

# 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**

<b>Species name (Latin binomial):</b>	Dittrichia graveolens
<b>Synonyms:</b>	Inula graveolens, Erigeron graveolens, Cupularia graveolens
<b>Common names:</b>	Stinkweed, Stinkwort, Khaki weed,
<b>Evaluation date (mm/dd/yy):</b>	04/14/05
<b>Evaluator #1 Name/Title:</b>	John Beall
<b>Affiliation:</b>	California Native Plant Society
<b>Phone numbers:</b>	408-739-3756
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<b>Address:</b>	1275 Heatherstone Way Sunnyvale, CA 94087
<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, Bob Case, John Knapp, Elizabeth Brusati
<b>Committee review date:</b>	7/8/05
<b>List date:</b>	enter text here
<b>Re-evaluation date(s):</b>	enter text here

**General comments on this assessment:**

*Dittrichia graveolens* is very new to California (1984). It has been found primarily in disturbed areas. Conclusions about which plant communities (intact or disturbed) can be invaded by *Dittrichia graveolens* in California are speculative. Future specimens collected should include observations of the plant community (species present) and the condition of the plant community.

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

<a href="#">1.1</a>	Impact on abiotic ecosystem processes	<b>U</b>	<b>No Information</b>
<a href="#">1.2</a>	Impact on plant community	<b>B</b>	<b>Other Pub. Mat'l</b>
<a href="#">1.3</a>	Impact on higher trophic levels	<b>B</b>	<b>Other Pub. Mat'l</b>
<a href="#">1.4</a>	Impact on genetic integrity	<b>D</b>	<b>Other Pub. Mat'l</b>

**Impact**

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

**UBBD**

*Using matrix, determine score and enter below:*

**B**

<a href="#">2.1</a>	Role of anthropogenic and natural disturbance	<b>B (2 pts)</b>	<b>Other Pub. Mat'l</b>
<a href="#">2.2</a>	Local rate of spread with no management	<b>A (3 pts)</b>	<b>Rev'd, Sci. Pub'n</b>
<a href="#">2.3</a>	Recent trend in total area infested within state	<b>A (3 pts)</b>	<b>Rev'd, Sci. Pub'n</b>
<a href="#">2.4</a>	Innate reproductive potential <a href="#">Wksht A</a>	<b>A (3 pts)</b>	<b>Other Pub. Mat'l</b>
<a href="#">2.5</a>	Potential for human-caused dispersal	<b>A (3 pts)</b>	<b>Rev'd, Sci. Pub'n</b>
<a href="#">2.6</a>	Potential for natural long-distance dispersal	<b>A (3 pts)</b>	<b>Other Pub. Mat'l</b>
<a href="#">2.7</a>	Other regions invaded	<b>C (1 pt)</b>	<b>Other Pub. Mat'l</b>

**Invasiveness**

*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 Overall Score and Alert Status from the three section scores and enter below:*

**Medium**

**Red Alert**

<a href="#">3.1</a>	Ecological amplitude/Range	<b>B</b>	<b>Other Pub. Mat'l</b>
<a href="#">3.2</a>	Distribution/Peak frequency <a href="#">Wksht C</a>	<b>D</b>	<b>Other Pub. Mat'l</b>

