

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

Table 1. Species and Evaluator Information

Species name (Latin binomial):	Pennisetum setaceum (Forssk.) Chiov.
Synonyms:	Pennisetum ruppelii, Phalaris setaceum
Common names:	fountain grass; crimson, African, purple, or tender fountain grass.
Evaluation date (mm/dd/yy):	08/03/04
Evaluator #1 Name/Title:	Cynthia L. Roye, Associate State Park Resource Ecologist
Affiliation:	California State Parks
Phone numbers:	(916) 653-9083
Email address:	croye@parks.ca.gov
Address:	P.O. Box 942896, Sacramento, CA 94296-0001
Evaluator #2 Name/Title:	enter text here
Affiliation:	enter text here
Phone numbers:	enter text here
Email address:	enter text here
Address:	enter text here

Section below for list committee use—please leave blank

List committee members:	Cynthia Roye, Joe DiTomaso, Peter Warner, Alison Stanton, John Randall, Jake Sigg
Committee review date:	8/27/2004
List date:	enter text here
Re-evaluation date(s):	enter text here

General comments on this assessment:

Actual data regarding frequency of occurrence in California plant communities lacking.

Table 2. Criteria, Section, and Overall Scores

1.1	Impact on abiotic ecosystem processes	B	Rev'd, Sci. Pub'n
1.2	Impact on plant community	A	Rev'd, Sci. Pub'n
1.3	Impact on higher trophic levels	B	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:

BABD

Using matrix, determine score and enter below:

B

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

Invasiveness

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

16

Use matrix to determine score and enter below:

B

Plant Score

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

Medium

No Alert

3.1	Ecological amplitude/Range	A	Anecdotal
3.2	Distribution/Peak frequency Wksht C	C	Observational

Distribution

Using matrix, determine score and enter below:

B

Table 3. Documentation

<p>Question 1.1 Impact on abiotic ecosystem processes</p>	<p>B Rev'd, Sci. Pub'n back</p>
<p>Identify ecosystem processes impacted: Increases fuel load and therefore frequency, intensity, and spread of fire.</p>	
<p>Rationale: enter text here</p>	
<p>Sources of information: Lovich IN: Bossard et al., 2000. Invasive Plants of California's Wildlands. Univeresity of California Press. pp 258-262.</p> <p>D'Antonio, C.M. and P.M. Vitousek. 1992. Biological invasions by exotic grasses, the grass/fire cycle, and global change. Annu. Rev. Ecol. Syst. 1992. 23:63-87</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: Fountain grass is well-adapted to fire and can increase in density following a burn. Intense fires result in severe damage to native plant communities that are not as fire-tolerant as fountain grass and may endanger rare communities. In California, contributes to conversion of desert shrub communities to grassland by facilitatiing periodic fires. Recent vegetation releve samples taken in the Santa Monica Mountains discovered P. setaceum dominant in 7 samples, enough to name a Pennisetum setaceum Alliance.</p> <p>Fountain grass seeds prodigiously. In Hawaii it has been shown to have higher net photosynthetic rates and greater biomass allocated to leaves than the native Heteropogon contortus native to the study site. The fountain grass has a higher growth rate and therefore a competitive advantage over the native plants.</p>	
<p>Rationale: enter text here</p>	
<p>Sources of information: Lovich, J.E. IN: Bossard et al. 2000.</p> <p>Loope et al. as excerpted from an article in Stone, C.P., C. W. Smith, and J.T. Tunison. 1992. Alien plant invasions in native ecosystems of Hawaii: management and research. pp.551-576. as accessed on the Internet at: http://www.hear.org/Alien/Species/In/Hawaii/PenSet_1992LoopeetalExcerpt.htm</p> <p>Williams, D.G. and R.A. Black. 1994. Drought response of a native and introduced Hawaiian grass. Functional Ecology 97:512-519.</p> <p>Keeler-Wolf, T. and J. Evens. 2004. Vegetation Samples in Santa Monica Mountains. Unpublished data.</p> <p>CDFa, Encycloweedia as accessed on the internet 5/28/03 at http://pi.cdfa.ca.goc/weedinfo/PENNISET2.html</p>	
<p>Question 1.3 Impact on higher trophic levels</p>	<p>B Other Pub. Mat'l back</p>
<p>Identify type of impact or alteration: Is poor forage for browsing and grazing animals. Can negatively affect ground nesting birds and other terrestrial wildlife when fires occur.</p>	
<p>Rationale: enter text here</p>	
<p>Sources of information: Lovich IN: Bossard et al. 2000. USDA, NRCS. 2004. The PLANTS Database, Version</p>	

