

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):	Raphanus sativus L. (and hybrids with R. raphanistrum L.)
Synonyms:	R. raphanistrum var. sativus
Common names:	cultivated radish, wild radish,
Evaluation date (mm/dd/yy):	1/21/05
Evaluator #1 Name/Title:	Elizabeth Brusati, project manager
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Section below for list committee use—please leave blank

List committee members:	Joe DiTomaso, Jake Sigg, Cynthia Roye, Peter Warner
Committee review date:	6/30/05
List date:	enter text here
Re-evaluation date(s):	enter text here

General comments on this assessment:

The two species of radish readily hybridize and show wide variation in morphology, so it is not possible to separate them for PAFs.

Table 2. Criteria, Section, and Overall Scores

1.1	Impact on abiotic ecosystem processes	U	No Information
1.2	Impact on plant community	C	Observational
1.3	Impact on higher trophic levels	D	Other Pub. Mat'l
1.4	Impact on genetic integrity	D	Other Pub. Mat'l

Impact

Enter four characters from Q1.1-1.4 below:

UCDD

Using matrix, determine score and enter below:

C

2.1	Role of anthropogenic and natural disturbance	3 (2 pts)	Other Pub. Mat'l
2.2	Local rate of spread with no management	1 (1 pt)	Observational
2.3	Recent trend in total area infested within state	1 (1 pt)	Other Pub. Mat'l
2.4	Innate reproductive potential Wksht A	3 (2 pts)	Other Pub. Mat'l
2.5	Potential for human-caused dispersal	3 (2 pts)	Other Pub. Mat'l
2.6	Potential for natural long-distance dispersal	1 (1 pt)	Other Pub. Mat'l
2.7	Other regions invaded	1 (1 pt)	Other Pub. Mat'l

Invasiveness

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

10

Use matrix to determine score and enter below:

C

Plant Score

Using matrix, determine Overall Score and Alert Status from the three section scores and enter below:

Low

No Alert

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

Distribution

Using matrix, determine score and enter below:

B

Table 3. Documentation

Question 1.1 Impact on abiotic ecosystem processes	U No Information back
Identify ecosystem processes impacted: no information	
Rationale: enter text here	
Sources of information: enter text here	
Question 1.2 Impact on plant community composition, structure, and interactions	C Observational back
Identify type of impact or alteration: Primarily found in agricultural areas or roadsides. Not often found in wildlands and when present does not form dense patches (1). Invasive in coastal dunes, prairie, and scrub in Marin, Sonoma, and Mendocino counties (2).	
Rationale: enter text here	
Sources of information: 1. Joe DiTomaso, Weed Science Program, UC Davis, observational. 2. Peter Warner, California State Parks, Mendocino, pers. obs.	
Question 1.3 Impact on higher trophic levels	D Other Pub. Mat'l back
Identify type of impact or alteration: Livestock that ingest large quantities of seeds can develop irritation of the digestive tract. Not in high enough density in wildlands to cause a problem.	
Rationale: enter text here	
Sources of information: DiTomaso, J., and E. Healy. Weeds of California and Other Western States. in prep.	
Question 1.4 Impact on genetic integrity	D Other Pub. Mat'l back
Identify impacts: Both species of radish in California are introduced. They are well-known for their ability to hybridize. Populations in inland areas show mostly <i>R. raphanistrum</i> characters, while coastal populations are more similar to <i>R. sativus</i> (1).	
Rationale: enter text here	
Sources of information: 1. Klinger, T. and N. C. Ellstrand 1994. Engineered genes in wild populations: Fitness of weed-crop hybrids of <i>Raphanus sativus</i> . <i>Ecological Applications</i> 4(1): 117-120.	
Question 2.1 Role of anthropogenic and natural disturbance in establishment	B Other Pub. Mat'l back
Describe role of disturbance: Mostly a weed of disturbed areas, but also in coastal rangelands and adjacent to (but not alongside) roads and trails (1).	

Rationale: Present on roadsides, pastures, crop fields, orchards, vineyards, old gardens, playgrounds, parks, and other disturbed places (2).	
Sources of information: 1. Peter Warner, ecologist, California State Parks, Mendocino, pers. observation 2. DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488.	
Question 2.2 Local rate of spread with no management	C Observational back
Describe rate of spread: Does not really form large patches	
Rationale: enter text here	
Sources of information: DiTomaso, observational.	
Question 2.3 Recent trend in total area infested within state	C Other Pub. Mat'l back
Describe trend: It already exists throughout California, so presumably it isn't spreading quickly at this time.	
Rationale: enter text here	
Sources of information: DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488.	
Question 2.4 Innate reproductive potential	B Other Pub. Mat'l back
Describe key reproductive characteristics: Winter or summer annual, sometimes biennial. Elongate pods do not open to release seeds. Buried seeds of <i>R. raphanistrum</i> can survive 20-30 years. <i>R. raphanistrum</i> can produce large quantities of seeds under favorable conditions. Germination occurs in fall after the first significant rain, but some seeds continue to germinate through spring or at other times when conditions are favorable.	
Rationale: enter text here	
Sources of information: DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488.	
Question 2.5 Potential for human-caused dispersal	B Other Pub. Mat'l back
Identify dispersal mechanisms: Fruits and seeds can disperse with human activities, agricultural operations, and as contaminants of crop and hay.	
Rationale: enter text here	
Sources of information: DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488.	

Question 2.6 Potential for natural long-distance dispersal	C Other Pub. Mat'l back
Identify dispersal mechanisms: Seeds and fruits can be dispersed by water and animals.	
Rationale: enter text here	
Sources of information: DiTomaso and Healy. 2006. Weeds of California. UC DANR Publ. #3488.	
Question 2.7 Other regions invaded	C Other Pub. Mat'l back
Identify other regions: Native to the Mediterranean. Present in many U.S. states. Listed as noxious weed (secondary) in Minnesota and in Australia, but mainly because it impacts agriculture.	
Rationale: Scoring as C because it is already widespread.	
Sources of information: DiTomaso and Healy in prep	
Question 3.1 Ecological amplitude/Range	A Other Pub. Mat'l back
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: Occurs throughout California, except deserts, Great Basin, and some mountain areas, to 1000m. Present on roadsides, pastures, crop fields, orchards, vineyards, old gardens, playgrounds, parks, and other disturbed places (1). One of the most invasive plants in coastal hind dunes and adjacent prairie and scrub in Marin, Sonoma, and Mendocino counties (2).	
Rationale: enter text here	
Sources of information: 1. DiTomaso and Healy 2006 2. Peter Warner, California State Parks, Mendocino, pers. obs.	
Question 3.2 Distribution/Peak frequency	D Observational back
Describe distribution: enter text here	
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	No: 0 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	Yes: 2 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:	

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	D. prese
	desert	score
	interior	score
Scrub and Chaparral	coastal bluff scrub	D. prese
	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. prese
	valley and foothill grassland	D. prese
	Great Basin grassland	score
	vernal pool	score
	meadow and seep	score
	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	D. prese
	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).