**Distribution**

*Using matrix, determine score and enter below:*

**C**

**Table 3. Documentation**

<p><b>Question 1.1</b> Impact on abiotic ecosystem processes</p>	<p>U No Information <a href="#">back</a></p>
<p>Identify ecosystem processes impacted: <i>Dittrichia graveolens</i> can grow on heavy metal mine waste adding litter to the soil and bioaccumulating Mercury, Zinc, and Nickel. This could possibly redistribute heavy metals from deeper in the soil profile and accumulate them in the growing region of plants. There is no information to support this hypothesis, however.</p>	
<p>Rationale: <i>Dittrichia graveolens</i> can grow on mercury mine waste soil with 2.5% Mercury (Hg), and bioaccumulate 16,500ug/g Hg (Almaden mine, Spain). It has grown on mine waste in Rubik, Albania and bioaccumulates Nickel (1110 mg/kg and Zinc (849 mg/kg).</p>	
<p>Sources of information: Danish Environmental Protection Agency. 2000. Management of Contaminated Sites and Land in Central and Eastern Europe: Albania Accessed online April 4, 2005 at <a href="http://www.mst.dk/udgiv/Publications/2000/87-7909-888-6/html/kap10-eng.htm">http://www.mst.dk/udgiv/Publications/2000/87-7909-888-6/html/kap10-eng.htm</a></p> <p>Higuera, Pablo L. University of Castilla-La-Mancha, Spain. 2003. Presentation: Almaden: Remediation techniques in the largest mercury mining district of the world. CCMS Meeting Prevention and Remediation Issues in selected Industrial Sectors Pilot Study. Bala Mare (Romania), Sept. 7-11 2003. Accessed online April 4, 2005 at <a href="http://www.cluin.org/romania/presentations/2921843.pdf">http://www.cluin.org/romania/presentations/2921843.pdf</a></p>	
<p><b>Question 1.2</b> Impact on plant community composition, structure, and interactions</p>	<p>B Other Pub. Mat'l <a href="#">back</a></p>
<p>Identify type of impact or alteration: Can form dense stands in late summer/early fall with few plant competitors.</p>	
<p>Rationale: Grows rapidly late in the year from small rosette to over 1meter tall in open, disturbed, riparian, non-native grasslands, and sites which may include some native species.</p> <p>In Australia: Can compete with annuals and forbs. <i>Dittrichia graveolens</i> impacts a greater variety of plant communities.</p>	
<p>Sources of information: Australia:</p> <p>Victoria (Australia) Department of Primary Industries. 2005. Impact Assessment <i>Dittrichia graveolens</i>. Accessed online on 4/6/05 at <a href="http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/impact_stinkwort">http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/impact_stinkwort</a></p> <p>Parsons, W. T., Cuthbertson, E.G. 1992. Stinkwort <i>Dittrichia graveolens</i> (L.) Noxious Weeds of Australia Inkata Press p 281-283.</p> <p>Parsons, W. T., 1973 Stinkwort (<i>Inula graveolens</i> (L.) Desf.) Noxious Weeds of Victoria. Inkata Press. Sydney Australia p104-107.</p> <p>California:</p> <p>Preston R. E., <i>Dittrichia graveolens</i> (Asteraceae) New to California weed flora. Madrono 44(2) 200-203.</p> <p>Parsons, W. T., 1973 Stinkwort (<i>Inula graveolens</i> (L.) Desf.) Noxious Weeds of Victoria. Inkata Press. Sydney Australia p104-107.</p> <p>John Beall: personal observation (2000-2005)</p>	
<p><b>Question 1.3</b> Impact on higher trophic levels</p>	<p>B Other Pub. Mat'l <a href="#">back</a></p>
<p>Identify type of impact or alteration: Sheep graze on plant seedheads can get sick or die. Can taint meat or milk</p>	

