

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

Species name (Latin binomial):	Dipsacus sativus
Synonyms:	In most of the literature used in this review, the teasels were described as a group, making very little distinction between D. sativus, D. fullonum, and D. sylvestris (name also used for D. fullonum); therefore information is largely identical. Further, according to personal observation by J.M. DiTomaso, in California, both D. fullonum and D. sativus occur in similar habitats and behave in a similar manner.
Common names:	Fullers teasel
Evaluation date (mm/dd/yy):	July 23, 2004
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Section below for list committee use—please leave blank

List committee members:	Peter Warner, Joe DiTomaso, Alison Stanton, John Randall, Jake Sigg, Cynthia Roye
Committee review date:	8/27/2004
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	C	Rev'd, Sci. Pub'n
1.2	Impact on plant community	B	Rev'd, Sci. Pub'n
1.3	Impact on higher trophic levels	C	Rev'd, Sci. Pub'n
1.4	Impact on genetic integrity	D	Rev'd, Sci. Pub'n

Impact

Enter four characters from Q1.1-1.4 below:

CBCD

Using matrix, determine score and enter below:

B

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	B (2 pts)	Rev'd, Sci. Pub'n
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	A (3 pts)	Rev'd, Sci. Pub'n
2.6	Potential for natural long-distance dispersal	C (1 pt)	Rev'd, Sci. Pub'n
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:

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:

Medium

No Alert

3.1	Ecological amplitude/Range	A	Rev'd, Sci. Pub'n
3.2	Distribution/Peak frequency Wksht C	C	Rev'd, Sci. Pub'n

Distribution

Using matrix, determine score and enter below:

B

Table 3. Documentation

<p>Question 1.1 Impact on abiotic ecosystem processes</p>	<p>C Rev'd, Sci. Pub'n back</p>
<p>Identify ecosystem processes impacted: light availability, nutrient impacts from persisting stalks/leaves</p>	
<p>Rationale: dead stems and flower heads can persist for a year or more, impacting light levels at ground level, shading out native or desirable plant species</p>	
<p>Sources of information: DiTomaso, J.M. and E. Healy. Weeds of California and Other Western States, as yet published.</p>	
<p>Question 1.2 Impact on plant community composition, structure, and interactions</p>	<p>B Rev'd, Sci. Pub'n back</p>
<p>Identify type of impact or alteration: can form dominant stands/monocultures, has impacted threatened species in other states, can form dense and persisting litter/thatch layer</p>	
<p>Rationale: Dead stems and flower heads can persist for a year or more, impacting light levels at ground level, shading out native or desirable plant species ;</p>	
<p>Mechanisms of competition for individual plants include the wide, horizontally-oriented rosette leaves which produce heavy shading, and the deep taproot which extends to depths beyond roots of many grasses</p>	
<p>Grass litter, and the presence of other dicotyledonous species, and the overall primary productivity of the rest of the community are important factors determining the success or failure of an attempted colonization by teasel.</p>	
<p>If left unchecked, teasel quickly can form large monocultures excluding all native vegetation;</p>	
<p>Threatens to displace native species of sensitive conservation status in the UK; invading high quality natural communities including prairies, savannas, seeps and sedge meadows;</p>	
<p>One of few plants to have been investigated in detail as an alien species threatening to displace a native plant of sensitive conservation status/listed as Federally threatened (<i>Cirsium vinaceum</i>) in Central New Mexico</p>	
<p>Sources of information: DiTomaso, J.M. and E. Healy. Weeds of California and Other Western States, as yet published; Cheesman, O.D., 1998. The impact of some field boundary management practices development of <i>Dipsacus fullonum</i> L. flowering stems, and implications for conservation. Agriculture, Ecosystems and Environment 68 (1998) 41-49; Werner, P.A., 1975. The biology of Canadian weeds. Can. J. Plant Sci. 55:783-794; Glass, William, 1990. Vegetation management Manual: Cutleaved teasel and common teasel, Illinois Nature Preserves Commission, Springfield Illinois.</p>	
<p>Question 1.3 Impact on higher trophic levels</p>	<p>C Rev'd, Sci. Pub'n back</p>
<p>Identify type of impact or alteration: Only one reference found to impacts to cattle and humans trying to pass through a densely infested teasel area</p>	
<p>Rationale: stands become dense and impenetrable to humans or livestock;</p>	
<p>Sources of information: Werner, P.A., 1975. The biology of Canadian weeds. Can. J. Plant Sci. 55:783-794</p>	

