

# 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**

<b>Species name</b> (Latin binomial):	Verbascum thapsus
<b>Synonyms:</b>	enter text here
<b>Common names:</b>	common mullein, wooly mullein, lungwort, feltwort, torches, Jacob's staff, velvetplant, old man's flannel, miner's candle
<b>Evaluation date</b> (mm/dd/yy):	July 26, 2004
<b>Evaluator #1 Name/Title:</b>	Carri Pirosko
<b>Affiliation:</b>	California Department of Food and Agriculture, Noxious Weed Program
<b>Phone numbers:</b>	(530) 545-9119
<b>Email address:</b>	cpirosko@cdfa.ca.gov
<b>Address:</b>	20235 Charlanne Drive, Redding, CA 96002
<b>Evaluator #2 Name/Title:</b>	Joseph M. DiTomaso
<b>Affiliation:</b>	University of California
<b>Phone numbers:</b>	530-754-8715
<b>Email address:</b>	ditomaso@vegmail.ucdavis.edu
<b>Address:</b>	Weed Science Program, Robbins Hall, Davis, CA 95616

Section below for list committee use—please leave blank

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

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

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

**Impact**

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

**DCUD**

*Using matrix, determine score and enter below:*

**C**

<a href="#">2.1</a>	Role of anthropogenic and natural disturbance	<b>B (2 pts)</b>	Rev'd, Sci. Pub'n
<a href="#">2.2</a>	Local rate of spread with no management	<b>B (2 pts)</b>	Rev'd, Sci. Pub'n
<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>A (3 pts)</b>	Rev'd, Sci. Pub'n
<a href="#">2.5</a>	Potential for human-caused dispersal	<b>B (2 pts)</b>	Rev'd, Sci. Pub'n
<a href="#">2.6</a>	Potential for natural long-distance dispersal	<b>C (1 pt)</b>	Rev'd, Sci. Pub'n
<a href="#">2.7</a>	Other regions invaded	<b>C (1 pt)</b>	Rev'd, Sci. Pub'n

**Invasiveness**

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

**12**

*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:*

**Low  
No Alert**

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

**Distribution**

*Using matrix, determine score and enter below:*

**B**

**Table 3. Documentation**

<p><b>Question 1.1</b> Impact on abiotic ecosystem processes</p>	<p>D Rev'd, Sci. Pub'n <a href="#">back</a></p>
<p>Identify ecosystem processes impacted: Not much in literature about abiotic impacts, only post-fire references found, but even those impacts were short-term, see reference below.</p>	
<p>Rationale: Appears to temporarily disrupt the normal sequence of ecological succession in post-forest-fire situations: Has been observed to rapidly establish following forest fires in the western Sierra Nevada; high densities of rosettes appear to prevent reinvasion of native herbs and grasses in burned areas- but this is only transient and it eventually gives away to shrub canopy.</p>	
<p>Sources of information: Bossard, C.C., J.M. Randall, and M.C. Hoshovsky, 2000. Invasive Plants of California's Wildlands, University of California Press.</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: Usually only a problem in sparsely vegetated/bare ground areas; one reference to invading undisturbed area (meadow).</p>	
<p>Rationale: Common mullein is not often a significant weed of most wildlands and natural areas, as it is easily crowded out by grasses or other competing vegetation.</p> <p>It is a problem in sparsely vegetated soils of the eastern Sierra Nevada</p> <p>Has invaded pristine meadows with undisturbed soils, displacing native herbs and grasses, in Mono Lake and Owens Valley.</p> <p>Has been observed to rapidly establish following forest fires in the western Sierra Nevada; high densities of rosettes appear to prevent reinvasion of native herbs and grasses in burned areas- but eventually give away to shrub canopy.</p> <p>Since mullein forms very dense populations after fire, due to the poor dispersal of seeds from the parent plant, its presence may hinder the establishment of other species and thus the future development of the community.</p> <p>Thought to serve as host for insects that are themselves economic pests, such as mullein leaf bug, a pest of apples and pears- crops species, no references to impacts to native plant species.</p>	
<p>Sources of information: Bossard, C.C., J.M. Randall, and M.C. Hoshovsky, 2000. Invasive Plants of California's Wildlands, University of California Press; Gobbi, M., J. Puntieri, and S. Calvelo, 1995. Post Fire Recovery and Invasion by Alien Plant Species in a south American Woodland-Steppe Ecotone. Plant Invasions- General Aspects and Special Problems, pp. 105-115, Academic Publishing, Amsterdam, The Netherlands.</p>	
<p><b>Question 1.3</b> Impact on higher trophic levels</p>	<p>U No Information <a href="#">back</a></p>
<p>Identify type of impact or alteration: No impacts to higher trophic levels noted in literature (Other than references to mullein serving as a host for insects harmful to crops- but crops are not considered higher trophic levels).</p>	
<p>Rationale:</p>	