<p>if eaten by cows. Can cause contact dermatitis/itching to people brushing against or hand pulling (without gloves) green plants.</p>	
<p>Rationale: The barbed seedhead becomes imbedded in the intestine of sheep causing enteritis. The plants produce terpenes which are thought to cause allergic contact dermatitis.</p>	
<p>Sources of information: In Australia</p> <p>Philbey, A.W., A.G. Morton, 2000. Pyogranulomatous enteritis in sheep due to penetrating seed heads of <i>Dittrichia graveolens</i>. Aust. Vet. J. Vol. 78. No 12 pps 858-860</p> <p>Parsons, W. T., 1973 Stinkwort (<i>Inula graveolens</i> (L.) Desf.) Noxious Weeds of Victoria. Inkata Press. Sydney Australia p104-107.</p> <p>Parsons, W. T., Cuthbertson, E.G. 1992. Stinkwort <i>Dittrichia graveolens</i> (L.) Noxious Weeds of Australia Inkata Press p 281-283.</p> <p>In California</p> <p>Preston R. E., <i>Dittrichia graveolens</i> (Asteraceae) New to California weed flora. Madrono 44(2) 200-203.</p> <p>John Beall : personal observation (2000-2005)</p>	
<p><b>Question 1.4</b> Impact on genetic integrity</p>	<p>D Other Pub. Mat'l <a href="#">back</a></p>
<p>Identify impacts: None</p>	
<p>Rationale: No native species of <i>Dittrichia</i></p>	
<p>Sources of information: Hickman, J. C. (ed.) 1993. The Jepson Manual, Higher Plants of California. University of California Press. Berkeley, CA</p>	
<p><b>Question 2.1</b> Role of anthropogenic and natural disturbance in establishment</p>	<p>B Other Pub. Mat'l <a href="#">back</a></p>
<p>Describe role of disturbance: Anthropogenic disturbances such as: timing/type of weed control, general construction/grading of lots, right of ways, roads, trails, levees, and dams. Overgrazing domestic livestock and improperly timed mowing can encourage establishment.</p>	
<p>Rationale: So far <i>Dittrichia graveolens</i> needs some anthropogenic or natural disturbance to invade native plant communities. Removal of vegetation encourages establishment of <i>Dittrichia graveolens</i>.</p>	
<p>Sources of information: Australia</p> <p>Parsons, W. T., Cuthbertson, E.G. 1992. Stinkwort <i>Dittrichia graveolens</i> (L.) Noxious Weeds of Australia Inkata Press p 281-283.</p> <p>Parsons, W. T., 1973 Stinkwort (<i>Inula graveolens</i> (L.) Desf.) Noxious Weeds of Victoria. Inkata Press. Sydney Australia p104-107.</p> <p>Victoria (Australia) Department of Primary Industries. 2005. Impact Assessment <i>Dittrichia graveolens</i>.</p>	

<p>Accessed online on 4/6/05 at <a href="http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/impact_stinkwort">http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/impact_stinkwort</a> California Preston R. E., <i>Dittrichia graveolens</i> (Asteraceae) New to California weed flora. <i>Madrono</i> 44(2) 200-203.</p>	
<p><b>Question 2.2</b> Local rate of spread with no management</p>	<p>A Rev'd, Sci. Pub'n <a href="#">back</a></p>
<p>Describe rate of spread: Rapidly expanding.</p>	
<p>Rationale: <i>Dittrichia graveolens</i> was found in California first in 1984 in Alviso in Santa Clara County (Close to Alameda County) along a levee/railroad track. Since that time it has rapidly expanded along roadsides, bayland levees, manipulated riparian areas, vacant lots, overgrazed pastures, and non-native grasslands from Santa Clara, Alameda, and Contra Costa Counties to surrounding counties.</p>	
<p>Sources of information: Hrusa, Fred; Ertter, Barbara; Sanders, Andrew; Leppeig, Gordon; Dean Ellen. 2002. Catalogue of non-native vascular plants occurring in spontaneously in California beyond those addressed in The Jepson Manual: Part I. <i>Madrono</i>. 49(20 April-June 61-98). Preston R. E., <i>Dittrichia graveolens</i> (Asteraceae) New to California weed flora. <i>Madrono</i> 44(2) 200-203. Preston, Robert List of <i>Dittrichia graveolens</i> specimens. unpublished document. Jepson Herbarium <i>Dittrichia graveolens</i>, specimens. John Beall: Personal observation</p>	
<p><b>Question 2.3</b> Recent trend in total area infested within state</p>	<p>A Rev'd, Sci. Pub'n <a href="#">back</a></p>
<p>Describe trend: Increasing rapidly since introduction in 1984 in disturbed areas primarily along roads, levees, and manipulated rivercourses.</p>	
<p>Rationale: <i>Dittrichia graveolens</i> is found (based upon a ID'ed specimen) in 14 counties in California. Specimens were collected and ID'ed in Santa Clara County (1984), Alameda County (1996), Contra Costa County (1996), Madera County (1997), San Joaquin County (1997), Solano County (1998), Sonoma County (1999), Yolo County (1999), San Mateo County (2001), Marin County (2002), Sacramento County (2002), Santa Cruz County (2002), Placer County (2003), San Diego County (2003). Counties where specimens have not been seen and/or listed, but not collected and ID'ed include San Benito County (2004) Ventura County (2004), Monterey County (2005)</p>	
<p>Sources of information: Hrusa, Fred; Ertter, Barbara; Sanders, Andrew; Leppeig, Gordon; Dean Ellen. 2002. Catalogue of non-native vascular plants occurring in spontaneously in California beyond those addressed in The Jepson Manual: Part I. <i>Madrono</i>. 49(20 April-June 61-98). Preston R. E., <i>Dittrichia graveolens</i> (Asteraceae) New to California weed flora. <i>Madrono</i> 44(2) 200-203. Preston, Robert List of <i>Dittrichia graveolens</i> specimens and locations. unpublished document. Pinnacles Plant Checklist December 2004 unpublished document. Jepson Herbarium <i>Dittrichia graveolens</i> specimens Bob Case: personal communication (2005) John Beall: personal observation (2005)</p>	

