

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):	Crataegus monogyna
Synonyms:	Crataegus apiifolia, C. curvisepala, C. dissecta, C. oxyacanthana, C. oxyacantha var. monogyna, C. oxyacantha v. paulii, Mespilus monogyna, Oxyacantha apiifolia, others.
Common names:	English hawthorn, common hawthorn, oneseed hawthorn, May tree, singleseed hawthorn, azzarola, neapolitan medlar, oneseed hawthorn, whitethorn,
Evaluation date (mm/dd/yy):	7/30/2004
Evaluator #1 Name/Title:	Brianna Richardson, Project Manager
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Evaluator #2 Name/Title:	
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Section below for list committee use—please leave blank

List committee members:	Peter Warner, Joe DiTomaso, Cynthia Roye, John Randall, Jake Sigg, Alison Stanton
Committee review date:	8/27/2004
List date:	enter text here
Re-evaluation date(s):	enter text here

General comments on this assessment:

Questions 2.2, 2.3, 1.4, and 3.2 need further exploration. A preserve in Willamette Valley, Oregon had to be abandoned because the Crataegus monogyna infestation was so severe it could not be controlled with available resources. This should serve as a warning that this plant has the potential to be a serious invader. (Bossard, CC, JM Randall, MC Hoshovsky. 2000. Invasive Plants of California's Wildlands. UC Press.)

This completed PAF was previewed by Jake Sigg, prior to committee review. August, 2004.

Table 2. Criteria, Section, and Overall Scores

1.1	Impact on abiotic ecosystem processes	D	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	C	Rev'd, Sci. Pub'n

<p>Impact</p> <p><i>Enter four characters from Q1.1-1.4 below:</i></p> <p>DBCC</p> <p><i>Using matrix, determine score and enter below:</i></p> <p>C</p>

2.1	Role of anthropogenic and natural disturbance	A (3 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	B (2 pts)	Observational
2.4	Innate reproductive potential Wksht A	C (1 pt)	Other Pub. Mat'l
2.5	Potential for human-caused dispersal	A (3 pts)	Other Pub. Mat'l
2.6	Potential for natural long-distance dispersal	A (3 pts)	Rev'd, Sci. Pub'n
2.7	Other regions invaded	C (1 pt)	Other Pub. Mat'l

<p>Invasiveness</p> <p><i>Enter the sum total of all points for Q2.1-2.7 below:</i></p> <p>15</p> <p><i>Use matrix to determine score and enter below:</i></p> <p>B</p>
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<p>Plant Score</p> <p><i>Using matrix, determine Overall Score and Alert Status from the three section scores and enter below:</i></p> <p>Low</p> <p>No Alert</p>
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3.1	Ecological amplitude/Range	B	Other Pub. Mat'l
3.2	Distribution/Peak frequency Wksht C	D	Observational

<p>Distribution</p> <p><i>Using matrix, determine score and enter below:</i></p> <p>C</p>

