

# 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**

<b>Species name (Latin binomial):</b>	Cotoneaster pannosa Franchet.
<b>Synonyms:</b>	C. pannosus Franch.
<b>Common names:</b>	Silverleaf Cotoneaster, velvet cotoneaster
<b>Evaluation date (mm/dd/yy):</b>	9/6/04
<b>Evaluator #1 Name/Title:</b>	Caroline Christman, Habitat Restoration Intern
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Section below for list committee use—please leave blank

<b>List committee members:</b>	Carla Bossard, John Randall, Cynthia Roye, Jake Sigg, Peter Warner
<b>Committee review date:</b>	2/11/05
<b>List date:</b>	enter text here
<b>Re-evaluation date(s):</b>	enter text here

**General comments on this assessment:**

I will be basing many of my decisions on my own field experience and on that of my colleagues. I do not have any knowledge on the invasive qualities of cotoneaster in southern California or the Central Valley. (Reviewer #1).

*C. pannosa* cannot be distinguished from *C. franchetti* when not in flower.

**Table 2. Criteria, Section, and Overall Scores**

<a href="#">1.1</a>	Impact on abiotic ecosystem processes	<b>D</b>	<b>Observational</b>
<a href="#">1.2</a>	Impact on plant community	<b>B</b>	<b>Other Pub. Mat'l</b>
<a href="#">1.3</a>	Impact on higher trophic levels	<b>B</b>	<b>Observational</b>
<a href="#">1.4</a>	Impact on genetic integrity	<b>D</b>	<b>Rev'd Sci Pub'n</b>

<p><b>Impact</b></p> <p><i>Enter four characters from Q1.1-1.4 below:</i></p> <p><b>DBBD</b></p> <p><i>Using matrix, determine score and enter below:</i></p> <p><b>B</b></p>
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<a href="#">2.1</a>	Role of anthropogenic and natural disturbance	<b>3 (3 pts)</b>	<b>Other Pub. Mat'l</b>
<a href="#">2.2</a>	Local rate of spread with no management	<b>3 (3 pts)</b>	<b>Observational</b>
<a href="#">2.3</a>	Recent trend in total area infested within state	<b>2 (2 pts)</b>	<b>Other Pub. Mat'l</b>
<a href="#">2.4</a>	Innate reproductive potential <a href="#">Wksht A</a>	<b>A (3pts.)</b>	<b>Observational</b>
<a href="#">2.5</a>	Potential for human-caused dispersal	<b>3 (3 pts)</b>	<b>Other Pub. Mat'l</b>
<a href="#">2.6</a>	Potential for natural long-distance dispersal	<b>3 (3 pts)</b>	<b>Doc'n level</b>
<a href="#">2.7</a>	Other regions invaded	<b>1 (1 pt)</b>	<b>Other Pub. Mat'l</b>

<p><b>Invasiveness</b></p> <p><i>Enter the sum total of all points for Q2.1-2.7 below:</i></p> <p><b>18</b></p> <p><i>Use matrix to determine score and enter below:</i></p> <p><b>A</b></p>
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<p><b>Plant Score</b></p> <p><i>Using matrix, determine Overall Score and Alert Status from the three section scores and enter below:</i></p> <p><b>Medium</b></p> <p><b>No Alert</b></p>
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<a href="#">3.1</a>	Ecological amplitude/Range	<b>A</b>	<b>Observational</b>
<a href="#">3.2</a>	Distribution/Peak frequency <a href="#">Wksht C</a>	<b>U</b>	<b>No Information</b>

<p><b>Distribution</b></p> <p><i>Using matrix, determine score and enter below:</i></p> <p><b>B</b></p>
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**Table 3. Documentation**

