rapid vegetative regrowth occurs between February and June. Drying stolons in the sun for ten weeks does not inhibit their ability to root. .</p>	
Rationale:	
Sources of information:	
<p>Nelson, D. 1999. Cape Ivy, Another Problem Plant for the Ventana Wilderness. The Double Cone Quarterly. Spring Equinox 1999, Vol II, No I, <<http://www.ventanawild.org/news/se99/capeivy.html>>.</p> <p>DiTomaso, J. and E. Healy. Weeds of California and Other Western States, (Unpublished).</p> <p>Robison, R. E-mail communication. 1/4/2005.</p> <p>Balciunas, J. 2001. Viable seed production by cape ivy in California finally confirmed. CalEPPC News 9(2): 13.</p>	
Question 2.5	Potential for human-caused dispersal B Other Pub. Mat'l back
Identify dispersal mechanisms: Cape ivy is being sold as an ornamental in North America. Fragments as short as one half inch, carried by runoff or landscape machinery, can take root and colonize new areas. Listed in Sunset Western Garden Book.	
Rationale:	
Sources of information: Balciunas, J, E. Grobbelaar, R. Robison, and S. Naser. Distribution of Cape ivy (<i>Delairea odorata</i> Lem.), a growing threat to western riparian ecosystems. For publication in J. Aquatic Plant Management.	
Alvarez, M. (1997) Management of Cape-ivy (<i>Delairea odorata</i>) in the Golden Gate National Recreation Area. CalEPPC 1997 Symposium Proceedings.	
Found in Cal-IPC nursery survey 2004.	
Brenzel, K. N. 2001. Sunset Western Garden Book. Sunset Publishing Company, Menlo Park, CA	
Question 2.6	Potential for natural long-distance dispersal B Other Pub. Mat'l back
Identify dispersal mechanisms: Seeds disperse with wind, water, and soil movement. If there is a Cape ivy source upstream, high water flows in the winter can be expected to transport pieces of plants down-stream, which can begin new colonies.	
Rationale: Occasional long distance dispersal by animals or abiotic mechanisms.	
Sources of information: Moore, K. (1997) Battling the Kudzu of the West: Controlling Cape Ivy (formerly	

German ivy) by Hand Removal. CalEPPC News, Fall 1997, Page 4.	
Question 2.7 Other regions invaded	B Other Pub. Mat'l back
Identify other regions: Also present in Oregon and Hawaii. Listed as a noxious weed in Australia. Present in Italy and Spain.	
Rationale: enter text here	
Sources of information: USDA, NRCS. 2004. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	
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: <i>D. odorata</i> was first introduced to the North American east coast in the 1850's, and Marin County and Golden Gate Park, California in the 1950's for landscaping. Within 10 years it became naturalized. In California, populations have been found in following communities: grasslands, open oak forests, coastal scrub, Monterey pine forests, coastal bluff, riparian forests, old growth forests, seasonal wetlands, dunes, serpentine soil, and exotic shrub and forest communities. Also grows under eucalyptus trees, unlike most other species (Bossard, pers. obs.)	
Rationale: enter text here	
Sources of information: Bossard, C.C. 2000. <i>Delawarea odorata</i> . Bossard, C.C., J.M. Randall, and M.C. Hoshovsky, (eds). Pp. 154-158. In, <i>Invasive plants of California's wildlands</i> . Berkeley, California: University of California Press.	
Elliot, W. 1994. German ivy engulfing riparian forests and heading for the uplands. <i>CalEPPC News</i> 2(1): 9.	
Hamingson, E.E. and M.E. Alvarez. 2000. Assessing cape-ivy control in two California National Parks. P. 36 in: Kelley, M. (ed.). 2003. <i>Proceedings of the California Exotic Pest Plant Council Symposium Vol. 6: 2000-2002</i> .	
Dudley, T. 1998. Exotic plant invasions in California riparian areas and wetlands. <i>Fremontia</i> 26(4): 24-29.	
Freitzke, S. and P. Moore. 1998. Exotic plant management in National Parks of California. <i>Fremontia</i> 26(4):49-53.	
Question 3.2 Distribution/Peak frequency	C Other Pub. Mat'l back
Describe distribution: see 3.1	
Rationale: enter text here	
Sources of information: enter text here	

Worksheet A[back](#)

Reaches reproductive maturity in 2 years or less	Yes: 1 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	No: 0 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	Yes: 1 pt
Fragments easily and fragments can become established elsewhere	Yes: 2 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	D. prese
	coastal scrub	D. prese
	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	score
Grasslands, Vernal Pools, Meadows, and other Herb Communities	coastal prairie	D. prese
	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	C. 5-20%
	riparian woodland	D. prese
	riparian scrub (incl. desert washes)	score
Woodland	cismontane woodland	score
	piñon and juniper woodland	score
	Sonoran thorn woodland	score
Forest	broadleaved upland forest	score
	North Coast coniferous forest	D. prese
	closed cone coniferous forest	score
	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).