Table 3. Documentation

<p>Question 1.1 Impact on abiotic ecosystem processes</p>	<p>D Rev'd, Sci. Pub'n back</p>
<p>Identify ecosystem processes impacted: Grubb refers to a 1979 study by Key in which soils under <i>C. monogyna</i> were found to have higher amounts of plant-available phosphorous and nitrate than grassland soil.</p>	
<p>Rationale: Little importance is placed on the nutrient-enriching properties of <i>C. monogyna</i> in the literature.</p>	
<p>Sources of information: Grubb, P.J., W.G. Lee, J.Kollmann, J.B.Wilson. 1996. Interaction of irradiance and soil nutrient supply on growht of seedlings of ten European tall-shrub speices and <i>Fagus sylvatica</i>. <i>Journal of Ecology</i> V.84: 827-840.</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: <i>C. monogyna</i> has more conspicuous fruit than native <i>C. douglasii suksdorfii</i>, making it more attractive to robins. This may result in <i>C. monogyna</i> having more dispersal success when the two spp are found in the same location. <i>C. suksdorfii</i> is a rare plant. In a NY study, <i>C. monogyna</i> had a cover >25% in patches >100 sqmtr. Can form dense thickets excluding all understory plants. Can replace open grassland habitat with a dense shrub and small tree layer.</p>	
<p>Rationale: Can be severe, forming dense stands and eliminating understory layers. May compete directly with the rare <i>C. suksdorfii</i> for dispersal services of birds. May create shrub or tree layer in grasslands.</p>	
<p>Sources of information: Salabanks, R. 1993. Fruiting plant attractiveness to avian seed dispersers: Native v. invasives <i>Crataegus</i> in western Oregon. <i>Madrono</i> V.40 n.2: 108-116.</p> <p>Hunter, J.C., J.A.Mattice. 2002. The spread of woody exotics into the forests of a northeastern landscape, 1938-1990. <i>Journal of th eTorrey Botanical Society</i> 129(3): 220-227.</p> <p>Oregon State University website: www.orst.edu/dept/ldplants/crmo-i.htm.</p> <p>Garry Oak Ecosystems Recovery Team website: www.goert.ca/resources/invspecies.htm.</p> <p>Observational, Peter Warner, John Randall, Jake Sigg, Joe DiTomaso, 2004.</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: Insect pollinated. <i>C. monogyna</i> has more conspicuous fruit than native <i>C. douglasii suksdorfii</i>, making it more attractive to robins. Seeds may be eaten by mammals. Creates dense thickets that can impede movement, and is covered in thorns.</p>	
<p>Rationale: May impede the movement of larger mammals. Thorns may interfere with herbivores, or may damage the mouths of herbivores and frugivores. Provides food for birds and small mammals.</p>	
<p>Sources of information: Salabanks, R. 1993. Fruiting plant attractiveness to avian seed dispersers: Native v. invasives <i>Crataegus</i> in western Oregon. <i>Madrono</i> V.40 n.2: 108-116.</p> <p>DiTomaso, J., E. Healy. Weeds of California and Other Western States. unpublished.</p> <p>Bass, D.A. 1990. Dispersal of an introduced shrub (<i>Crataegus monogyna</i>) by the brush-tailed possum</p>	

<p>(<i>Trichosurus vulpecula</i>). Australian Journal of Ecology V.15: 227-229. Weed Info website: www.weedinfo.com.au</p>	
<p>Question 1.4 Impact on genetic integrity</p>	<p>C Rev'd, Sci. Pub'n back</p>
<p>Identify impacts: Readily hybridizes with several other <i>Crataegus</i> spp. including the native North American spp. <i>C. douglasii</i> Lindley. Hybridizes with the rare <i>C. suksdorfii</i> in Oregon. A. Williams is not aware of any native <i>Crataegus</i> in RNP. No information available about possible hybridization occurring in CA.</p>	
<p>Rationale: Can hybridize with native (and rare native ssp), but it is unclear if this is happening in the state.</p>	
<p>Sources of information: DiTomaso, J., E. Healy. Weeds of California and Other Western States. unpublished. Salabanks, R. 1993. Fruiting plant attractiveness to avian seed dispersers: Native v. invasives <i>Crataegus</i> in western Oregon. Madrono V.40 n.2: 108-116. Andrea Williams, Redwood NP, personal communication 8/3/04 (phone) Observational, Peter Warner, 2004.</p>	
<p>Question 2.1 Role of anthropogenic and natural disturbance in establishment</p>	<p>A Rev'd, Sci. Pub'n back</p>
<p>Describe role of disturbance: Australia study: <i>C. monogyna</i> occurred more frequently on roadsides than in farmland, where it was only found where planted as hedge.</p>	
<p>Rationale: No disturbance noted in most accounts of establishment.</p>	
<p>Sources of information: Lane, D. 1979. The significance of noxious weeds on roadsides in agricultural areas of Victoria, Australia. Weed Researc. V.19: 151-156. Many reviewed publications refer to invasion sites.</p>	
<p>Question 2.2 Local rate of spread with no management</p>	<p>B Rev'd, Sci. Pub'n back</p>
<p>Describe rate of spread: In Australia, the local range of <i>C.monogyna</i> expands at 120m/yr. In NY study, the rate of spread was not great over a ~50 yr. period, and the authors believe it is not likely to increase (in mature, deciduous forests).</p>	
<p>Rationale: No information on rate of spread in CA. Different sites experience different rates of spread.</p>	
<p>Sources of information: Salabanks, R. 1993. Fruiting plant attractiveness to avian seed dispersers: Native v. invasives <i>Crataegus</i> in western Oregon. Madrono V.40 n.2: 108-116. Hunter, J.C., J.A.Mattice. 2002. The spread of woody exotics into the forests of a northeastern landscape, 1938-1990. Journal of the Torrey Botanical Society 129(3): 220-227. Observational, Peter Warner, Jake Sigg, 2004.</p>	