<p><b>Question 1.1</b> Impact on abiotic ecosystem processes</p>	<p>D Observational <a href="#">back</a></p>
<p>Identify ecosystem processes impacted: I have not observed any impact on ecosystem processes.</p>	
<p>Rationale: I have not observed any impact on ecosystem processes. However, my observations are limited to land managed fairly intensively. Therefore, for example, the fire regime is already drastically altered (there are no fires) and it is difficult to say whether cotoneaster in a different setting would an impact on fire occurrence.</p> <p>Cotoneaster may influences natural erosion processes, such as reducing erosion in old sand dunes and coastal bluffs, this erosion creates opening in coastal scrub for rare and endangered dune and serpentine annual plants. It is not clear whether the extensive root system of the cotoneaster impeded erosion more than the larger scrub plants such as <i>Lupinus chamissonis</i>, <i>Bacharis pilularis</i>, <i>Ceanothus thyrsoiflorus</i>, etc.</p> <p>From the horticultural literature it seems that Cotoneasters do not impact the nutrient and mineral dynamics of the soil, as they are considered a possible candidate for planting in any well-drained soil and not noted to effect plants around them. However, the impact of one or two cotoneasters may be negligible though greater numbers are not.</p>	
<p>Sources of information: Sigg, J. 2000. Cotoneaster. Spp. in Bossard, C. M., J. Randall, and M. Hochovsky (ed.). Invasive Plants of California's Wildlands. University of California Press, Berkeley, CA.</p>	
<p><b>Question 1.2</b> Impact on plant community composition, structure, and interactions</p>	<p>A Other Pub. Mat'l <a href="#">back</a></p>
<p>Identify type of impact or alteration: Cotoneaster can quickly come to dominate a scrub or grassland area on sandy or clay soils, and even on serpentine soils and extirpate native species.</p>	
<p>Rationale: In many areas of coastal California the Cotoneaster, at 3m tall, will be the tallest plant and shade out native scrub and grasses, in forested areas Cotoneaster seedlings will compete with seedlings from native trees. The Cotoneaster grows quickly in comparison to native scrubs, has a large root system that can extend beyond the canopy of a smaller Cotoneaster, and produces berries which are very popular with birds which spread the seeds. Additionally, the Cotoneasters are highly adaptable and can grow in moist (near waterways) or dry soils, and even in the thin, rocky soils underlying native grasslands. California's grasslands have been severely reduced by the proliferation of non-native annual grasses and are especially difficult to restore. Cotoneaster are able to grow in grasslands, shade out nativegrasses and create areas with higher organic matter and moisture which favor weedy grasses. Cotoneaster spread very rapidly which intensifies the risk to many of our native ecosystems.</p>	
<p>Sources of information: Invasive Plants of California Wildlands. Sigg, Jake, on www. cal-ipc.org,</p>	
<p><b>Question 1.3</b> Impact on higher trophic levels</p>	<p>B Observational <a href="#">back</a></p>
<p>Identify type of impact or alteration: Reduces habitat for burrowing rodents such as voles and shrews, reduces habitat for bird species such as quail that require open grassy areas for seed foraging, reduces space in which raptors can hunt. Reducing habitat for rodents and some birds will in turn reduce food source for raptors, foxes, coyotes and other carnivores.</p>	
<p>Rationale: Coastal areas of California are defined by areas of scrub and oak interspered with open areas in which grasses and annual forbs persist, this pattern is constantly changing depending on erosion, rainfall, and natural progression from open sand into scrub and eventually oak woodland. However, Cotoneaster grows and spreads</p>	

<p>much more quickly than native plants and fills in open areas in scrub and covers grasslands when not rigorously controlled. It's dense roots and branches can effectively close off the area under its canopy making it inhospitable to rodents and difficult for larger birds to penetrate.</p>	
<p>Sources of information: Observation</p>	
<p><b>Question 1.4</b> Impact on genetic integrity</p>	<p>U No Information <a href="#">back</a></p>
<p>Identify impacts: Not aware of any ability to hybridize with natives, but have found no information on this.</p>	
<p>Rationale: Cotoneaster is in the rosaceae family and might be able to hybridize with native rosaceae, though it seems unlikely as there are no native plants in the same genus.</p>	
<p>Sources of information: no information</p>	
<p><b>Question 2.1</b> Role of anthropogenic and natural disturbance in establishment</p>	<p>A Other Pub. Mat'l <a href="#">back</a></p>
<p>Describe role of disturbance: Cotoneaster can invade wildlands without any dramatic anthropogenic or natural disturbance.</p>	
<p>Rationale: I have observed Cotoneaster growing in undisturbed scrubland, grassland and forested areas. Because birds eat the berries and drop the seed in scat, disturbance is not necessary for the spread of the seed. Additionally, Cotoneaster are well-adapted to many soil types and can do well in full sun or part shade conditions. It is likely that the fragmentation of wildlands has been at least partly responsible for this spread, Cotoneasters are a popular horticultural plant (in part because they attract birds!) and they are often cultivated close to wild areas. It has been noted by Jake Sigg that the oldest Cotoneasters seen in the wild are only 15 to 20 years old and that a change in genotype might have allowed Cotoneasters to spread more rapidly in the recent past as they have been cultivated in California since 1854.</p>	
<p>Sources of information: Observation, Invasive Plants of California Wildlands. Sigg, Jake, on <a href="http://www.cal-ipc.org">www. cal-ipc.org</a>,</p>	
<p><b>Question 2.2</b> Local rate of spread with no management</p>	<p>A Observational <a href="#">back</a></p>
<p>Describe rate of spread: Double number of plants in 2 or 3 years.</p>	
<p>Rationale: For each fruiting plant I see 5 seedlings at least 50 meters from the parent plant survive for at least one year (at which point I remove them, so I cannot be sure that they would survive to maturity and to produce fruit, but they seem to be healthy when they are pulled). It is difficult to say how rapid the spread of the plant will be exactly because I can find no information regarding at what age they produce fruit.</p>	
<p>Sources of information: Observation</p>	
<p><b>Question 2.3</b> Recent trend in total area infested within state</p>	<p>B Other Pub. Mat'l <a href="#">back</a></p>
<p>Describe trend: Increasing steadily, unable to quantify</p>	