Question 1.4 Impact on genetic integrity	D Rev'd, Sci. Pub'n back
Identify impacts: Rated as "minor" because the potential does exist according to the literature, see cited reference below. No native species of <i>Dipsacus</i> in California, so hybridization is not relevant.	
Rationale: No hybrids involving this species have been described; however, since isolation of species of <i>Dipsacus</i> is mainly geographic and ecological, it is probable that extensive hybridization could be expected when species do come in contact.	
Sources of information: Ehrendorfer, F., 1965. Dispersal mechanisms, genetic systems, and colonizing abilities in some flowering plant families. Pages 331-352 in H.G Baker and G.L. Stebbins, eds. The genetics of colonizing species. Academic Press, New York.	
Question 2.1 Role of anthropogenic and natural disturbance in establishment	B Rev'd, Sci. Pub'n back
Describe role of disturbance: Usually establishment requires either anthropogenic or natural disturbance.	
Rationale: Usually establishment requires either anthropogenic or natural disturbance. Teasel sometimes occurs in high quality prairies, savannaas, seeps, and sedge meadows, BUT roadsides, dumps, and heavily disturbed areas are the most common habitats of teasel.	
Sources of information: Glass, William, 1990. Vegetation management Manual: Cutleved teasel and common teasel, Illinois Nature Preserves Commission, Springfield Illinois.	
Question 2.2 Local rate of spread with no management	B Rev'd, Sci. Pub'n back
Describe rate of spread: Based on literature cited below, teasel likely ranks some where inbetween "increases, but less rapidly" to "stable".	
Rationale: Populations of teasel have been collected from the same field and roadsides for up to 25 years, explanations for the logevity of the population on one site are lacking. It is suspected that teasel numbers fluctuate greatly and the spread of a population is relatevely slow compared to other weeds because the generation time of teasel is longer than 1 year and there is no vegetative reproduction	
Sources of information: Werner, P.A., 1975. The biology of Canadian weeds. Can. J. Plant Sci. 55:783-794.	
Question 2.3 Recent trend in total area infested within state	C Observational back
Describe trend: Statewide, teasel likely ranks some where inbetween "increases, but less rapidly" to "stable". Over the entire state it probably has not expanded its range in the past several years.	
Rationale: Personal observation: teasel infestations in roadside meadows have expanded greatly within a 2-3 year timeframe; while some seem to be fairly stable in overall range/expansion potential. Teasel has spread rapidly in the last 20-30 years- this rapid range expansion probably was aided by construction of the interstate highway system ; because of teasel's use as a horticulture plant, this has aided in its dispersal	

Sources of information: Personal Observation - C. Pirosko and J.M. DiTomaso	
Question 2.4 Innate reproductive potential	B Rev'd, Sci. Pub'n back
Describe key reproductive characteristics: enter text here	
<p>Rationale: a single plant might be expected to produce approx. 3,000 seeds;</p> <p>In fields presenting optimal conditions, teasel rosettes may grow rapidly and flower in their 2nd year, while in less suitable areas the rosettes grow more slowly and populations may consist of plants on a 3- or 4- year reproductive cycle;</p>	
Sources of information: Werner, P.A., 1975. The biology of Canadian weeds. Can. J. Plant Sci. 55:783-794; Glass, William, 1990. Vegetation management Manual: Cutleved teasel and common teasel, Illinois Nature Preserves Commission, Springfield Illinois.	
Question 2.5 Potential for human-caused dispersal	A Rev'd, Sci. Pub'n back
Identify dispersal mechanisms: roadside constructions/maintenance; horticulture/nursery trade; dried flower arrangements and gardening	
<p>Rationale: Can be dispersed to greater distances with water, mud, soil movement, human activities, and possibly animals; often found along steep roadside banks of new highways where potential for severe erosion is high, connected with highway construction.</p> <p>Popular in dried flower arrangements and thus could be spread by persons collecting plants for such dried arrangements; because of teasel's use as a horticulture plant, this has aided in its dispersal.</p>	
Sources of information: DiTomaso, J.M. and E. Healy. 2005. Weeds of California and Other Western States, (in press)	
Question 2.6 Potential for natural long-distance dispersal	B Rev'd, Sci. Pub'n back
Identify dispersal mechanisms: Most seed do not travel long distances- while, water is the primary mode of long distance dispersal, seeds designed to endure submersion in water for long periods of time	
<p>Rationale: Most seed fall near plant base (99.9%), but can be dispersed to greater distances with water, mud, soil movement, human activities, and possibly animals; seeds can float in water up to 22 days without loss of viability; .</p>	
Sources of information: DiTomaso, J.M. and E. Healy. Weeds of California and Other Western States, as yet published. Werner, P.A., 1975. The biology of Canadian weeds. Can. J. Plant Sci. 55:783-794; Glass, William, 1990. Vegetation management Manual: Cutleved teasel and common teasel, Illinois Nature Preserves Commission, Springfield Illinois.	

