

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):	<i>Isatis tinctoria</i>
Synonyms:	
Common names:	Dyers woad
Evaluation date (mm/dd/yy):	August 1, 2003
Evaluator #1 Name/Title:	Joe DiTomaso
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Evaluator #2 Name/Title:	enter text here
Affiliation:	enter text here
Phone numbers:	enter text here
Email address:	enter text here
Address:	enter text here

Section below for review committee use—please leave blank

Review committee members:	Jake Sigg, Peter Warner, Doug Johnson, Joe DiTomaso, Brianna Richardson
Committee review date:	August 1, 2003
List date:	enter text here
Re-evaluation date(s):	enter text here

Table 2. Criteria, Section, and Overall Scores

1.1	Impact on abiotic ecosystem processes	B	Rev'd, Sci. Pub'n
1.2	Impact on plant community	A	Rev'd, Sci. Pub'n
1.3	Impact on higher trophic levels	B	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:
BABD
 Use matrix determine the score; enter below:
B

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

“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:
13
 Use matrix to determine score and enter below:
B

“Plant Score”
 Using matrix, determine the Overall Score and Alert Status from the three section scores and enter them below:
Medium
No Alert

3.1	Ecological amplitude	A	Other Pub. Mat'l
3.2	Distribution	B	Observational

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

Worksheet A. Complete this worksheet to answer Question 2.4.

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	Yes: 1 pt
5 pts 1 unknown	
B (4-5 pts)	

Table 3. Documentation

Question 1.1 Impact on abiotic ecosystem processes
Identify ecosystem processes impacted: Deep root system can reduce water for natives.
Rationale:
Sources of information: Evans, J.O. 1991. The importance, distribution, and control of Dyers woad (<i>Isatis tinctoria</i>). Pages 287-393. In, Noxious Range Weeds. Westview Press, Boulder, CO. Eds. L.F. James, J.O. Evans, M.H. Ralphs and R.D. Child.; Varga, W. A. and Evans, J. O. 1975. Dyers woad and alfalfa interaction - a double take of a competition study. Proceedings of the Western Society of Weed Science 28:38-39.; Farah, K. O., Tanaka, A. F., and West, N. E. 1988. Autecology and population biology of dyers woad (<i>Isatis tinctoria</i>). Weed Science 36:186-193.
Question 1.2 Impact on plant community composition, structure, and interactions
Identify type of impact or alteration: Competes with shrubs and browse species, particularly natives. Can dominate plant communities.
Rationale:
Sources of information: Evans, J.O. 1991. The importance, distribution, and control of Dyers woad (<i>Isatis tinctoria</i>). Pages 287-393. In, Noxious Range Weeds. Westview Press, Boulder, CO. Eds. L.F. James, J.O. Evans, M.H. Ralphs and R.D. Child.; Farah, K. O., Tanaka, A. F., and West, N. E. 1988. Autecology and population biology of dyers woad (<i>Isatis tinctoria</i>). Weed Science 36:186-193.
Question 1.3 Impact on higher trophic levels
Identify type of impact or alteration: Reduces grazing capacity by 38%, but no data on livestock grazing.
Rationale:
Sources of information: McConnell, E.G., J.O. Evans, and S.A. Dewey. 1999. Dyer's woad. Pp. 231-237. In, Biology and Management of Noxious Rangeland Weeds. Eds. R.L. Sheley and J.K. Petroff, Oregon State Univ. Press, Corvallis.
Question 1.4 Impact on genetic integrity
Identify impacts: Probably none.
Rationale: No other species of <i>Isatis</i> in California.
Sources of information: DiTomaso, J.M. and E. A. Healy. 2005. Weeds of California. Div. Nat. Agr. Res. Univ. California (in press)
Question 2.1 Role of anthropogenic and natural disturbance in establishment
Describe role of disturbance: Prefers disturbance but can move into undisturbed rangeland and forested areas.
Rationale:
Sources of information: McConnell, E.G., J.O. Evans, and S.A. Dewey. 1999. Dyer's woad. Pp. 231-237. In, Biology and Management of Noxious Rangeland Weeds. Eds. R.L. Sheley and J.K. Petroff, Oregon State Univ. Press, Corvallis.; Roche, C. 1992. Dyers woad (<i>Isatis tinctoria</i> L.). Pacific Northwest Cooperative Extension Publication 384:2 pp.
Question 2.2 Local rate of spread with no management
Describe rate of spread: A population in Montana spread from 2 to 100 acres in 2 years. Spreading on BLM land at average of 14% per year.
Rationale:
Sources of information: McConnell, E.G., J.O. Evans, and S.A. Dewey. 1999. Dyer's woad. Pp. 231-237. In, Biology and Management of Noxious Rangeland Weeds. Eds. R.L. Sheley and J.K. Petroff, Oregon State Univ. Press, Corvallis.
Question 2.3 Recent trend in total area infested within state
Describe trend: Seems to be spreading in northern California, but not at rapid rate.
Rationale:
Sources of information: DiTomaso, observation
Question 2.4 Innate reproductive potential
Describe key reproductive characteristics: Seeds are large and individual plants generally produce 350-500 each.
Rationale:
Sources of information: McConnell, E.G., J.O. Evans, and S.A. Dewey. 1999. Dyer's woad. Pp. 231-237. In, Biology and Management of Noxious Rangeland Weeds. Eds. R.L. Sheley and J.K. Petroff, Oregon State Univ. Press, Corvallis.; Roche, C. 1992. Dyers woad (<i>Isatis tinctoria</i> L.). Pacific Northwest Cooperative Extension Publication 384:2 pp.; Evans, J.O. 1991. The importance, distribution, and control of Dyers woad (<i>Isatis tinctoria</i>). Pages 287-393. In, Noxious Range Weeds. Westview Press, Boulder, CO. Eds. L.F. James, J.O. Evans, M.H. Ralphs and R.D. Child.

