

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):	Hordeum marinum and H. murinum
Synonyms:	H. marinum: Critesion geniculatum, C. hystrix, C. marinum, H. geniculatum, H. gussoneanum. H. hystrix, H. stebbinsii H. murinum: C. murinum, H. leporinum
Common names:	H. marinum: Mediterranean barely H. murinum: hare barley, barleygrass, foxtail, leporinum barley, mouse barley, wild barley
Evaluation date (mm/dd/yy):	2/8/05
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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:

enter text here

Table 2. Criteria, Section, and Overall Scores

1.1	Impact on abiotic ecosystem processes	U	No Information
1.2	Impact on plant community	B	Rev'd, Sci. Pub'n
1.3	Impact on higher trophic levels	C	Other Pub. Mat'l
1.4	Impact on genetic integrity	D	Rev'd, Sci. Pub'n

<p>Impact</p> <p><i>Enter four characters from Q1.1-1.4 below:</i></p> <p>UBCD</p> <p><i>Using matrix, determine score and enter below:</i></p> <p>B</p>

2.1	Role of anthropogenic and natural disturbance	B (2 pts)	Rev'd, Sci. Pub'n
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

<p>Invasiveness</p> <p><i>Enter the sum total of all points for Q2.1-2.7 below:</i></p> <p>11</p> <p><i>Use matrix to determine score and enter below:</i></p> <p>B</p>
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<p>Plant Score</p> <p><i>Using matrix, determine Overall Score and Alert Status from the three section scores and enter below:</i></p> <p>Medium</p> <p>No Alert</p>

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

<p>Distribution</p> <p><i>Using matrix, determine score and enter below:</i></p> <p>A</p>

Table 3. Documentation

Question 1.1 Impact on abiotic ecosystem processes	C Observational back
Identify ecosystem processes impacted: Like many other annual grasses, they could increase fire frequency. They typically do not get to densities high enough to do this, however.	
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: Outcompetes perennial grasses, for example, by tolerating higher salinity and invading bare areas when perennials die.	
Rationale: enter text here	
Sources of information: 1. Popay, A. I. and P. Sanders 1982. "Seasonal variations in salinity of soils supporting different levels of barley grass <i>Hordeum murinum</i> . New Zealand Journal of Agricultural Research 25(2): 223-228.	
Question 1.3 Impact on higher trophic levels	C Other Pub. Mat'l back
Identify type of impact or alteration: Livestock forage early in season. Later in season, develop flower spikelets with stiff, barbed awns that injure mouths, eyes, nasal passages, and skin of animals (1). No specific information on damage to wildlife. Probably good forage early on.	
Rationale: enter text here	
Sources of information: DiTomaso, J. and E. Healy. Weeds of California and Other Western States.	
Question 1.4 Impact on genetic integrity	D Rev'd, Sci. Pub'n back
Identify impacts: There are five species of native <i>Hordeum</i> in California, along with several subspecies (1). Field and greenhouse experiments found no hybridization, nor were there any hybrids of <i>H. murinum</i> in contact zones with cultivated barley. There appear to be genetic barriers against hybridization (2).	
Rationale: enter text here	
Sources of information: 1. Hickman, J. C. (ed.) 1993. The Jepson Manual, Higher Plants of California. University of California Press. Berkeley, CA	
2. Savova Bianchi, D., J. Keller Senften, and F. Felber. 2002. Isozyme variation of <i>Hordeum murinum</i> in Switzerland and test of hybridization with cultivated barley. Weed Research 42(4): 325-333.	