Sources of information:	
<b>Question 1.4</b> Impact on genetic integrity	D Rev'd, Sci. Pub'n <a href="#">back</a>
Identify impacts: No references in literature to impacts on genetic integrity and no native Verbascum species in California.	
Rationale: enter text here	
Sources of information: enter text here	
<b>Question 2.1</b> Role of anthropogenic and natural disturbance in establishment	B Rev'd, Sci. Pub'n <a href="#">back</a>
Describe role of disturbance: Mullein is highly associated with disturbance, only one cited reference to invasion into a pristine meadow, see reference below.	
Rationale: Mullein is most commonly found as an early colonizer of abandoned fields or along field edges, or roadsides  One of the first species to invade roadsides that have been treated with soil-active herbicides  Has invaded pristine meadows with undisturbed soils, displacing native herbs and grasses, in Mono Lake and Owens Valley.	
Sources of information: Mitich, L.W., 1989. Intriguing World of Weeds, Common Mullein- the roadside torch parade. Weed Technology Vol. 3:704-705. Bossard, C.C., J.M. Randall, and M.C. Hoshovsky, 2000. Invasive Plants of California's Wildlands, University of California Press.	
<b>Question 2.2</b> Local rate of spread with no management	B Rev'd, Sci. Pub'n <a href="#">back</a>
Describe rate of spread: Rate of spread is rather slow, as most seed do not move far from parent plant; increases, but less rapidly to stable.	
Rationale: Seed dispersal is passive and generally limited to ca. 4 meters	
Sources of information: Bossard, C.C., J.M. Randall, and M.C. Hoshovsky, 2000. Invasive Plants of California's Wildlands, University of California Press.	
<b>Question 2.3</b> Recent trend in total area infested within state	C Observational <a href="#">back</a>
Describe trend: Personal observation, have seen more and more along roadsides, roadside pull-outs, and abandoned areas in the northeast part of the state. However, it is an early colonizer, often replace by something else- over time, except in bare ground areas.  Increasing in some areas, but in general probably stable statewide.	
Rationale: Mullein is most commonly found as an early colonizer of abandoned fields or along field edges, or	

<p>roadsides</p> <p>One of the first species to invade roadsides that have been treated with soil-active herbicides</p> <p>Movement of soil for highway and building construction assists in dispersal; as well as gardening</p>	
<p>Sources of information: Mitich, L.W., 1989. Intriguing World of Weeds, Common Mullein- the roadside torch parade. Weed Technology Vol. 3:704-705.</p> <p>Personal observation in NE California, C. Pirosko, also J.M. DiTomaso</p>	
<p><b>Question 2.4</b> Innate reproductive potential</p>	<p>A Rev'd, Sci. Pub'n <a href="#">back</a></p>
<p>Describe key reproductive characteristics: reproduces by seed only, prolific seed producer!</p>	
<p>Rationale: Field studies show that a single plant produces 200-300 capsules with 500-800 seeds per capsule; thus seed production can be 100,000 - 240,000 seeds per plant.</p> <p>See notes with Worksheet A</p>	
<p>Sources of information: Bossard, C.C., J.M. Randall, and M.C. Hoshovsky, 2000. Invasive Plants of California's Wildlands, University of California Press.</p>	
<p><b>Question 2.5</b> Potential for human-caused dispersal</p>	<p>B Rev'd, Sci. Pub'n <a href="#">back</a></p>
<p>Identify dispersal mechanisms: There are numerous opportunities for dispersal to new areas, through constant and widespread roadside construction, but not really into wildland areas. The vast majority of seed do not disperse long distances.</p>	
<p>Rationale: Movement of soil for highway and building construction assists in dispersal</p>	
<p>Sources of information: Mitich, L.W., 1989. Intriguing World of Weeds, Common Mullein- the roadside torch parade. Weed Technology Vol. 3:704-705. Bossard, C.C., J.M. Randall, and M.C. Hoshovsky, 2000. Invasive Plants of California's Wildlands, University of California Press.</p>	
<p><b>Question 2.6</b> Potential for natural long-distance dispersal</p>	<p>C Rev'd, Sci. Pub'n <a href="#">back</a></p>
<p>Identify dispersal mechanisms: Very little potential for natural long-distance dispersal, seed on animals is always a possibility though.</p>	
<p>Rationale: Seeds have no specialized structures for long-distance dispersal by wind or animals</p> <p>Seed dispersal is passive and generally limited to ca. 4 meters</p>	
<p>Sources of information: Bossard, C.C., J.M. Randall, and M.C. Hoshovsky, 2000. Invasive Plants of California's Wildlands, University of California Press.</p>	