3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	
Question 1.4 Impact on genetic integrity	D Other Pub. Mat'l back
Identify impacts: No closely related native plants..	
Rationale: enter text here	
Sources of information: Lovich IN: Bossard et al. 2000.	
Question 2.1 Role of anthropogenic and natural disturbance in establishment	B Observational back
Describe role of disturbance: Most commonly found in areas with anthropogenic or natural disturbance. Found along highways and on steep sea cliff faces in Los Angeles County. Cliff faces are typically unstable and some have been altered by Highway maintenance. In Santa Barbara Co., slowly expanding into natural areas using roadways and railroad right-of-way as pathways. Is found on cut and fill slopes along at least 25 miles of Hwy 8 in San Diego County. Once in an area may establish in undisturbed vegetation. Per Ing, 2004, Can become dominant in grasslands within 2-3 years if no control measures employed. Takes longer to establish in well-developed scrub.	
Rationale: enter text here	
Sources of information: Keeler- Wolf and Evens. 2004. Vegetation releve samples taken in Santa Monica Mountains. Unpublished data. Lovich, J.E. IN: Bossard et al. 2000.; Glick, R. 2003 From observations made in Santa Barbara County. Personal Communication.; Ing, A.R. 2004. From observations made in and near Chino Hills SP, 1997 to present. Personal Communication, July 30, 2004.	
Question 2.2 Local rate of spread with no management	A Other Pub. Mat'l back
Describe rate of spread: In Hawaii plants can grow in basal diameter from 1.1 inch to 12 inches in 5 years. Plant unknown from Chino Hills SP 7 years ago, now taking over CalTrans cut and fill slopes of SR 142 and park grasslands if not controlled.	
Rationale: enter text here	
Sources of information: Lovich, J.E. IN: Bossard et al. 2000.; Ing, A.R. 2004. From observations made in and near Chino Hills SP, 1997 to present. Personal Communication, July 30, 2004.	
Question 2.3 Recent trend in total area infested within state	B Observational back
Describe trend: Is rapidly invading steep W and S facing hillsides in western Santa Monica Mountains. Appears to be increasing rapidly in coastal and desert southern California. Has very wide elevational range in Hawaii. Appears to be limited to areas with less than 50 inches median annual rainfall per Benton.	

Rationale: enter text here	
Sources of information: Benton, N. 1997. Fountain Grass. Alien Plant Working Group. Plant Conservation Alliance as accessed over the Internet 5/29/03 at: http://www.nps.gov/plants/alien/fact/pese1.htm Junak, Steve. 2004. Personal Communication via e-mail with David Chang, 8/2/04. Ing, Alissa R. 2004. Personal Communication via e-mail to Cynthia Roye. 7/30/04. Glick, Ronnie. 2003. Personal communication via telephone conversation. Dice, J. 2004. Personal Communicarion via e-mail to Cynthia Roye, 8/2/04. Observational, List Committee, 8/2004.	
Question 2.4 Innate reproductive potential	A Rev'd, Sci. Pub'n back
Describe key reproductive characteristics: reproduces by fertilized or unfertilized seed, is apomictic, seeds remain viable in soil for at least seven years.	
Rationale: enter text here	
Sources of information: Simpson and Bashaw. 1969. Cytology and reproductive characteristics in Pennisetum setaceum. American Journal of Botany. 56:31-36.	
Question 2.5 Potential for human-caused dispersal	A Other Pub. Mat'l back
Identify dispersal mechanisms: This plant is widely available in the nursery trade and still appears on lists of plants recommended for drought tolerance. It is a popular landscape plant in southern California. It has not been listed as a noxious weed by the California Department of Food and Agriculture. Is spread by vehicles, livestock and humans, especially along transportation from areas where it is used horticulturally.	
Rationale: enter text here	
Sources of information: Bradley, K. 1998. Fountain Grass- a dry region threat. Wildland Weeds 1(4):4-5. Florida Exotic Pest Plant Council.	
Question 2.6 Potential for natural long-distance dispersal	B Other Pub. Mat'l back
Identify dispersal mechanisms: Seed may disperse via wind over short range. Birds and water may disperse.	
Rationale: enter text here	
Sources of information: Lovich, J.E. IN: Bossard et al. 2000.	
Question 2.7 Other regions invaded	C Doc'n level back
Identify other regions: Individuals of fountain grass exhibit phenotypic plasticity for photosynthesis and biomass allocation in response to differences in temperature. On the leeward side of the island of Hawaii these plants	

