

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):	Ulex europaeus L.
Synonyms:	Ulex europaea
Common names:	gorse, common gorse, furze, prickly broom
Evaluation date (mm/dd/yy):	08/11/03
Evaluator #1 Name/Title:	Cynthia L. Roye, Associate State Park Resource Ecologist
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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 list committee use—please leave blank	
List committee members:	Matt Brooks, Joe DiTomaso, Peter Warner, Doug Johnson
Committee review date:	9/4/03, Berkeley
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	A	Other Pub. Mat'l
1.2	Impact on plant community	A	Other Pub. Mat'l
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:
AABD
Use matrix determine the score; enter below:
A

2.1	Role of anthropogenic and natural disturbance	B 2	Other Pub. Mat'l
2.2	Local rate of spread with no management	B 2	Other Pub. Mat'l
2.3	Recent trend in total area infested within state	C 1	Rev'd, Sci. Pub'n
2.4	Innate reproductive potential	A 3	Other Pub. Mat'l
2.5	Potential for human-caused dispersal	C 1	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:
11
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:
High
No Alert

3.1	Ecological amplitude	A	Observational
3.2	Distribution	D	Observational

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

Table 3. Documentation

Question 1.1 Impact on abiotic ecosystem processes
Identify ecosystem processes impacted: Soil chemistry, fire frequency, fire intensity
Rationale: Associated with nitrogen-fixing bacteria so adds nitrogen to soils; leaf litter acidifies and lowers cation exchange capacity of moderately fertile soils; may impoverish soil of phosphorus; grows in outward ring with flammable dead material in center; oils in plant increase flammability
Sources of information: Hoshovsky, M.C. IN: Bossard et al. 2000. Invasive Plants of California's Wildlands. University of California Press. Berkeley, CA 358p.; Parsons, W.T. and E.G. Cuthbertson. 1992. Noxious Weeds of Australia. Inkata Press, Melbourne and Sydney, Australia. 692 P; Parker, R. and L. Burrill. 1991. Gorse (<i>Ulex europaeus</i> L.). Washington, Idaho, Oregon. Pacific Northwest Extension Publication. Pamphlet.
Question 1.2 Impact on plant community composition, structure, and interactions
Identify type of impact or alteration: Forms impenetrable thickets excluding desirable vegetation.
Rationale: Colonizes nitrogen-poor soils outcompeting native plants; forms impenetrable thickets excluding desirable native vegetation. Tolerates most soil types but can suffer boron or magnesium deficiency.
Sources of information: Hoshovsky in Bossard et al.; TNC 1989. Element Stewardship Abstract for <i>Ulex europaeus</i> . Accessed online at: http://tncweeds.ucdavis.edu/esadocs/ulxeuro.html May 2003.
Question 1.3 Impact on higher trophic levels
Identify type of impact or alteration: B. Impedes movement of wildlife; provides habitat for some (like undesirable rabbits in Australia). Used by honey bees. No other information about use as forage found.
Rationale: spiny nature and dense growth forms impenetrable thicket.
Sources of information: Parsons and Cuthbertson (see above).
Question 1.4 Impact on genetic integrity
Identify impacts: None documented
Rationale: Plant has no closely related natives or non-natives in California.
Sources of information: Hoshovsky in Bossard et al. eds. 2000. Wildland Weeds of California.
Question 2.1 Role of anthropogenic and natural disturbance in establishment
Describe role of disturbance: B; Found in infertile or disturbed sites but may invade undisturbed open areas.

Rationale: found in infertile or disturbed sites including sand dunes, gravel bars, fence rows, overgrazed pastures, logged and burned-over areas. May invade open areas in coastal forests per Pasquinelli, 1998.

Sources of information: Hoshovsky, M. IN: Bossard et al. 2000. Pasquinelli, R. 1998. Exotic weeds in the North Coast State Parks. Fremontia 26 (4): 54-57.

Question 2.2 Local rate of spread with no management

Describe rate of spread: rapid.

Rationale: explosive seed dispersal up to 5 m. from original plant.

Sources of information: California Department of Food and Agriculture Encycloweedia as accessed on the Internet at:<http://pi.cdfa.ca.gov/weedinfo/ULEX2.html> June 2, 2003.

Question 2.3 Recent trend in total area infested within state

Describe trend: Score = C, Stable.

Rationale: Gorse may have already achieved its ecoclimactic limit, at least coastally, based on climatic modelling.