<b>Question 2.4</b> Innate reproductive potential	A Other Pub. Mat'l <a href="#">back</a>
<p>Describe key reproductive characteristics: . Plants growing from 2 centimeters to one meter can produce flowers. <i>Dittrichia graveolens</i> produces copious amounts of seed ( estimated 15,000 seed per plant) after a rapid growth from rosette in late summer. It flowers from September till December with seeds developing after flowering even after plant being pulled. Seeds last no more than three years. Seeds can move over 200 meters in the air.</p>	
<p>Rationale: enter text here</p>	
<p>Sources of information: Parsons, W. T., Cuthbertson, E.G. 1992. Stinkwort <i>Dittrichia graveolens</i> (L.) Noxious Weeds of Australia Inkata Press p 281-283.</p> <p>Parsons, W. T., 1973 Stinkwort (<i>Inula graveolens</i> (L.) Desf.) Noxious Weeds of Victoria. Inkata Press. Sydney Australia p104-107.</p> <p>Victoria (Australia) Department of Primary Industries. 2005. Invasiveness Assessment <i>Dittrichia graveolens</i>. Accessed online on 4/6/05 at <a href="http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/_stinkwort">http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/_stinkwort</a></p> <p>Preston R. E., <i>Dittrichia graveolens</i> (Asteraceae) New to California weed flora. <i>Madrono</i> 44(2) 200-203.</p> <p>John Beall: Personal observation (2000-2005)</p>	
<b>Question 2.5</b> Potential for human-caused dispersal	A Rev'd, Sci. Pub'n <a href="#">back</a>
<p>Identify dispersal mechanisms: <i>Dittrichia graveolens</i> has a wide variety of human caused dispersal methods</p>	
<p>Rationale: <i>Dittrichia graveolens</i> seeds can be dispersed long distances by the barbed/sticky seed attaching to vehicles, human clothing, shoes, or animal fur. Sheep or unprocessed wool can carry seeds. Seeds can be moved with soil in loads or with equipment. Seeds can be windborne over 200 meters which facilitates movement by human causes.</p>	
<p>Sources of information: Parsons, W.T. 1973 Noxious Weeds of Victoria. Inkata Press Sydney Australia,</p> <p>Parsons, W. T., Cuthbertson, E.G. 1992. Stinkwort <i>Dittrichia graveolens</i> (L.) Noxious Weeds of Australia Inkata Press p 281-283.</p> <p>Victoria (Australia) Department of Primary Industries. 2005. Impact Assessment <i>Dittrichia graveolens</i>. Accessed online on 4/6/05 at <a href="http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/_stinkwort">http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/_stinkwort</a></p> <p>DiTomaso J., Healey E., Weeds of California and other Western States. unpublished.</p> <p>Preston, R.E. 1997, <i>Dittrichia graveolens</i> (Asteraceae), New to California weed flora. <i>Madrono</i> 44(2). 200-203.</p> <p>Randall, John. 1999, Import Risk Analysis: Importation of weed species by live animals and unprocessed fibre of sheep and goats. p. 13 Ministry of Agriculture and Forestry. Wellington New Zealand.</p> <p>Nesom G. L. 2004. Asteraceae from wool mill sites in South Carolina, Including new records for North America. <i>SIDA</i> 21(2) 1215-1223.</p>	