Question 2.7 Other regions invaded	C Rev'd, Sci. Pub'n back
Identify other regions: Seems to invade similar ecological types in California as in other states and regions	
<p>Rationale: North Coast, Klamath Ranges, central and southern Sierra Nevada foothills, San Francisco Bay region, 10 1700m. Most contiguous states, except some southern and north-central states; Very dense patches found in northeastern US and northwestern US;</p> <p>Currently invades: fallow fields, pastures, roadside, waste places, ditches, riparian sites and other disturbed sties; invading high quality natural communities including prairies, savannas, seeps and sedge meadows</p>	
Sources of information: DiTomaso, J.M. and E. Healy. Weeds of California and Other Western States, as yet published.	
Question 3.1 Ecological amplitude/Range	A Rev'd, Sci. Pub'n back
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: It looks to invade in seven ecological types, widespread.	
<p>Rationale: Currently invades: fallow fields, pastures, roadside, waste places, ditches, riparian sites and other disturbed sties; invading high quality natural communities including prairies, savannas, seeps and sedge meadows</p> <p>Teasel grows in open sunny habitats, ranging from wet to dry conditions, while wet conditions are optimal</p>	
Sources of information: DiTomaso, J.M. and E. Healy. Weeds of California and Other Western States, as yet published; Cheesman, O.D., 1998. The impact of some field boundary management practices development of <i>Dipsacus fullonum</i> L. flowering stems, and implications for conservation. Agriculture, Ecosystems and Environment 68 (1998) 41-49; Rayner, J.N. (ed.), 1961. Surfaced temperature frequencies for North America and Greenland. Arctic Meteorol. Res. Group Publ. 33,, Montreal, Que.	
Question 3.2 Distribution/Peak frequency	C Rev'd, Sci. Pub'n back
Describe distribution: Fairly widestread distribution, some parameters listed below for establishment	
<p>Rationale: A typical teasel population might occupy 2,000 m2 of a field or extend for several kilometers along a roadway</p> <p>Currently invades: fallow fields, pastures, roadside, waste places, ditches, riparian sites and other disturbed sties; invading high quality natural communities including prairies, savannas, seeps and sedge meadows</p> <p>Teasel grows in open sunny habitats, ranging from wet to dry conditions, while wet conditions are optimal</p>	
Sources of information: Werner, P.A., 1975. The biology of Canadian weeds. Can. J. Plant Sci. 55:783-794; Cheesman, O.D., 1998. The impact of some field boundary management practices development of <i>Dipsacus fullonum</i> L. flowering stems, and implications for conservation. Agriculture, Ecosystems and Environment 68 (1998) 41-49; Rayner, J.N. (ed.), 1961. Surfaced temperature frequencies for North America and Greenland. Arctic Meteorol. Res. Group Publ. 33,, Montreal, Que.	

Worksheet A

[back](#)

Reaches reproductive maturity in 2 years or less	No: 0 pt
Dense infestations produce >1,000 viable seed per square meter	Yes: 2 pts
Populations of this species produce seeds every year.	No: 0 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	Yes: 2 pts
Viable seed produced with <i>both</i> self-pollination and cross-pollination	Yes: 1 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
	5 pts Total Unknowns
	B (4-5 pts)

Note any related traits: a few seeds are produced by selfing, while most seed produced through cross pollination; no vegetative reproduction; a rosette forms a flowering stalk only after attaining a critical size of approximately 30 cm in diameter, so doesn't necessarily reach reprod. maturity in 2 years or less

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	C. 5-20%
	rivers, streams, canals	C. 5-20%
	estuaries	score
Dunes	coastal	score
	desert	score
	interior	score
Scrub and Chaparral	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
Grasslands, Vernal Pools, Meadows, and other Herb Communities	coastal prairie	D. presen
	valley and foothill grassland	D. presen
	Great Basin grassland	C. 5-20%
	vernal pool	score
	meadow and seep	C. 5-20%
	alkali playa	score
	pebble plain	score
Bog and Marsh	bog and fen	C. 5-20%
	marsh and swamp	D. presen
Riparian and Bottomland	riparian forest	score
	riparian woodland	score
	riparian scrub (incl. desert washes)	D. presen
Woodland	cismontane woodland	score
	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).