# 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

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|---|---|
| **Species name** (Latin binomial)**:** | Vulpia bromoides (L.) |
| **Synonyms:** | Festuca bromoides, Vulpia dertonensis |
| **Common names:** | squirrel tail fescue, brome fescue, |
| **Evaluation date** (mm/dd/yy)**:** | 2/10/05 |
| **Evaluator #1 Name/Title:** | Elizabeth Brusati, project manager |
| **Affiliation:** | California Invasive Plant Council |
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| **Address:** | 1442A Walnut St. #462, Berkeley, CA 94709 |
| **Evaluator #2 Name/Title:** | Joseph DiTomaso |
| **Affiliation:** | University of California-Davis |
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| **Email address:** | jmditomaso@ucdavis.edu |
| **Address:** | Dept. Plant Sci., Mail Stop 4, Davis, CA 95616 |

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:** | 7/805 |
| **List date:** | enter text here |
| **Re-evaluation date(s):** | enter text here |

**General comments on this assessment:**
Much less common than Vulpia myuros.

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

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

**Impact**

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

**CCBC**

*Using matrix, determine score and enter below:*

**C**

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

**10**

*Use matrix to determine score and enter below:*

**C**

| | | | |
|---|---|---|---|
| 3.1 | Ecological amplitude/Range | A | Other Pub. Mat'l |
| 3.2 | Distribution/Peak frequency Wksht C | C | Observational |

**Distribution**

*Using matrix, determine score and enter below:*

**B**

**Plant Score**

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

**Low**

**No Alert**

## Table 3. Documentation

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| **Question 1.1** Impact on abiotic ecosystem processes C Observational back |
| Identify ecosystem processes impacted: Similar to other annual grasses, replacement of perennial grasses can increase fire frequency. However, it does not often form a large infestation and thus its impact is probably very small. |
| Rationale: enter text here |
| Sources of information: DiTomaso, observational. |
| **Question 1.2** Impact on plant community composition, structure, and interactions C Other Pub. Mat'l back |
| Identify type of impact or alteration: One of the many annual grasses that replaced perennial grasses in California (1). |
| Rationale: V. bromoides is similar to the more common V. myuros (1). Amixture of non-native grasses, including V. myuros, reduced seed output of the native perennial Nassella pulchra. This result was attributed to annuals outcompeting Nassella for water (2). 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 V. myuros seeding density. V. myuros 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 (3). |
| Sources of information: 1. DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488<br>2. 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. Oecologia 121(4): 518-526.<br>3. Brown, C. S. and K. J. Rice (2000). The mark of zorro: Effects of the exotic annual grass Vulpia myuros on California native perennial grasses. Restoration Ecology 8(1): 10-17. |
| **Question 1.3** Impact on higher trophic levels B Other Pub. Mat'l back |
| Identify type of impact or alteration: Barbed seeds 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. Plant Protection Quarterly 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 Vulpia or Festuca spp. |
| Rationale: There are two native Vulpia and twelve Festuca in California (1). Natural hybrids have been recorded between V. bromoides and F. rubra (native to CA) and F. nigrescens (not in CA) in Europe (2). |

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| Sources of information: 1. Hickman, J. C. (ed.) 1993. The Jepson Manual, Higher Plants of California. University of California Press. Berkeley, CA<br><br>2. Ainscough, M. M., C. M. Barker, and C. A. Stace. 1986. Natural hybrids between Festuca and species of Vulpia section Vulpia. Watsonia 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 is more common in disturbed sites. |
| 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 Other Pub. Mat'l back |
| Describe rate of spread: Not a rapid spreading plant. Populations fluctuate with disturbance and appear to be static overall. |
| Rationale: enter text here |
| Sources of information: 1. DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488 |
| **Question 2.3** Recent trend in total area infested within state C Other Pub. Mat'l back |
| Describe trend: Already present throughout much of California. |
| Rationale: enter text here |
| Sources of information: DiTomaso and Healy in prep. |
| **Question 2.4** Innate reproductive potential B Rev'd, Sci. Pub'n back |
| Describe key reproductive characteristics: The reproductive biology of squirreltail fescue appears to be similar to that of rattail fescue. 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: A or B |

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| Sources of information: 1. DiTomaso, J., and E. Healy. in prep. Weeds of California and Other Western States<br>2. Code, G. R. 1996. Why vulpia is a problem in Australian agriculture. Plant Protection Quarterly 11(SUPPL. 1): 202-204.<br>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 C Other Pub. Mat'l back |
| Identify dispersal mechanisms: Can disperse with human activities, most probably in hay or by moving cattle or livestock. |
| 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 C 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 Rev'd, Sci. Pub'n back |
| Identify other regions: Also occurs in Oregon, Washington, Idaho, Utah, Nevada, Arizona, most southern states, and many eastern states (1). A noxious weed in Australia (2). |
| Rationale: Already widespread in California, so scoring as C. |
| Sources of information: 1. DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488<br>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 deserts and Great Basin region, to 1500m. Squirreltail fescue inhabits roadsides, fields, and dry or seasonally wet sites in grassland, chaparral, coastal sage scrub, and open woodland throughout California, except the deserts and Great Basin region. |
| Rationale: DiTomaso and Healy. in prep. |
| Sources of information: enter text here |

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| **Question 3.2** Distribution/Peak frequency D Observational back |
| Describe distribution: Not nearly as common as Vulpia myuros. |
| Rationale: enter text here |
| Sources of information: DiTomaso, 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 *both* 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 | **No: 0 pt** |

| | |
|---|---|
| **4 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 | **D. presen** |
| | 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) | **score** |
| **Woodland** | cismontane woodland | **D. presen** |
| | 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).