<b>Question 2.6</b> Potential for natural long-distance dispersal	A Other Pub. Mat'l <a href="#">back</a>
Identify dispersal mechanisms: Seed can be moved naturally by wind, soil movement, water, and seed attachment to animals. Pappus is well developed for wind dispersal and can move seed long distances.	
Rationale: Seeds can be dispersed by wind greater than 200 meters which facilitates other natural dispersal mechanisms. Dispersal by attachment of seed to animals. Seeds can be moved by water into roadless area more than two miles down Chalone Creek at Pinnacles National Monument.	
Sources of information: Victoria (Australia) Department of Primary Industries. 2005. Invasiveness Assessment <i>Dittrichia graveolens</i> . Accessed online on 4/6/05 at <a href="http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/_stinkwort">http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/_stinkwort</a> :Parsons, W. T., Cuthbertson, E.G. 1992. <i>Stinkwort Dittrichia graveolens</i> (L.) Noxious Weeds of Australia Inkata Press p 281-283. Parsons, W. T., 1973 <i>Stinkwort (Inula graveolens</i> (L.) Desf.) Noxious Weeds of Victoria. Inkata Press. Sydney Australia p104-107. California: Preston R. E., <i>Dittrichia graveolens</i> (Asteraceae) New to California weed flora. <i>Madrono</i> 44(2) 200-203. Sharon Franklet Botanist, Pinnacles National Monument: Personal Communication (2005)	
<b>Question 2.7</b> Other regions invaded	C Other Pub. Mat'l <a href="#">back</a>
Identify other regions: See Rationale	
Rationale: Besides being found in California, <i>Dittrichia graveolens</i> is found in New Jersey at Liberty State Park, New York, Connecticut, and in 1957 a specimen was found, but not identified until 200, in Berkeley County, South Carolina. All United States locations were considered disturbed, ruderal, rangeland, tidal, or riparian. In Australia which has had <i>Dittrichia</i> for 150 years it is found in a greater variety of habitats. In Victoria <i>Dittrichia graveolens</i> is distributed in medium to large populations in dry coastal vegetation, mallee shrubland, lowland grassland and grassy woodland, and dry sclerophyll forest and woodland. It is also found in disturbed sites in England, Germany, Austria, Netherlands.	
Sources of information: United States Department of Agriculture Natural Resources Conservation Service, 2005. Plant Profile for <i>Dittrichia graveolens</i> (L) W.Greuter stinkwort Nesom, G.L. 2004, Asteraceae from wool mill sites in South Carolina, including New Records for North America. <i>SIDA</i> 21(2) 1215-1223. Victoria (Australia) Department of Primary Industries. 2005. Impact Assessment <i>Dittrichia graveolens</i> . Accessed online on 4/6/05 at <a href="http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/_stinkwort">http://www.nre.vic.gov.au/DPI/Vro/rosite.nsf/pages/_stinkwort</a>	