<p>Rationale: Cotoneaster has only recently been noted as a wildland invader, but so far has spread significantly along the coast, esp. near urban areas where it has been in cultivation for many years. It seems likely that as the population of California grows and housing along the coast becomes denser, the Cotoneaster will be brought into local gardens and will spread from them into wild areas. It does not seem likely to spread inland as it prefers the cooler, moister climate of the coast.</p>	
<p>Sources of information: Invasive Plants of California Wildlands. Sigg, Jake, on <a href="http://www.cal-ipc.org">www. cal-ipc.org</a>, Cotoneaster pannosus. Forest Starr, Kim Starr, and Lloyd Loope. United States Geological Survey--Biological Resources Division, Haleakala Field Station, Maui, Hawai'i, January, 2003</p>	
<p><b>Question 2.4</b> Innate reproductive potential</p>	<p>B Observational <a href="#">back</a></p>
<p>Describe key reproductive characteristics: Unsure how quickly it reaches sexual maturity, probably no more than 3 years, a single plant can produce thousands of berries, they fruit every year, the fruit is produced during the fall months and stay on the plant throughout the winter, seedlings can sprout without being eaten, as shown by many seedlings germinating directly beneath the parent plant, unsure how long seeds are viable in the soil, produce seed from self-and cross- pollination, does not spread by rhizomes or root structures, but does resprout like crazy when cut.</p>	
<p>Rationale: enter text here</p>	
<p>Sources of information: Observation, Invasive Plants of California Wildlands. Sigg, Jake, on <a href="http://www.cal-ipc.org">www. cal-ipc.org</a>,</p>	
<p><b>Question 2.5</b> Potential for human-caused dispersal</p>	<p>A Other Pub. Mat'l <a href="#">back</a></p>
<p>Identify dispersal mechanisms: Used in public and private ornamental cultivation.</p>	
<p>Rationale: First, I worked in the nursery industry in the past and have sold Cotoneasters (believe me, I have been chastened). Second, there are hundreds of websites advertising many species and varieties of Cotoneaster for sale by mail order or at local nurseries, all over the USA and in many other countries. All of these websites give information on planting and caring for your Cotoneaster. Additionally, the Hawaiian Forest Service even planted Cotoneaster as part of a reforestation project.</p>	
<p>Sources of information: Observation  Invasive Plants of California Wildlands. Sigg, Jake, on <a href="http://www.cal-ipc.org">www. cal-ipc.org</a>  Cotoneaster pannosus. Forest Starr, Kim Starr, and Lloyd Loope. United States Geological Survey--Biological Resources Division, Haleakala Field Station, Maui, Hawai'i, January, 2003  Use Google to search for Cotoneaster and see what you find.</p>	
<p><b>Question 2.6</b> Potential for natural long-distance dispersal</p>	<p>A Other Pub. Mat'l <a href="#">back</a></p>
<p>Identify dispersal mechanisms: Birds and other animals eat fruit and move seed over range. Fruit can be moved by flowing water.</p>	

