

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):	Vulpia myuros (L.)
Synonyms:	
Common names:	rat-tail fescue, red-tailed fescue, sixweeksgrass, zorro annual fescue
Evaluation date (mm/dd/yy):	2/10/05
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Section below for list committee use—please leave blank

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

General comments on this assessment:

Much more common than *Vulpia bromoides*.

Table 2. Criteria, Section, and Overall Scores

1.1	Impact on abiotic ecosystem processes	B	Observational
1.2	Impact on plant community	B	Rev'd, Sci. Pub'n
1.3	Impact on higher trophic levels	B	Rev'd, Sci. Pub'n
1.4	Impact on genetic integrity	C	Rev'd, Sci. Pub'n

Impact

Enter four characters from Q1.1-1.4 below:

BBBC

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	C (1 pt)	Observational
2.3	Recent trend in total area infested within state	C (1 pt)	Observational
2.4	Innate reproductive potential Wksht A	B (2 pts)	Rev'd, Sci. Pub'n
2.5	Potential for human-caused dispersal	B (2 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)	Other Pub. Mat'l

Invasiveness

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

11

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	Other Pub. Mat'l
3.2	Distribution/Peak frequency Wksht C	A	Observational

Distribution

Using matrix, determine score and enter below:

A

Table 3. Documentation

Question 1.1 Impact on abiotic ecosystem processes	B Observational back
Identify ecosystem processes impacted: Replacement of native perennial grasses with annuals such as <i>Vulpia</i> has increased the fire frequency.	
Rationale: enter text here	
Sources of information: DiTomaso, observational	
Question 1.2 Impact on plant community composition, structure, and interactions	B Rev'd, Sci. Pub'n back
Identify type of impact or alteration: One of the many annual grasses that replaced perennial grasses in California (1). Contains 20 allelopathic chemicals that inhibit other plants (2). Population densities can be transient depending on the climate or disturbance. Populations increase following disturbance.	
Rationale: Amixture of non-native grasses, including <i>V. myuros</i> , reduced seed output of the native perennial <i>Nassella pulchra</i> . This result was attributed to annuals outcompeting <i>Nassella</i> for water (3). In another California study, perennial grass seedling survival and above-ground biomass decreased and individuals became thinner (i.e., reduced weight-to-height ratio) with increasing <i>V. myuros</i> seeding density. <i>V. myuros</i> also significantly suppressed above-ground biomass and densities of weeds and had a more negative effect on weed densities than on native perennial grass densities (4).	
Sources of information: 1. DiTomaso, J., and E. Healy. in prep. Weeds of California and Other Western States 2. An, M., J. E. Pratley, T. Haig. 2001. Phytotoxicity of vulpia residues: III. Biological activity of identified allelochemicals from <i>Vulpia myuros</i> . <i>Journal of Chemical Ecology</i> 27(2): 383-394 3. Hamilton, J. G., C. Holzapfel, and B. E. Mahall. 1999. Coexistence and interference between a native perennial grass and non-native annual grasses in California. <i>Oecologia</i> 121(4): 518-526. 4. Brown, C. S. and K. J. Rice (2000). The mark of zorro: Effects of the exotic annual grass <i>Vulpia myuros</i> on California native perennial grasses. <i>Restoration Ecology</i> 8(1): 10-17.	
Question 1.3 Impact on higher trophic levels	B Rev'd, Sci. Pub'n back
Identify type of impact or alteration: Barbed seed injure the mouths, eyes, and hide of grazing animals (1).	
Rationale: enter text here	
Sources of information: 1. Code, G. R. 1996. Why vulpia is a problem in Australian agriculture. <i>Plant Protection Quarterly</i> 11(SUPPL. 1): 202-204.	
Question 1.4 Impact on genetic integrity	C Rev'd, Sci. Pub'n back
Identify impacts: There is potential for hybridization with native <i>Vulpia</i> or <i>Festuca</i> spp.	
Rationale: There are two native <i>Vulpia</i> and twelve <i>Festuca</i> in California (1). Natural hybrid have been recorded	

