

# 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**

<b>Species name (Latin binomial):</b>	Erodium cicutarium (L.) L'Her.
<b>Synonyms:</b>	
<b>Common names:</b>	filaree, redstem filaree, redstem stork's bill
<b>Evaluation date (mm/dd/yy):</b>	2/1/05
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Section below for list committee use—please leave blank

<b>List committee members:</b>	Joe DiTomaso, Joanna Clines, Cynthia Roye, Doug Johnson
<b>Committee review date:</b>	7/8/05
<b>List date:</b>	enter text here
<b>Re-evaluation date(s):</b>	enter text here

**General comments on this assessment:**

In grasslands, *E. botrys*, *E. brachycarpum*, and *E. cicutarium* all coexist and behave similarly.

**Table 2. Criteria, Section, and Overall Scores**

<a href="#">1.1</a>	Impact on abiotic ecosystem processes	<b>D</b>	<b>Observational</b>
<a href="#">1.2</a>	Impact on plant community	<b>C</b>	<b>Rev'd, Sci. Pub'n</b>
<a href="#">1.3</a>	Impact on higher trophic levels	<b>D</b>	<b>Rev'd, Sci. Pub'n</b>
<a href="#">1.4</a>	Impact on genetic integrity	<b>D</b>	<b>Other Pub. Mat'l</b>

**Impact**

*Enter four characters from Q1.1-1.4 below:*

**DCDD**

*Using matrix, determine score and enter below:*

**C**

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

**Invasiveness**

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

**10**

*Use matrix to determine score and enter below:*

**C**

**Plant Score**

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

**Low**

**No Alert**

<a href="#">3.1</a>	Ecological amplitude/Range	<b>A</b>	<b>Rev'd, Sci. Pub'n</b>
<a href="#">3.2</a>	Distribution/Peak frequency <a href="#">Wksht C</a>	<b>A</b>	<b>Observational</b>

**Distribution**

*Using matrix, determine score and enter below:*

**A**

**Table 3. Documentation**

<p><b>Question 1.1</b> Impact on abiotic ecosystem processes</p>	<p>D Observational <a href="#">back</a></p>
<p>Identify ecosystem processes impacted: Do not appear to have significant impact on abiotic processes.</p>	
<p>Rationale: enter text here</p>	
<p>Sources of information: DiTomaso, observational</p>	
<p><b>Question 1.2</b> Impact on plant community composition, structure, and interactions</p>	<p>C Rev'd, Sci. Pub'n <a href="#">back</a></p>
<p>Identify type of impact or alteration: May be able to outcompete native species. Forms large basal rosettes of leaves that can kill nearby plants (1), but this generally only occurs after disturbance, such as fire and they are quickly outcompeted within a year or two of fire.</p>	
<p>Rationale: enter text here</p>	
<p>Sources of information: 1. Coomes, D. A., M. Rees, P. J. Grubb, and L. Turnbull. 2002. Are differences in seed mass among species important in structuring plant communities? Evidence from analyses of spatial and temporal variation in dune-annual populations. <i>Oikos</i> 96(3): 421-432.</p> <p>Kyser and DiTomaso, 2002. <i>Weed Science</i></p>	
<p><b>Question 1.3</b> Impact on higher trophic levels</p>	<p>D Rev'd, Sci. Pub'n <a href="#">back</a></p>
<p>Identify type of impact or alteration: Forms a mutualistic relationship with endangered kangaroo rats, which eat the seeds (1, 2). Also eaten by desert tortoises (3). Good forage for wildlife although when they form a dominant stand after fire then can reduce annual grasses and limit late season forage. I could not find specific descriptions of negative impacts.</p>	
<p>Rationale: 1. Schiffman, P. M. 1994. Promotion of exotic weed establishment by endangered giant kangaroo rats (<i>Dipodomys ingens</i>) in a California grassland. <i>Biodiversity &amp; Conservation</i> 3(6): 524-537.</p> <p>2. Inouye, R. S. 1981. Interactions among Unrelated Species Granivorous Rodents a Parasitic Fungus and a Shared Prey Species. <i>Oecologia</i> 49(3): 425-427.</p> <p>2. Hazard, L. C., D. R. Shemanski, and K. A. Nagy. 2000. Digestibility of native and exotic food plants eaten by juvenile desert tortoises. <i>American Zoologist</i> 40(6): 1050. (abstract)</p>	
<p>Sources of information: enter text here</p>	
<p><b>Question 1.4</b> Impact on genetic integrity</p>	<p>D Other Pub. Mat'l <a href="#">back</a></p>
<p>Identify impacts: No information available on hybridization, but there are two native <i>Erodium</i> species in California: <i>E. macrophyllum</i> on the south and central coast and the Channel Islands, and <i>E. texanum</i> on the southern coast and desert. Doubtful if these species hybridize. No record of any <i>Erodium</i> species hybridizing.</p>	