Rationale: enter text here	
Sources of information: Observation Invasive Plants of California Wildlands. Sigg, Jake, on www. cal-ipc.org Cotoneaster pannosus. Forest Starr, Kim Starr, and Lloyd Loope. United States Geological Survey--Biological Resources Division, Haleakala Field Station, Maui, Hawai'i, January, 2003 Weeds of California and Other Western States. DiTomaso J, Healy E. As yet unpublished	
<b>Question 2.7</b> Other regions invaded	C Other Pub. Mat'l <a href="#">back</a>
Identify other regions: Has invaded cool, upland forests in Hawaii and Guam, temperate bushland in Australia and cool, coastal regions of South Africa.	
Rationale: Reviewer #2; Lowered score from "A" assigned by Reviewer #1 based on Worksheet C.	
Sources of information: Institute of Pacific Islands Forestry, Pacific Island Ecosystems at Risk (PIER): <a href="http://www.hear.org/pier/index.html">http://www.hear.org/pier/index.html</a> Cotoneaster pannosus. Forest Starr, Kim Starr, and Lloyd Loope. United States Geological Survey--Biological Resources Division, Haleakala Field Station, Maui, Hawai'i, January, 2003 Iziko, Museums of Cape Town: <a href="http://www.museums.org.za/bio/plants/rosaceae/">http://www.museums.org.za/bio/plants/rosaceae/</a>	
<b>Question 3.1</b> Ecological amplitude/Range	A Observational <a href="#">back</a>
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: Cotoneaster can be found in all coastal ecosystems except foredunes, as I know from observation, and it is found mainly in an area around Los Angeles, an area around the San Francisco Bay, along the central coast near Big Sur, and in far Northern California near the border with Oregon. It was introduced to the state in 1854 for ornamental purposes. I have no information on where else it may be or what percentage of total ecosystem in California it has invaded. I would guess around 5%-10% for riparian woodland, and more like 20% for coastal scrub and prairie, considering how reduced in size and number these ecosystems are. However, I have no information to prove this. Known from 5 major types per Worksheet C.	
Rationale: on enter text here	
Sources of information: Observation Invasive Plants of California Wildlands. Sigg, Jake, on www. cal-ipc.org Cotoneaster pannosus. Forest Starr, Kim Starr, and Lloyd Loope. United States Geological Survey--Biological Resources Division, Haleakala Field Station, Maui, Hawai'i, January, 200.	
<b>Question 3.2</b> Distribution/Peak frequency	U No Information <a href="#">back</a>
Describe distribution: Unknown	

Rationale: enter text here
Sources of information: enter text here

**Worksheet A**

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Reaches reproductive maturity in 2 years or less	<u>No</u>
Dense infestations produce >1,000 viable seed per square meter	<u>Yes (2)</u>
Populations of this species produce seeds every year.	<b>Yes: 1 pt</b>
Seed production sustained over 3 or more months within a population annually	<b>Yes: 1 pt</b>
Seeds remain viable in soil for three or more years	<b>Unknown: 0 pts</b>
Viable seed produced with <i>both</i> self-pollination and cross-pollination	<b>Yes: 1 pt</b>
Has quickly spreading vegetative structures (rhizomes, roots, etc.) that may root at nodes	<b>No: 0 pt</b>
Fragments easily and fragments can become established elsewhere	<b>No: 0 pts</b>
Resprouts readily when cut, grazed, or burned	<b>Yes: 1 pt</b>
	<b>6 pts      1 unknown</b>
	<b>A (6+ points)</b>

**Note any related traits:** seeds spread by birds and other animals, also spread by water movement and human cultivation. It is likely that a single plant can produce several thousand seeds per year, depending on plant size and vigor, but I have seen nothing documenting this. Different *Cotoneaster* species may hybridize

## Worksheet C - California Ecological Types

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(*sensu* Holland 1986)

Major Ecological Types	Minor Ecological Types	Code*
<b>Marine Systems</b>	marine systems	score
<b>Freshwater and Estuarine Aquatic Systems</b>	lakes, ponds, reservoirs	score
	rivers, streams, canals	score
	estuaries	score
<b>Dunes</b>	coastal	Unknow
	desert	score
	interior	score
<b>Scrub and Chaparral</b>	coastal bluff scrub	Unknow
	coastal scrub	Unknow
	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
<b>Grasslands, Vernal Pools, Meadows, and other Herb Communities</b>	coastal prairie	Unknow
	valley and foothill grassland	score
	Great Basin grassland	score
	vernal pool	score
	meadow and seep	score
	alkali playa	score
	pebble plain	score
<b>Bog and Marsh</b>	bog and fen	score
	marsh and swamp	score
<b>Riparian and Bottomland</b>	riparian forest	score
	riparian woodland	Unknow
	riparian scrub (incl. desert washes)	score
<b>Woodland</b>	cismontane woodland	score
	piñon and juniper woodland	score
	Sonoran thorn woodland	score
<b>Forest</b>	broadleaved upland forest	score
	North Coast coniferous forest	Unknow
	closed cone coniferous forest	score
	lower montane coniferous forest	score
	upper montane coniferous forest	score
	subalpine coniferous forest	score
<b>Alpine Habitats</b>	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).