Question 2.3 Recent trend in total area infested within state	B Observational back
Describe trend: Increasing slowly throughout the state.	
Rationale: enter text here	
Sources of information: Observational, Peter Warner, Jake Sigg, 2004.	
Question 2.4 Innate reproductive potential	C Other Pub. Mat'l back
Describe key reproductive characteristics: Crown and upper portion of main roots develop suckers if trees are damaged or disturbed. Cannot pollinate itself. Reproductive maturity at 10 yrs old.	
Rationale: 2 points.	
Sources of information: DiTomaso, J., E. Healy. Weeds of California and Other Western States. unpublished. Observational, Peter Warner, John Randall, Jake Sigg, Joe DiTomaso, 2004.	
Question 2.5 Potential for human-caused dispersal	A Other Pub. Mat'l back
Identify dispersal mechanisms: Commonly sold horticulturally.	
Rationale: Numerous opportunities for plant to be introduced to new areas.	
Sources of information: www.naturehills.com and numerous other on-line sites.	
Question 2.6 Potential for natural long-distance dispersal	A Rev'd, Sci. Pub'n back
Identify dispersal mechanisms: Seeds dispersed primarily by animals, especially birds, possibly mammals. May also disperse with water, soil movement. Seeds are not damaged (and do germinate) after passing through the guts of possums.	
Rationale: Seeds readily consumed by birds, sometimes preferentially.	
Sources of information: Salabanks, R. 1993. Fruiting plant attractiveness to avian seed dispersers: Native v. invasives Crataegus in western Oregon. Madrono V.40 n.2: 108-116. DiTomaso, J., E. Healy. Weeds of California and Other Western States. unpublished. Bass, D.A. 1990. Dispersal of an introduced shrub (Crataegus monogyna) by the brush-tailed possum (Trichosurus vulpecula). Australian Journal of Ecology V.15: 227-229.	
Question 2.7 Other regions invaded	C Other Pub. Mat'l back
Identify other regions: Invasive in Willamette Valley, OR. Noxious/invasive in Victoria, South, and Western Australia. In British Columbia it's found in wetland and lake margins.	

Rationale: Invades similar habitats to the ones it's found in in California. Invades wetlands in BC, isn't noted as doing so in CA, but does prefer more moist grasslands and may exist in wetlands in CA. Conservatively a C, could be a B.	
Sources of information: DiTomaso, J., E. Healy. Weeds of California and Other Western States. unpublished. Plants for a Future Database: www.scs.leeds.ac.uk Garry Oak Ecosystems Recovery Team website: www.goert.ca/resources/invspecies.htm.	
Question 3.1 Ecological amplitude/Range	B Other Pub. Mat'l back
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: Riparian areas, woodland, grassland (where moist).	
Rationale: Invades 2 major ecological types in CA.	
Sources of information: DiTomaso, J., E. Healy. Weeds of California and Other Western States. unpublished. Observational, Peter Warner, Joe DiTomaso, 2004.	
Question 3.2 Distribution/Peak frequency	D Other Pub. Mat'l back
Describe distribution: Colonizes forest and woodland understories on the San Francisco peninsula and the norhter SF Bay area (Marin and Sonoma counties). North coast, north coast ranges, SF Bay region, central coast. Arkansas, Illinois, Montana, Oregon, Tennessee, Utah, Washington, Wisconsin, northeastern US.	
Rationale: Inhabits less than 5% of any ecotype in CA.	
Sources of information: DiTomaso, J., E. Healy. Weeds of California and Other Western States. unpublished. Observational, Peter Warner, Joe DiTomaso, 2004.	

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Reaches reproductive maturity in 2 years or less	No: 0 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	Unknown: 0 pts
Viable seed produced with <i>both</i> self-pollination and cross-pollination	No: 0 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	Yes: 1 pt
	2 pts 1 unknown
	C (1-3)
Note any related traits: Root suckers sprout when tree is damaged or disturbed.	

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	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	score
	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	D. present
	riparian scrub (incl. desert washes)	D. present
Woodland	cismontane woodland	D. present
	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).