Question 2.5 Potential for human-caused dispersal
Identify dispersal mechanisms: Moves long distance by vehicles, feed, bedding, hay and crop contamination.
Rationale:
Sources of information: Roche, C. 1992. Dyers woad (<i>Isatis tinctoria</i> L.). Pacific Northwest Cooperative Extension Publication 384:2 pp.; Callihan, R.H. 1990. Dyers woad. Biology, distribution and control. Univ. Idaho College of Agric., Current Information Series No. 857. 4 pp.
Question 2.6 Potential for natural long-distance dispersal
Identify dispersal mechanisms: Most seed (95%) fall within 2 feet of parent plant. Some long distance movement in water, but not common.
Rationale:
Sources of information: McConnell, E.G., J.O. Evans, and S.A. Dewey. 1999. Dyer's woad. Pp. 231-237. In, Biology and Management of Noxious Rangeland Weeds. Eds. R.L. Sheley and J.K. Petroff, Oregon State Univ. Press, Corvallis.; Evans, J.O. 1991. The importance, distribution, and control of Dyers woad (<i>Isatis tinctoria</i>). Pages 287-393. In, Noxious Range Weeds. Westview Press, Boulder, CO. Eds. L.F. James, J.O. Evans, M.H. Ralphs and R.D. Child.
Question 2.7 Other regions invaded
Identify other regions: found throughout the western US. Also grows on six other continents as a weed.
Rationale:
Sources of information: Evans, J.O. 1991. The importance, distribution, and control of Dyers woad (<i>Isatis tinctoria</i>). Pages 287-393. In, Noxious Range Weeds. Westview Press, Boulder, CO. Eds. L.F. James, J.O. Evans, M.H. Ralphs and R.D. Child.; Varga, W. A. and Evans, J. O. 1975. Dyers woad and alfalfa interaction - a double take of a competition study. Proceedings of the Western Society of Weed Science 28:38-39.
Question 3.1 Ecological amplitude
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: Introduced to Utah in 1910 and to Siskiyou county, CA in the early 1900s. Common on rocky soils of the intermountain west.
Rationale:
Sources of information: McConnell, E.G., J.O. Evans, and S.A. Dewey. 1999. Dyer's woad. Pp. 231-237. In, Biology and Management of Noxious Rangeland Weeds. Eds. R.L. Sheley and J.K. Petroff, Oregon State Univ. Press, Corvallis.; Callihan, R.H. 1990. Dyers woad. Biology, distribution and control. Univ. Idaho College of Agric., Current Information Series No. 857. 4 pp.
Question 3.2 Distribution
Describe distribution: Most widely distributed in the Great Basin of NE California.
Rationale:
Sources of information: DiTomaso, observation

Complete the worksheet that corresponds to your state using the letter codes and instructions in Section 3.

Worksheet C - California Ecological Types

(*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	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	C. 5-20%
	chenopod scrub	score
	montane dwarf scrub	score
	Upper Sonoran subshrub scrub	score
Grasslands, Vernal Pools, Meadows, and other Herb Communities	coastal prairie	score
	valley and foothill grassland	score
	Great Basin grassland	B. 20-50%
	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	score
	piñon and juniper woodland	score
	Sonoran thorn woodland	score
Forest	broadleaved upland forest	score
	North Coast coniferous forest	score
	closed cone coniferous forest	C. 5-20%
	lower montane coniferous forest	C. 5-20%
	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).