<b>Question 3.1</b> Ecological amplitude/Range	B Other Pub. Mat'l <a href="#">back</a>
<p>Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: First specimen of <i>Dittrichia graveolens</i> (Accession number UC1601326) collected November 1, 1984 two miles north of Alviso in Santa Clara County along railroad tracks at the upper edge of the tidal marsh by H.T. Harvey.</p>	
<p>Rationale: <i>Dittrichia graveolens</i> is found (based upon a ID'ed specimen) in 14 counties in California. Specimens were collected and ID'ed in Santa Clara County (1984), Alameda County (1996), Contra Costa County (1996), Madera County (1997), San Joaquin County (1997), Solano County (1998), Sonoma County (1999), Yolo County (1999), San Mateo County (2001), Marin County (2002), Sacramento County (2002), Santa Cruz County (2002), Placer County (2003), San Diego County (2003).</p> <p>Counties where specimens have not been seen and/or listed, but not collected and ID'ed include San Benito County (2004) Ventura County (2004), Monterey County (2005)</p> <p>In California <i>Dittrichia graveolens</i> is primarily found in disturbed or ruderal sites particularly along roads and levees, and graded sites with few plants in late summer . It has also been found on the edge of the tidal estuary, rocky outcrops, in properly grazed and overgrazed pastureland (non-native grassland), in manipulated riparian areas, intact riparian scrub-dry washes, at the edge of drying lakes, percolation ponds, and depressions.</p> <p><i>Dittrichia graveolens</i> has been in California too short of a time to get an accurate picture of which plant communities have been or will be invaded.</p>	
<p>Sources of information: enter text here</p> <p>Preston R. E., <i>Dittrichia graveolens</i> (Asteraceae) New to California weed flora. Madrono 44(2) 200-203.</p> <p>Preston, Robert, 2005. List of <i>Dittrichia graveolens</i> specimens and locations: unpublished document.</p> <p>Pinnacles Plant Checklist December 2004 National Park Service: unpublished document.</p> <p>Sharon Franklet Botanist, Pinnacles National Monument: Personal Communication (2005)</p> <p>Jepson Herbarium <i>Dittrichia graveolens</i> specimens</p> <p>Bob Case: personal communication (2005)</p> <p>John Beall: personal observation (2005)</p>	
<b>Question 3.2</b> Distribution/Peak frequency	D Other Pub. Mat'l <a href="#">back</a>
<p>Describe distribution: enter text here</p>	
<p>Rationale: enter text here</p> <p><i>Dittrichia graveolens</i> has not reached its peak in the state. The plant will continue to expand into a wide variety of disturbed/ruderal locations in more counties throughout the state following roads and levees into more counties. There are many more parts of the state with disturbed areas/plant communities with open or sparse plant cover in late summer that <i>Dittrichia graveolens</i> will expand into. In addition <i>Dittrichia graveolens</i> may expand further into open riparian locations, and plant communities where harsh edaphic conditions which limit plants including soils with (heavy metals-including serpentine soils and saline soils).</p>	

Sources of information: enter text here

Danish Environmental Protection Agency. 2000. Management of Contaminated Sites and Land in Central and Eastern Europe: Albania Accessed online April 4, 2005 at <http://www.mst.dk/udgiv/Publications/2000/87-7909-888-6/html/kap10-eng.htm>

Higueras, Pablo L. University of Castilla-La-Mancha, Spain. 2003. Presentation: Almaden: Remediation techniques in the largest mercury mining district of the world. CCMS Meeting Prevention and Remediation Issues in selected Industrial Sectors Pilot Study. Bala Mare (Romania), Sept. 7-11 2003. Accessed online April 4, 2005 at <http://www.cluin.org/romania/presentations/2921843.pdf>

Preston R. E., *Dittrichia graveolens* (Asteraceae) New to California weed flora. *Madrono* 44(2) 200-203.

Bob Case: personal communication (2005)

John Beall: personal observation (2005)

**Worksheet A**

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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>Unknown: 0 pts</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>Unknown: 0 pts</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>Yes: 1 pt</b>
	<b>7 pts      2 unknowns</b>
	<b>A (6+ pts)</b>
<b>Note any related traits:</b> enter text here	

## Worksheet C - California Ecological Types

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(*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	score
	valley and foothill grassland	D. present
	Great Basin grassland	score
	vernal pool	score
	meadow and seep	score
	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	score
	riparian woodland	score
	riparian scrub (incl. desert washes)	D. present
<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).