

Cotoneaster pannosus

Cotoneaster

Rosaceae

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OVERVIEW

Cotoneaster pannosus is a popular ornamental plant that escapes from cultivation and has become a pest in at least Hawai'i, California, and Australia. Plants are dispersed by fruit eating birds and can form thickets along roads and pastures, in woodlands and shrublands, and in both disturbed and natural plant communities. This plant prefers cooler climates and poses the greatest risk to native mid-elevation shrubland and mesic forests where plants can readily germinate and form large stands. The plant is not currently on the Hawai'i state noxious weed list and it is somewhat widely planted on East Maui. Early detection of naturalized plants in natural environments will help prevent large infestations. Public education is needed to discourage plantings of this and other potentially harmful ornamentals, especially in or near natural areas.

TAXONOMY

Family: Rosaceae (rose family) (Wagner et al. 1999).

Latin name: *Cotoneaster pannosus* Franch. (Bailey and Bailey 1976, ITIS 2001, PLANTS 2001).

Synonyms: There is some confusion of the correct spelling of the species name. For the purposes of this report, it will be referred to as *C. pannosus*, though it is often listed as *C. pannosa*. The plant is listed as *Cotoneaster pannosa* Franch. in Wagner et al. (1990), then as *C. pannosus* in Lorence et al. (1995), then again as *C. pannosa* by Herbarium Pacificum Staff (1999). Neal (1965) lists the species "*C. pannosa*". However, Bailey and Bailey (1976) and PLANTS (2001) lists the species "*C. pannosus*". Clearly, there has is much confusion.

Common names: *Cotoneaster*, silverleaf cotoneaster (Brickell and Zuk 1997, PLANTS 2001).

Taxonomic notes: *Cotoneaster* is a large genus of over 200 species of deciduous, semi-evergreen, or evergreen shrubs and trees from forested and rocky areas in northern temperate regions of Europe, Asia and North Africa (Brickell and Zuk 1997). The genus includes numerous ornamentals that are widely grown in landscaping for their attractive flowers and fruits (Bailey and Bailey 1976). Many different cultivars, including some dwarf forms, have been grown for horticultural purposes.

Nomenclature: Unknown.

Related species in Hawai'i: Lorence et al. (1995) report that, "Another species, *C. microphyllus* Wall. ex Lindl., which differs from *C. pannosus* in its low habit up to 1 m tall, leaf blades up to .8 cm long, and the lower surface white-gray pilose strigose, later glabrate, has been cultivated on the island of Hawai'i and may be naturalized there

(Herbst, pers. comm.)." A few *Cotoneaster* species have been grown in Hawai'i for reforestation, including *C. francheti* Bois, *C. frigida* Wall, *C. pannosa* Franch, and *C. sp.* Medik (Skolmen 1960). A single tall tree of *C. aff. harrovianus* is cultivated near the campground in Polipoli, Maui, the same planting from which the *C. pannosus* originated. *C. aff. harrovianus* has not yet shown signs of spread. Many other *Cotoneaster* species are widely grown and valued in the landscaping industry elsewhere in the world and it is likely that other species will be introduced to Hawai'i in the future.

DESCRIPTION

"Shrub 2-5 m tall. Leaves simple, blades elliptic, 1.5-3 x .8-1.6 cm, glabrous above, whitish tomentose beneath, apex mucronulate, petiole 5-8 mm. Flowers in terminal corymbs, petals white. Fruit a bright red pome, subglobose to ellipsoid, 5-7 mm in diam; seeds 2-5, 4-5 mm long." (Lorence et al. 1995).

BIOLOGY & ECOLOGY

Cultivation: Many *Cotoneaster* species are valued in landscaping. *C. pannosus* makes a nice hedge or specimen plant and prefers a cooler climate. Plants have attractive rose like flowers that bloom profusely, along with numerous red apple like fruits, and soft furry leaves born on long arching branches. On Maui, plants are cultivated mostly in residential, roadside, or pasture settings in cooler climates, such as Makawao, Pi'iholo, Kula, Keokea, and Polipoli.

Invasiveness: *C. pannosus* is widely cultivated and has escaped from plantings in at least Hawai'i, California, and Australia. Plants are documented to be significant weeds of forested areas and are capable of altering and displacing native plant communities in areas where they invade by forming monotypic thickets. Seeds can be dispersed by fruit eating birds and plants readily germinate in natural as well as disturbed areas (Wagner et al. 1999; Lorence et al. 1995, Herbarium Pacificum Staff 1999; CALEPPC 1999; DOA-WA 2001).

Pollination: Unknown.

Propagation: *Cotoneaster* can be propagated by sowing ripe seeds or from cuttings (Brickell and Zuk 1996).

Pests and Diseases: According to Brickell and Zuk (1996), "Sensitive to rust, powdery mildew, stem cankers, and fire blight. Scale insects, rose slugs, spider mites, slugs, and snails cause problems."

Dispersal: *C. pannosus* is initially dispersed long distances through the horticulture trade. In Hawai'i, it has also been used in forestry plantings. Plants are able to spread further through local dispersal of seeds by fruit eating birds and pigs. Seedlings sprout along fencelines, roads, in pastures, native shrubland and wooded areas. Seeds were found on Maui in the feces of wild pigs (*Sus scrofa*) and ring-necked pheasants (*Phasianus colchicus*).

DISTRIBUTION

Native range: *C. pannosus* is native to China (Neal 1965).