<p>exhibit a broad ecological tolerance and an extensive altitudinal distribution (near sea level to 2600m). In Hawaii this plant is found in dry forests. In other parts of the world invaded habitats are similar to those already invaded in California.</p>	
<p>Rationale: enter text here</p>	
<p>Sources of information: Williams, D.G. and R.A. Black. 1993. Phenotypic variation in contrasting temperature environments: growth and photosynthesis in Pennisetum setaceum. Functional Ecology 7:623-633.</p>	
<p>Question 3.1 Ecological amplitude/Range</p>	<p>A Observational back</p>
<p>Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: Date of introduction to California unknown but a specimen from 1906 from the Brandegee Garden in San Diego is housed at the University of California Herbarium. In 2004 the plant is known from Coastal Bluff Scrub, Coastal Scrub, Sonoran Desert Scrub, Desert Riparian, Desert Wash, grasslands, chaparral, along roadsides and trails in coast and desert areas.</p>	
<p>Rationale: Is known in California from three major types, seven minor types</p>	
<p>Sources of information: SMASCH database accessed 8/10/04 from the Internet at: http://www.mip.berkeley.edu:8080/servlet/SmaschAccessionDetail?accession_id=UC132260 enter text here Junak, Steve. 2004. Personal Communication via e-mail with Davcid Chang, 8/2/04. Ing, Alissa R. 2004. Personal Communication via e-mail to Cynthia Roye. 7/30/04. Glick, Ronnie. 2003. Personal communication via telephone conversation. Dice, J. 2004. Personal Communication via e-mail to Cynthia Roye, 8/2/04. Keeler-Wolf and Evens. 2004. Vegetation samples in the Santa Monica Mountains. Unpublished data. Observational, List Committee 8/2004.</p>	
<p>Question 3.2 Distribution/Peak frequency</p>	<p>C Observational back</p>
<p>Describe distribution: Known from coastal and desert in southern California. Has been reported from 10 California State Park units.</p>	
<p>Rationale: enter text here</p>	
<p>Sources of information: Lack hard information regarding current distribution. D is best estimate currently available until Committee members provide input. SMASCH database accessed 8/10/04 from the Internet at: http://www.mip.berkeley.edu:8080/servlet/SmaschAccessionDetail?accession_id=UC132260 enter text here Junak, Steve. 2004. Personal Communication via e-mail with Davcid Chang, 8/2/04. Ing, Alissa R. 2004. Personal Communication via e-mail to Cynthia Roye. 7/30/04.</p>	

Glick, Ronnie. 2003. Personal communication via telephone conversation.
 Dice, J. 2004. Personal Communication via e-mail to Cynthia Roye, 8/2/04.
 Keeler-Wolf and Evens. 2004. Vegetation samples in the Santa Monica Mountains. Unpublished data.
 Observational, List Committee 8/2004.

Worksheet A

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Reaches reproductive maturity in 2 years or less	Yes: 1 pt
Dense infestations produce >1,000 viable seed per square meter	Unknown: 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	Yes: 1 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	Yes: 1 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
	7 pts 1 unknown
	A (6+ pts)

Note any related traits: May reproduce from fertilized or unfertilized seed. Is apomictic. Cultivated by seed but also spreads rapidly, resprouts following cutting or fire. Some cultivars reported to be sterile. Fertility may increase when pollinated by species pollen.

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	C. 5-20%
	desert	score
	interior	score
Scrub and Chaparral	coastal bluff scrub	D. presen
	coastal scrub	C. 5-20%
	Sonoran desert scrub	D. presen
	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	D. presen
	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	score
	riparian scrub (incl. desert washes)	D. presen
Woodland	cismontane woodland	score
	piñon and juniper woodland	score
	Sonoran thorn woodland	score
Forest	broadleaved upland forest	score
	North Coast coniferous forest	score
	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).