<b>Question 2.7</b> Other regions invaded	C Rev'd, Sci. Pub'n <a href="#">back</a>
<p>Identify other regions: Found in all 48 contiguous states and in Hawaii, in Canada it is reported to grow abundantly in soils with a pH range 6.5-7.8 and is found from sea level to 8,000 feet elevation</p> <p>Found throughout the U.S. and in southern Canada, in the British Isles, and throughout Europe, as far north as Norway and as far east as the Western Himalayas</p> <p>Naturalized through N. America, Chile, Hawaii, Australia, and New Zealand</p>	
<p>Rationale: Mullein has already invaded habitat types in California, similar to elsewhere across the globe</p>	
<p>Sources of information: Mitich, L.W., 1989. Intriguing World of Weeds, Common Mullein- the roadside torch parade. Weed Technology Vol. 3:704-705. Bossard, C.C., J.M. Randall, and M.C. Hoshovsky, 2000. Invasive Plants of California's Wildlands, University of California Press.</p>	
<b>Question 3.1</b> Ecological amplitude/Range	A Rev'd, Sci. Pub'n <a href="#">back</a>
<p>Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: enter text here</p>	
<p>Rationale: Occurs throughout California, but is particularly abundant in dry valleys on the eastern side of the Sierra Nevada. High population densities have been observed in moist meadows and creek drainages near Mono Lake and Owens Valley. It prefers disturbed habitats with little other vegetation, especially on dry, gravelly soils.</p> <p>Common along roadsides, right-of-ways, and river banks and in forest cuts, meadows, pastures, and waste areas.</p> <p>Disturbed, open sites: roadsides, abandoned fields, abandoned homesteads, industrial sites</p> <p>Riparian corridors, shrublands, juniper woodlands, scrub oak savannahs, California sagebrush associations</p>	
<p>Sources of information: Bossard, C.C., J.M. Randall, and M.C. Hoshovsky, 2000. Invasive Plants of California's Wildlands, University of California Press.</p>	
<b>Question 3.2</b> Distribution/Peak frequency	C Rev'd, Sci. Pub'n <a href="#">back</a>
<p>Describe distribution: See references in 3.1 and Worksheet C</p>	
<p>Rationale: See references in 3.1 and Worksheet C</p>	
<p>Sources of information: enter text here</p>	

**Worksheet A**

[back](#)

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>Yes: 1 pt</b>
Seeds remain viable in soil for three or more years	<b>Yes: 2 pts</b>
Viable seed produced with <i>both</i> self-pollination and cross-pollination	<b>Yes: 1 pt</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>8 pts      Total Unknowns</b>
	<b>A (6+ pts)</b>

**Note any related traits:** A population usually has both first year rosettes and 2<sup>nd</sup> year bolting plants, thus populations seed every year; seed can have a long dormancy, requiring light and enhanced by cold temps, can retain high levels of viability for at least 17 years

## Worksheet C - California Ecological Types

[back](#)

(*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	score
	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	score
<b>Grasslands, Vernal Pools, Meadows, and other Herb Communities</b>	coastal prairie	D. presen
	valley and foothill grassland	score
	Great Basin grassland	score
	vernal pool	score
	meadow and seep	D. presen
	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	D. presen
	riparian woodland	D. presen
	riparian scrub (incl. desert washes)	C. 5-20%
<b>Woodland</b>	cismontane woodland	D. presen
	piñon and juniper woodland	C. 5-20%
	Sonoran thorn woodland	score
<b>Forest</b>	broadleaved upland forest	D. presen
	North Coast coniferous forest	score
	closed cone coniferous forest	score
	lower montane coniferous forest	score
	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).