

# 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 (Latin binomial):</b>	<i>Mentha pulegium</i> L.
<b>Synonyms:</b>	<i>Mentha daghestanica</i> Boriss.; <i>Pulegium dagestanicum</i> (Boriss.) Holub; <i>Pulegium vulgare</i> Mill.
<b>Common names:</b>	Pennyroyal; European pennyroyal; grows-in-a-ditch
<b>Evaluation date (mm/dd/yy):</b>	7/31/03
<b>Evaluator #1 Name/Title:</b>	Peter J. Warner
<b>Affiliation:</b>	California Dept. of Parks and Recreation; CalEPPC
<b>Phone numbers:</b>	(707) 937-9172; (707) 937-2278
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<b>Address:</b>	P. O. Box 603, Little River, CA 95456-0603
<b>Evaluator #2 Name/Title:</b>	enter text here
<b>Affiliation:</b>	enter text here
<b>Phone numbers:</b>	enter text here
<b>Email address:</b>	enter text here
<b>Address:</b>	enter text here

Section below for list committee use—please leave blank

<b>List committee members:</b>	Jake Sigg, Peter Warner, Joe DiTomaso, Doug Johnson, Brianna Richardson
<b>Committee review date:</b>	08/01/03
<b>List date:</b>	enter text here
<b>Re-evaluation date(s):</b>	enter text here

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

1.1	Impact on abiotic ecosystem processes	U	None
1.2	Impact on plant community	B	Published, other
1.3	Impact on higher trophic levels	C	Published, other
1.4	Impact on genetic integrity	U	none

**“Impact”**  
*Enter four characters from Q1.1-1.4 below:*  
**UBCU**  
*Use matrix determine the score; enter below:*  
**C**

2.1	Role of anthropogenic and natural disturbance	B 2	Peer-reviewed
2.2	Local rate of spread with no management	A 3	observational
2.3	Recent trend in total area infested within state	A 3	Published, other
2.4	Innate reproductive potential	A 3	Peer-reviewed
2.5	Potential for human-caused dispersal	A 3	Peer-reviewed
2.6	Potential for natural long-distance dispersal	B 2	Peer-reviewed
2.7	Other regions invaded	B 2	Published, other

**“Invasiveness”**  
*For questions at left, recall that an A gets 3 points, a B gets 2, a C gets 1, and a D or U gets=0. Enter the sum total of all points for Q2.1-2.7 below:*  
**18**  
*Use matrix to determine score and enter below:*  
**A**

**“Plant Score”**  
*Using matrix, determine the Overall Score and Alert Status from the three section scores and enter them below:*  
**Medium**

3.1	Ecological amplitude	A	Published, other
3.2	Distribution	B	observational

**“Distribution”**  
*Use matrix determine the score; enter below:*  
**A**

**Table 3. Documentation**

<b>Question 1.1</b> Impact on abiotic ecosystem processes
Identify ecosystem processes impacted: generally unknown, but could affect evapotranspiration rates from vernal pools and other wetland habitats
Rationale: inference based on losses of vernal pool species from pennyroyal-infest pools
Sources of information: Peter Warner (personal observation)
<b>Question 1.2</b> Impact on plant community composition, structure, and interactions
Identify type of impact or alteration: displacement of native species; changes in community composition
Rationale: observations; inference from habitat information provided in print, both peer-reviewed and other
Sources of information: Warner, PJ. 2000. <i>in</i> Bossard, CC, JM Randall, and MC Hoshovsky (editors). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley. pp. 240-244.  DiTomaso, JM, and EA Healy. 2003. <i>Aquatic and Riparian Weeds of the West</i> . University of California, Agriculture and Natural Resources, Oakland. pp. 224-227.
<b>Question 1.3</b> Impact on higher trophic levels
Identify type of impact or alteration: potentially toxic to herbivores
Rationale: species known to be toxic to domestic livestock
Sources of information: Warner, PJ. 2000. <i>in</i> Bossard, CC, JM Randall, and MC Hoshovsky (editors). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley. pp. 240-244
<b>Question 1.4</b> Impact on genetic integrity
Identify impacts: potential for hybridization with native taxon ( <i>M. arvensis</i> )
Rationale: hybridization cited as common in published information
Sources of information: Hickman, JC (editor). 1993. <i>The Jepson Manual: Higher Vascular Plants of California</i> . University of California Press, Berkeley.
<b>Question 2.1</b> Role of anthropogenic and natural disturbance in establishment
Describe role of disturbance: species invades most commonly in heavily grazed areas, compacted soils, roadside ditches, areas of sedimentation