Sources of information: Fox, J.C. and S. Steinmaus. 2001. Climate prediction of an invasive plant in California: *Ulex europaeus* (gorse). Proceedings, California Weed Science Society 53:34-37; anecdotal observations by State Park Resource Ecologists Peter Warner, Bill Maslach, Joanne Kerbavaz and DFG Biologist Tina Fabula.

Question 2.4 Innate reproductive potential

Describe key reproductive characteristics: Score = A. Creeping roots, seeds, and re-sprouting root crowns

Rationale: seeds heavy, not windborne; explosive dispersal of up to 5 m with heat of sun; re-sprouts following fire, remains in seed bank for 30 years or more.

Sources of information: The Nature Conservancy. 1989. Element Stewardship Abstract for *Ulex europaeus* as accessed on the Intertnet at: <http://tncweeds.ucdavis.edu/esadocs/ulxeuro.html>

Question 2.5 Potential for human-caused dispersal

Identify dispersal mechanisms: C. Could be dispersed by humans for horticultural purposes, but this is currently not likely to be an important dispersal mechanism.

Rationale: Although this plant was introduced by humans it is currently on the California Department of Food and Agriculture Noxious Weed List B and is not be sold in California nurseries in counties where active control

measures are underway. This plant is considered undesirable in most California coastal counties.

Sources of information: Stanton, 2002. Alternatives to invasive landscape and garden plants. CalEPPC Symposium Proceedings as accessed at:

http://ucce.ucdavis.edu/freeform/ceppc/documents/2002_Symposium_Proceedings2377.pdf.

CDFA. 2003. California's Most (Un) Wanted Weeds. Noxious Times. Spring 2003. V4 #3.

Question 2.6 Potential for natural long-distance dispersal

Identify dispersal mechanisms: C; is dispersed by ants and quail locally, and may be dispersed by water when growing by streams.

Rationale: Dispersal agents are not likely to cause long-range dispersal. Water could act as long-range dispersal agent. Many infestations are on the immediate coast, limiting stream areas of immediate coastal drainage

Sources of information: enter text here

Question 2.7 Other regions invaded

Identify other regions: Is weedy in Australia, New Zealand, Chile, India, but in habitats similar to those invaded here. Is also in South Africa but is not considered a pest there.

Rationale: Is weedy in Australia, New Zealand, Chile, India, but in habitats similar to those invaded here. Is also in South Africa but is not considered a pest there.

Sources of information: Parsons and Cuthbertson, 1992. Noxious Weeds of Australia. Inkata Press. Melbourne, Sydney, Australia. 692 p.

Question 3.1 Ecological amplitude

Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: Score = A. Currently known from 6 major ecological types and 8 minor ecological types in California. Introduced to state 1894.

Rationale: Is found in 6 major ecological types and 8 minor ecological types in California

Sources of information: Personal Observations, Barry, Roye, Warner, Maslach, Fabula, Pasquinelli.

Question 3.2 Distribution

Describe distribution: Score = D. Found in less than 5% of the total number of occurrences of any of the types in which it is found.

Rationale: Can be very dense locally.

Sources of information: CalFlora Database, Personal observations, California State Parks 2002. Resource Condition Assessment.

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	Yes: 1 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	Yes: 1 pt
Fragments easily and fragments can become established elsewhere	No: 0 pts
Resprouts readily when cut, grazed, or burned	Yes: 1 pt
	7 pts 1 unknown
	A (6+ pts)

Note any related traits: Seed bank can persist for 30 years; seeds have coating that is impermeable to water; burning breaks seed dormancy and seedlings abound post burn (Parsons and Cuthbertson, 1992; Hoshovsky, 1989. TNC Elem. Stewardshp Abst. accessed at <http://tncweeds.ucdavis.edu/esadoes/documnts/ullexeur.pdf>)

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	D. presen
	desert	score
	interior	score
Scrub and Chaparral	coastal bluff scrub	D. presen
	coastal scrub	D. presen
	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
Grasslands, Vernal Pools, Meadows, and other Herb Communities	coastal prairie	D. presen
	valley and foothill grassland	score
	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)	D. presen
Woodland	cismontane woodland	D. presen
	piñon and juniper woodland	score
	Sonoran thorn woodland	score
Forest	broadleaved upland forest	score
	North Coast coniferous forest	D. presen
	closed cone coniferous forest	D. presen
	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).