Question 2.1 Role of anthropogenic and natural disturbance in establishment	B Rev'd, Sci. Pub'n back
Describe role of disturbance: Inhabit mostly disturbed sites (1). <i>H. murinum</i> was restricted by competition with other grasses to disturbed sites in New Zealand (2), whereas <i>H. marinum</i> ssp. <i>gussoneanum</i> can also invade the edges of vernal pools and relatively undisturbed grassland in California (2).	
Rationale: enter text here	
Sources of information: 1. DiTomaso, J. and E. Healy. in prep. Weeds of California and Other Western States. 2. Popay, A. I. and P. Sanders. 1982. Seasonal variations in salinity of soils supporting different levels of barley grass <i>Hordeum murinum</i> . New Zealand Journal of Agricultural Research 25(2): 223-228. 3. Hoopes, M. F. and L. M. Hall 2002. Edaphic factors and competition affect pattern formation and invasion in a California grassland. Ecological Applications 12(1): 24-39.	
Question 2.2 Local rate of spread with no management	C Observational back
Describe rate of spread: Depends on conditions of grasslands. Under healthy conditions, the rate of spread is slow. Degraded grasslands, in contrast, can be heavily invaded. Rarely are the wild barleys the dominant vegetation in a grassland.	
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: Species have been around for a long time and seem to be widely distributed, such that their continued spread is probably static.	
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 grasses that reproduce by seed. Seeds usually germinate after the first fall rain (1). Few seeds survive to germinate in winter and spring. Very few seeds are likely to be present after a year (2).	
Rationale: enter text here	
Sources of information: 1. DiTomaso and Healy 2. Popay, A. I. 1981. Germination of seeds of five annual species of barley grass. Journal of Applied Ecology 18(2): 547-558.	

Question 2.5 Potential for human-caused dispersal	B Other Pub. Mat'l back
Identify dispersal mechanisms: May be spread when spikelets attach to tires, farm equipment, shoes, or clothing (1). Can also be a contaminant of hay.	
Rationale: enter text here	
Sources of information: 1. DiTomaso and Healy in prep	
Question 2.6 Potential for natural long-distance dispersal	B Other Pub. Mat'l back
Identify dispersal mechanisms: Spikelets fall near parent plant and may disperse to greater distances by wind or by attaching to fur and feathers of animals (1).	
Rationale: enter text here	
Sources of information: 1. DiTomaso and Healy in prep	
Question 2.7 Other regions invaded	C Other Pub. Mat'l back
Identify other regions: Native to Europe. Present in Oregon, Washington, Idaho, Montana, Nevada, Utah, Arizona, Oklahoma. Mediterranean barley also in some northeastern states. Hare barley also in some eastern states (1). <i>H. murinum</i> common in New Zealand (2). In Arizona, <i>H. murinum</i> inhabits <i>Prosopis</i> woodland (3).	
Rationale:	
Sources of information: 1. DiTomaso and Healy in prep 2. Popay, A. I. 1981. Germination of seeds of five annual species of barley grass. <i>Journal of Applied Ecology</i> 18(2): 547-558 3. Stromberg, J. C., L. Gengarelly, et al. 1997. Exotic herbaceous species in Arizona's riparian ecosystems. pp. 45-57 in Brock, J. H. , Wade, M., Pysek, P., Green, D. [Editors]. <i>Plant invasions: Studies from North America and Europe</i> . Backhuys Publishers, Leiden, The Netherlands..	
Question 3.1 Ecological amplitude/Range	B Other Pub. Mat'l back
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: Probably introduced to California with Spanish colonists and spread with cattle grazing in the 1800's (1). Both species occur throughout California, except mountains. Mediterranean barley to 1500m; hare barley to 1000m Both species inhabit roadsides, fields, annual grassland, oak savannah, open hillsides, agronomic crops, waste places and other disturbed sites. Mediterranean barley grows in moist or dry places. Hare barley grows in moist sites (1). <i>H. marinum</i> ssp. <i>gussoneanum</i> can also invade the edges of vernal pools and relatively undisturbed sites (2).	
Rationale: 1. DiTomaso and Healy in prep	

2. Hoopes and Hall 2002 Alison Stanton, BMP Ecosciences, and Joanna Clines, US Forest Service, pers. obs.	
Sources of information: enter text here	
Question 3.2 Distribution/Peak frequency	A. Observational back
Describe distribution: Very frequently encountered in Valley and foothill grasslands.	
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 <i>both</i> self-pollination and cross-pollination	Unknown: 0 pts
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 1 unknown
	B (4-5 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	C. 5-20%
	coastal scrub	C. 5-20%
	Sonoran desert scrub	score
	Mojavean desert scrub (incl. Joshua tree woodland)	score
	Great Basin scrub	D. presen
	chenopod scrub	score
	montane dwarf scrub	score
	Upper Sonoran subshrub scrub	score
	chaparral	C. 5-20%
Grasslands, Vernal Pools, Meadows, and other Herb Communities	coastal prairie	C. 5-20%
	valley and foothill grassland	A. >50%
	Great Basin grassland	score
	vernal pool	D. presen
	meadow and seep	D. presen
	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	A. >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	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).