Global distribution: In Australia, *C. pannosus* is included in a list prepared by the Department of Agriculture, Western Australia (DOA-WA 2001) as an invasive garden plant. The impact is listed as significant for the areas of Victoria, Tasmania, and the Australian Capital Territory. In California, *C. Pannosus* is listed as one of the most invasive wildland pest plants by the California Exotic Pest Plant Council. It is currently invading coastal and woodland communities especially along the north coast near Big Sur (CALEPPC 1999). In Hawai'i, *C. pannosus* is escaping from landscaping and forestry plantings on Kaua'i and East Maui (Wagner et al. 1999; Lorence et al. 1995; Herbarium Pacificum Staff 1999). Wagner et al. (1990) also reported *C. pannosus* from Volcano, Hawai'i, where they described it as persisting but not spreading yet.

State of Hawai'i distribution: Wagner et al. (1990) reported that *C. pannosus* is occasionally cultivated in Hawai'i and appears to persist and occasionally (Volcano, Hawai'i, and Kula, Maui) reproduces in the vicinity of cultivated plants, but that it had not spread yet. In 1995, *C. pannosus* was published as a newly naturalized record from Kaua'i (Lorence et al. 1995). They reported, "This species has become naturalized in diverse mesic forest of *Acacia koa*, *Metrosideros polymorpha*, alien species, and forestry plantations in Waimea Canyon State Park, Kokee State Park, and Pu'u Ka Pele Forest Reserve at ca. 1000-1300 m elevation." In 1999, Herbarium Pacificum Staff then reported *C. pannosus* as naturalized on East Maui. Their collection was made in an urban area at 747 m (2,450 ft) elevation in pastureland and other smaller plants were observed in wattle forests.

Island of Maui distribution: *C. pannosus* is currently cultivated and naturalized on Maui. *Cotoneaster* is mostly cultivated in cooler climates of Upcountry, East Maui, including Makawao, Pi'iholo, Kula, Keokea, and Polipoli. In Makawao and Pi'iholo, plants observed were mostly all cultivated. At higher elevations in Kula, Keokea, and Polipoli, plants observed were mostly naturalized. Naturalized plants can be seen along fencelines, in pastures, sprouting in other plantings, and in native shrubland and wooded areas. A dense infestation occurs in native mamane (*Sophora tomentosa*) shrubland at 2012 m (6,600 ft) elevation in Polipoli State Park. Plants were originally planted by the campgrounds and within the past 15 years have spread into adjacent forestry plantations and native shrubland. *C. pannosus* has been found in Haleakala National Park twice. The first plant was found being cultivated near employee housing, 7,000 ft (2,134 m) elevation, and removed (Bill Haus pers. comm.). The second plant, 0.5 m (1.6 ft) tall, was recently found and pulled up (September 2002) by Betsy Gagne on Halemau'u Trail where the Supply Trail intersects it, 7,800 ft (2,377 m) elevation (Bill Haus pers. comm.).

CONTROL METHODS

There is not a lot of information on control of *C. pannosus*. The following information about control of other species of *Cotoneaster* is from New Zealand's Index of Weeds by the Bay of Plenty Regional Council (Environment BOP 2001). The recommended treatment is with herbicide using a cut stump treatment.

Physical control: Shrubs will resprout if cut. Seedlings can be pulled up by hand, though with some difficulty. Larger plants can be chain-sawed, if then painted with an herbicide.

Chemical control: Spray large plants with Escort herbicide and Pulse or cut and treat stump. Rate of application for handgun is 35 g Escort and 100 mls Pulse/100 litres water. Rate of application for backpack is 5 g Escort and 10 mls Pulse/10 litres water.

Biological control: None known.

Cultural control: The public could be discouraged from planting *Cotoneaster pannosus* or other species that escape from gardens. Alternative native and non-harmful non-native species could be offered as alternatives. Some native plants that would do well at higher elevations and provide similar shape and function in landscaping include pilo (*Coprosma* spp.), 'a'ali'i (*Dodonaea viscosa*), akala (*Rubus hawaiiensis*), pukiawe (*Styphelia tameiaemeiae*), mamane (*Sophora tomentosa*), and native geraniums (*Geranium* spp.).

Noxious weed acts: None. Though known to spread from initial plantings in California, Hawai'i, and Australia (Wagner et al. 1999; Lorence et al. 1995, CALEPPC 1999; DOA-WA 2001).

MANAGEMENT RECOMMENDATIONS

On Maui, *C. pannosus* is widely cultivated in higher elevations where it is spreading via bird and pig dispersed fruits. It is invading native shrubland as high as 2,012 m (6,600 ft) elevation in Polipoli State Park where it forms shrubby thickets. Alpine shrubland and mesic forests adjacent to cultivated plants seem to be at the greatest risk to invasion by *C. pannosus*. It is currently not on the noxious weed list for Hawai'i and will likely continue to spread as urban areas creep closer to natural areas. Two *C. pannosus* plants have been found in Haleakala National Park. One was found cultivated in the housing area, 2,134 m (7,000 ft) elevation, the other was recently found along Halemau'u trail, 2,377 m (7,800 ft) elevation, and both have been removed (Bill Haus pers. comm.). Ongoing efforts to keep this and other invaders out of desirable habitat at an early stage will be instrumental in preventing future infestations. The public could be made more aware of plants that threaten natural communities and alternative non-harmful plants could be offered for landscaping.

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