Rationale:	
Sources of information: Hickman, J. C. (ed.) 1993. The Jepson Manual, Higher Plants of California. University of California Press. Berkeley, CA	
<b>Question 2.1</b>	Role of anthropogenic and natural disturbance in establishment C Rev'd, Sci. Pub'n <a href="#">back</a>
Describe role of disturbance: Needs natural or anthropogenic disturbance for establishment.	
Rationale: Coverage of Erodium was significantly greater within the disturbed areas of kangaroo rat territories than in the less-disturbed spaces between territories (1). Erodium declined in woodlands but increased in grasslands as grazing intensified (2). Biomass increased with nitrogen addition in the Mojave Desert (3). In British dune, grazing by rabbits reduces perennials and allows establishment of annuals such as Erodium (4). Found mainly in disturbed sites (see 3.1).	
Sources of information: 1. Schiffman 1994 2. Rosiere, R. E. 1987. An Evaluation of Grazing Intensity Influences on California USA Annual Range. Journal of Range Management 40(2): 160-165. 3. Brooks, M. L. 2003. Effects of increased soil nitrogen on the dominance of alien annual plants in the Mojave Desert. Journal of Applied Ecology 40(2): 344-353 4. Coomes et al. 2002.	
<b>Question 2.2</b>	Local rate of spread with no management C Observational <a href="#">back</a>
Describe rate of spread: Can fluctuate up and down, but over all remains static.	
Rationale: enter text here	
Sources of information: DiTomaso, observational.	
<b>Question 2.3</b>	Recent trend in total area infested within state C Observational <a href="#">back</a>
Describe trend: Widely distributed and has been in the state for many years.	
Rationale: enter text here	
Sources of information: DiTomaso, observational.	
<b>Question 2.4</b>	Innate reproductive potential B Other Pub. Mat'l <a href="#">back</a>
Describe key reproductive characteristics: Summer or winter annual.  In Canada, emerged within 7-13 d of planting. Flowering occurred within 46-65 d of planting. Plants that emerged in late summer did not flower that season and survived as winter annuals. Seed production ranged from 2400-9900 seeds/plant (1). Seeds are impermeable at maturity but become permeable with dry storage and began	