Rationale: printed information
Sources of information: Warner, PJ. 2000. <i>in</i> Bossard, CC, JM Randall, and MC Hoshovsky (editors). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley. pp. 240-244. DiTomaso, JM, and EA Healy. 2003. <i>Aquatic and Riparian Weeds of the West</i> . University of California, Agriculture and Natural Resources, Oakland. pp. 224-227.
<b>Question 2.2</b> Local rate of spread with no management
Describe rate of spread: appears to spread rapidly into available wetland habitats, even those with substantial cover by other species
Rationale: observations
Sources of information: Peter Warner (personal observations)
<b>Question 2.3</b> Recent trend in total area infested within state
Describe trend: appears widespread already, but probably still expanding range of suitable habitats infested
Rationale: reported as uncommon in Hickman (1993), but observations indicate otherwise
Sources of information: Warner, PJ. 2000. <i>in</i> Bossard, CC, JM Randall, and MC Hoshovsky (editors). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley. pp. 240-244. DiTomaso, JM, and EA Healy. 2003. <i>Aquatic and Riparian Weeds of the West</i> . University of California, Agriculture and Natural Resources, Oakland. pp. 224-227. Hickman, JC (editor). 1993. <i>The Jepson Manual: Higher Vascular Plants of California</i> . University of California Press, Berkeley Peter Warner (personal observation) DiTomaso, JM observational
<b>Question 2.4</b> Innate reproductive potential
Describe key reproductive characteristics: seeds, stolons, rhizomes
Rationale: abundant flowers w/4 seeds/flower, many whorls of many flowers; many stems/plant
Sources of information: Warner, PJ. 2000. <i>in</i> Bossard, CC, JM Randall, and MC Hoshovsky (editors). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley. pp. 240-244. DiTomaso, JM, and EA Healy. 2003. <i>Aquatic and Riparian Weeds of the West</i> . University of California, Agriculture and Natural Resources, Oakland. pp. 224-227
<b>Question 2.5</b> Potential for human-caused dispersal
Identify dispersal mechanisms: propagated, sold, planted horticulturally; vegetative propagules easily fragmented

Rationale: printed information
Sources of information: Warner, PJ. 2000. <i>in</i> Bossard, CC, JM Randall, and MC Hoshovsky (editors). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley. pp. 240-244. DiTomaso, JM, and EA Healy. 2003. <i>Aquatic and Riparian Weeds of the West</i> . University of California, Agriculture and Natural Resources, Oakland. pp. 224-227
<b>Question 2.6</b> Potential for natural long-distance dispersal
Identify dispersal mechanisms: seeds, rhizomes, stolons attached to animals, humans
Rationale: printed information; plant morphological traits
Sources of information: Warner, PJ. 2000. <i>in</i> Bossard, CC, JM Randall, and MC Hoshovsky (editors). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley. pp. 240-244. DiTomaso, JM, and EA Healy. 2003. <i>Aquatic and Riparian Weeds of the West</i> . University of California, Agriculture and Natural Resources, Oakland. pp. 224-227
<b>Question 2.7</b> Other regions invaded
Identify other regions: Australian grazing lands (natural habitat?); potential for increase in range in CA
Rationale: printed information; personal observations
Sources of information: Warner, PJ. 2000. <i>in</i> Bossard, CC, JM Randall, and MC Hoshovsky (editors). <i>Invasive Plants of California's Wildlands</i> . University of California Press, Berkeley. pp. 240-244. DiTomaso, JM, and EA Healy. 2003. <i>Aquatic and Riparian Weeds of the West</i> . University of California, Agriculture and Natural Resources, Oakland. pp. 224-227 Peter Warner (personal observations)
<b>Question 3.1</b> Ecological amplitude
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: widespread in cismontane wetlands (obligate wetlands indicator species); reported from over 30 counties in CA
Rationale: observational
Sources of information: U. S. Fish and Wildlife Service website: <a href="http://www.nwi.fws.gov/bha/download/1996/national.pdf">http://www.nwi.fws.gov/bha/download/1996/national.pdf</a> ; CalFlora database ( <a href="http://www.calflora.org">www.calflora.org</a> )
<b>Question 3.2</b> Distribution
Describe distribution: very common in N. Calif. coastal wetlands, especially disturbed sites

Rationale: observational
Sources of information: Peter Warner (personal observations)

### Worksheet A

Complete this worksheet to answer Question 2.4.

Reaches reproductive maturity in 2 years or less (1 pt.)	<b>Yes</b>
Dense infestations produce >1,000 viable seed per square meter (2 pts.)	<b>Yes</b>
Populations of this species produce seeds every year. (1 pt.)	<b>Yes</b>
Seed production sustained over 3 or more months within a population annually (1 pt.)	<b>Yes</b>
Seeds remain viable in soil for three or more years (2 pts.)	<b>Unknown</b>
Viable seed produced with <i>both</i> self-pollination and cross-pollination (1 pt.)	<b>Unknown</b>
Has quickly spreading veg. structures (rhizomes, roots, etc.) that may root at nodes (1 pt)	<b>Yes</b>
Fragments easily and fragments can become established elsewhere (2 pts.)	<b>yes</b>
Resprouts readily when cut, grazed, or burned (1 pt.)	<b>Yes</b>
	<b>9 2</b>
	<b>A</b>
<b>Note any related traits:</b> enter text here	

## Worksheet C - California Ecological Types

Major Ecological Types	Minor Ecological Types	Code
<b>Marine Systems</b>	marine systems	score
<b>Freshwater and Estuarine Aquatic Systems</b>	lakes, ponds, reservoirs	C
	rivers, streams, canals	D
	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	
<b>Grasslands, Vernal Pools, Meadows, and other Herb Communities</b>	coastal prairie	C
	valley and foothill grassland	score
	Great Basin grassland	score
	vernal pool	B
	meadow and seep	C
	alkali playa	score
	pebble plain	score
<b>Bog and Marsh</b>	bog and fen	score
	marsh and swamp	C
<b>Riparian and Bottomland</b>	riparian forest	C
	riparian woodland	C
	riparian scrub (incl. desert washes)	D
<b>Woodland</b>	cismontane woodland	score
	piñon and juniper woodland	score
	Sonoran thorn woodland	score
<b>Forest</b>	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
<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).