between <i>V. myuros</i> and <i>F. rubra</i> (native to CA) and <i>F. nigrescens</i> (not in CA) in England (2).	
Sources of information: 1. Hickman, J. C. (ed.) 1993. The Jepson Manual, Higher Plants of California. University of California Press. Berkeley, CA 2. Ainscough, M. M., C. M. Barker, and C. A. Stace. 1986. Natural hybrids between <i>Festuca</i> and species of <i>Vulpia</i> section <i>Vulpia</i> . <i>Watsonia</i> 16(2): 143-152.	
Question 2.1 Role of anthropogenic and natural disturbance in establishment	B Other Pub. Mat'l back
Describe role of disturbance: Present in both disturbed and undisturbed open areas, but prefers a disturbed site.	
Rationale: enter text here	
Sources of information: 1. DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488	
Question 2.2 Local rate of spread with no management	C Observational back
Describe rate of spread: Populations fluctuate with season and disturbance. Overall it appears to be static.	
Rationale: enter text here	
Sources of information: DiTomaso, observational.	
Question 2.3 Recent trend in total area infested within state	C Observational back
Describe trend: Such a common annual grass that it is static in state.	
Rationale: enter text here	
Sources of information: DiTomaso, observational.	
Question 2.4 Innate reproductive potential	B Rev'd, Sci. Pub'n back
Describe key reproductive characteristics: Cool season annual. Reproduces by seed. Seeds require an afterripening period of about 2-3 months and can then germinate whenever conditions become favorable. In California, most germination occurs in fall and early winter after the first significant rain of the season. Usually self-pollinated (1). Can produce prolific seeds and large seed banks (2). Seeds production has been recorded at 265, 000 seeds/square m, with 4800 seedlings emerged (3).	
Rationale: enter text here	
Sources of information: 1. DiTomaso, J., and E. Healy. in prep. Weeds of California and Other Western States 2. Code, G. R. 1996. Why vulpia is a problem in Australian agriculture. <i>Plant Protection Quarterly</i> 11(SUPPL.	

1): 202-204.	
3. Dowling, P. M. 1996. The ecology of vulpia. Plant Protection Quarterly 11(SUPPL. 1): 204-206.	
Question 2.5 Potential for human-caused dispersal	B Other Pub. Mat'l back
Identify dispersal mechanisms: Can disperse with human activities.	
Rationale: enter text here	
Sources of information: 1. DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488	
Question 2.6 Potential for natural long-distance dispersal	B Other Pub. Mat'l back
Identify dispersal mechanisms: Can be dispersed by animals.	
Rationale: enter text here	
Sources of information: 1. DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488	
Question 2.7 Other regions invaded	C Other Pub. Mat'l back
Identify other regions: Nearly worldwide. Present in most contiguous states, including all western states except Wyoming and Colorado, and a few central states (1). A problem in Australia (2).	
Rationale: Scoring as C because already widespread in California.	
Sources of information: 1. DiTomaso and Healy in prep	
2. Code, G. R. 1996. Why vulpia is a problem in Australian agriculture. Plant Protection Quarterly 11(SUPPL. 1): 202-204.	
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: Throughout California, except possibly the Great Basin region, to 2000m. Present in disturbed and undisturbed open areas, including dry and seasonally wet sites, roadsides, rangeland, grassland, slopes, washes. In open areas in many plant communities, including chaparral and open woodland. Tolerates drought, some shade, very poor sandy soil, and acidic soil.	
Rationale:	
Sources of information: 1. DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488	

Question 3.2 Distribution/Peak frequency

A Observational [back](#)

Describe distribution: Annual grass very common to valley and foothill grasslands. Probably found in nearly every one.

Rationale: enter text here

Sources of information: DiTomaso, observational
Joanna Clines, US Forest Service, observational

Worksheet A[back](#)

Reaches reproductive maturity in 2 years or less	Yes: 1 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	No: 0 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	No: 0 pt
	5 pts Total Unknowns
	B (4-5 pts)
Note any related traits: enter text here	

Worksheet C - California Ecological Types

[back](#)

(*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	score
	Sonoran desert scrub	score
	Mojavean desert scrub (incl. Joshua tree woodland)	score
	Great Basin scrub	C. 5-20%
	chenopod scrub	score
	montane dwarf scrub	score
	Upper Sonoran subshrub scrub	score
	chaparral	B. 21-50%
Grasslands, Vernal Pools, Meadows, and other Herb Communities	coastal prairie	B. 21-50%
	valley and foothill grassland	A. >50%
	Great Basin grassland	score
	vernal pool	C. 5-20%
	meadow and seep	D. present
	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. present
	riparian scrub (incl. desert washes)	D. present
Woodland	cismontane woodland	B. 21-50%
	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	C. 5-20%
	upper montane coniferous forest	D. present
	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).