to germinate immediately when placed upon moist substrate after five years' storage (2). Able to grow well even with water stress (3).	
Rationale: DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488.	
Sources of information: 1. Blackshaw R.E., and K. N. Harker K.N. 1998. Redstem Filaree ( <i>Erodium cicutarium</i> ) Development and Productivity Under Noncompetitive Conditions.” Weed Technology 12: 590-594 2. Meisert, A. 2002. Physical dormancy in Geraniaceae seeds. Seed Science Research 12(2): 121-128. 3. Pelaez, D. V., C. A. Busso, O. R. Elia, D. E. Fresnillo Fedorenko, and O. A. Fernandez. 1995. Demography and growth of <i>Medicago minima</i> and <i>Erodium cicutarium</i> : Water stress effects. Journal of Arid Environments 30(1): 75-81..	
<b>Question 2.5</b> Potential for human-caused dispersal	B Other Pub. Mat'l <a href="#">back</a>
Identify dispersal mechanisms: Can be dispersed by clinging to shoes and clothes of people, tire, and agricultural or maintenance equipment (1).	
Rationale: enter text here	
Sources of information: 1. DiTomaso, J., and E. Healy. in prep. Weeds of California and Other Western States.	
<b>Question 2.6</b> Potential for natural long-distance dispersal	B Other Pub. Mat'l <a href="#">back</a>
Identify dispersal mechanisms: Mericarps disperse by water, soil movement, and especially by clinging to the fur, feathers, or feet of animals (1). Most seed fall to soil surface.	
Rationale: enter text here	
Sources of information: 1. DiTomaso and Healy in prep	
<b>Question 2.7</b> Other regions invaded	C Rev'd, Sci. Pub'n <a href="#">back</a>
Identify other regions: Native to Europe or the Mediterranean. Present in nearly every US state (1). Present in southern Africa (2). Present in rangeland of the semi-arid Caldenal region of Argentina (3).	
Rationale:	
Sources of information: 1. USDA, NRCS. 2004. The PLANTS Database, Version 3.5 ( <a href="http://plants.usda.gov">http://plants.usda.gov</a> ). National Plant Data Center, Baton Rouge, LA 70874-4490 USA. 2. Venter, H. J. T. and R. L. Verhoeven. 1990. The Genus <i>Erodium</i> in Southern Africa. South African Journal of Botany 56(1): 79-92. 3. Pelaez et al. 1995	

<b>Question 3.1</b> Ecological amplitude/Range	A Rev'd, Sci. Pub'n <a href="#">back</a>
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: Present in most California counties (1). May have invaded from Baja California before the first California mission was established in 1769; i.e. disturbance by cattle grazing was not responsible for its establishment (2). Present in woodland and grassland (3), and desert dunes (4). Found on roadsides, pastures, fields, grasslands, rangelands, waste places, and other open disturbed sites throughout California to 2000m (5).	
Rationale: enter text here	
Sources of information: 1. USDA 2004 2. Mensing S., and R. Byrne. 1998. Pre-mission Invasion of Erodium cicutarium in California. Journal of Biogeography 25: 757-762 3. Rosiere, R. E. 1987. An Evaluation of Grazing Intensity Influences on California USA Annual Range. Journal of Range Management 40(2): 160-165 4. Brooks 2003 5. DiTomaso and Healy in prep.	
<b>Question 3.2</b> Distribution/Peak frequency	A Observational <a href="#">back</a>
Describe distribution: Very common in valley and foothill grasslands.	
Rationale: enter text here	
Sources of information: DiTomaso, observational.	

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

## Worksheet C - California Ecological Types

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(*sensu* Holland 1986)

Major Ecological Types	Minor Ecological Types	Code*
<b>Marine Systems</b>	marine systems	score
<b>Freshwater and Estuarine Aquatic Systems</b>	lakes, ponds, reservoirs	score
	rivers, streams, canals	score
	estuaries	score
<b>Dunes</b>	coastal	score
	desert	D. present
	interior	score
<b>Scrub and Chaparral</b>	coastal bluff scrub	score
	coastal scrub	score
	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	C. 5-20%
<b>Grasslands, Vernal Pools, Meadows, and other Herb Communities</b>	coastal prairie	B. 21-50%
	valley and foothill grassland	A. >50%
	Great Basin grassland	C. 5-20%
	vernal pool	score
	meadow and seep	score
	alkali playa	score
	pebble plain	score
<b>Bog and Marsh</b>	bog and fen	score
	marsh and swamp	score
<b>Riparian and Bottomland</b>	riparian forest	score
	riparian woodland	score
	riparian scrub (incl. desert washes)	score
<b>Woodland</b>	cismontane woodland	B. 21-50%
	piñon and juniper woodland	score
	Sonoran thorn woodland	score
<b>Forest</b>	broadleaved upland forest	score
	North Coast coniferous forest	score
	closed cone coniferous forest	score
	lower montane coniferous forest	C. 5-20%
	upper montane coniferous forest	score
	subalpine coniferous forest	score
<b>Alpine Habitats</b>	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).