

Rubus niveus f. *a*

Hill or mysore raspberry

Rosaceae

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OVERVIEW

Rubus niveus f. *a*, native from Indian to southeastern Asia, the Philippines, and Indonesia, is now known to be naturalized on Kaua'i, Maui, and Hawai'i (Nagata 1995, Flynn and Lorence 1998, Wagner et al. 1999). On Maui, this species is widespread in disturbed areas, 500-4,200 ft (152-1,280 m) elevation, from moist areas of Ha'iku to arid areas of Keokea and Kula. On Maui, this species tends to occupy disturbed areas, such as roadsides, gulches, pastures, and urban areas. Island wide control is not feasible at this time. Early detection and control of this species in natural areas and places where it is unwanted is recommended at this time.

TAXONOMY

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

Latin name: *Rubus niveus* Thunb. (Wagner et al. 1999). *Rubus niveus* Thunb. form *a* (Gerrish et al. 1992).

Synonyms: *Rubus albescens* Roxb., *R. foliolosus* D. Don, *R. horsfieldii* Miq., *R. lasiocarpus* Sm., *R. micranthus* D. Don, *R. pedunculatus* D. Don (GRIN 2003).

Common names: Hill or mysore raspberry (Wagner et al. 1999), Ceylon raspberry (GRIN 2003).

Taxonomic notes: The genus *Rubus* is a large genus made up to about 250 species primarily of north temperate regions and the Andes of South America (Wagner et al. 1999).

Nomenclature: The genus name *Rubus* is the Latin name for bramble and originates from the word *ruber*, meaning red (Wagner et al. 1999).

Related species in Hawai'i: In Hawai'i, there are two endemic *Rubus* species, including *Rubus hawaiiensis* ('akala), known from mesic to wet forest and subalpine woodland, 660-3,070 m (2,165-10,072 ft), on Kaua'i, Moloka'i, Maui, and Hawai'i, and *R. macraei* ('akala), known from East Maui and Hawai'i (Wagner et al. 1999). Several naturalized species also occur in Hawai'i, including *Rubus argutus* (prickly Florida blackberry), *R. discolor* (Himalayan blackberry), *Rubus ellipticus* Sm. (yellow Himalayan raspberry), *Rubus glaucus* Benth. (Andean raspberry), *R. rosifolius* (thimbleberry), and *R. sieboldii* (Wagner et al. 1999).

DESCRIPTION

"Shrubs; stems up to 20 dm long, tomentulose when young or glabrous and glaucous, covered with stout, hooked prickles 3-7 mm long, their bases usually longitudinally elongated, bark of older stems not shredding. Leaves pinnately compound, leaflets 5-9,

elliptic-ovate to elliptic, 2.5-6 cm long, 2-3 cm wide, the terminal one often broadly ovate, +- lobed on 1 side, and up to 5 cm wide, upper surface glabrous, lower surface densely white tomentose, margins serrate, petiolules 0-0.1 cm long, petioles and rachis usually with curved prickles. Flowers in short, terminal, cymose panicles, densely tomentose and with scattered prickles, pedicels 6-12 mm long; petals rose purple, broadly obovate to suborbicular, ca. 4-5 mm long. Fruit dark red, becoming black, subglobose, ca. 1 cm long, white tomentulose." (Wagner et al. 1999).

Gerrish et al. (1992) found two distinct forms growing on Maui. The form described in Wagner et al. (1999) seems to be similar to what Gerrish et al. (1992) called "form a" and is likely what is described for the islands of Hawai'i, Maui, and Kaua'i. A second form, "form b" is also known from Maui. It is not certain if this form also exists on other islands. "Form a" is distinguished by the following, "deep pink or rose petals, five or seven leaflets, a terminal ovate leaflet, glaucous young stems that appear white, and purple/black fruit 1 to 1.5 cm long." "Form b" is distinguished by the following, "light pink petals, nine to eleven leaflets, a terminal elliptic leaflet, and dark red to purple stems." (Gerrish et al. 1992). In addition, the two are located in different areas on Maui, though some areas overlap and both forms are seen side by side. "Form a" is known from Ha'iku to Kula and Keokea, while "form b" is known from Kula and the Polipoli area. In addition, "form a" has a more upright habit with white stems, whereas, "form b" tends to have an arching habit with red stems.

BIOLOGY & ECOLOGY

Cultivation: *Rubus niveus* is cultivated in various warm regions of the world for its edible fruit (GRIN 2003).

Invasiveness: *Rubus niveus* is naturalized in Hawai'i and other places where it is cultivated (Wagner et al. 1999, GRIN 2003). *Rubus niveus* has sharp thorns and often creates an impenetrable thicket in disturbed areas on Maui.

Pollination: Not known.

Propagation: *Rubus* species can be propagated from seeds and cuttings.

Dispersal: In Hawai'i, *Rubus niveus* is spread long distances in the horticulture trade. *Rubus* species are known to be spread by fruit eating birds and mammals. It is likely that *Rubus niveus* is spread by animals as well.

Pests and diseases: Not known.

DISTRIBUTION

Native range: *Rubus niveus* is native from Indian to southeastern Asia, the Philippines, and Indonesia (Wagner et al. 1999). GRIN (2003) lists the following areas as native for *Rubus niveus*: Asia-Temperate: Afghanistan; China (Shaanxi, Gansu, Guangxi, Sichuan, Yunnan, Guizhou, Xizang). Asia-Tropical: Bhutan; India; Indonesia; Laos; Malaysia; Myanmar; Nepal; Phillipines; Sri Lanka; Thailand; Vietnam.

Global distribution: *Rubus niveus* is cultivated and naturalized in Hawai'i and elsewhere (Wagner et al. 1999, GRIN 2003).

State of Hawai'i distribution: *Rubus niveus* is known from Hawai'i, Maui, and Kaua'i (Nagata 1995, Flynn and Lorence 1998, Wagner et al. 1999). On Hawai'i, there is apparently a large infestation at the Hamakua Agricultural Experimental Station near Pa'ahuilo, Hamakua, 2,800 ft (853 m) elevation (Gerrish et al. 1992). Scattered clumps are located a few miles away at 2,000 ft (610 m) elevation, and near Laupahoehoe and along the highway in Ka'awali'i Gulch, Hamakua at 500 ft (152 m) elevation (Gerrish et al. 1992). *Rubus niveus* is also known from South Kona in mesic open scrub at 4,800 ft (1,463 m) elevation, and, with bird dispersed fruits, is likely in other mesic mid-elevation sites (Nagata 1995). On Kaua'i, *Rubus niveus* is reported from the Waimea District, in Waimea Canyon State Park, 840 m (2,756 ft) elevation, where 3 plants were found near the South corner of the Kukui Trail shelter below the Iliau Loop Trail (Flynn and Lorence 1998). These plants have since been controlled by the Kaua'i Department of Agriculture (Flynn and Lorence 1998).

Island of Maui distribution: During island wide surveys on Maui, *Rubus niveus* form a was found to be naturalized from Ha'iku, 500 ft (152 m) elevation, which is a relatively moist area, to Kula and Keokea, as high as 4,200 ft (1,280 m) elevation, which is a relatively dry area. In these areas, *Rubus niveus* form a is commonly observed on the sides of the road, in gulches, pastures, and scrub areas. It is common in Kula and Keokea and scattered in Ha'iku, Makawao, and Pi'iholo. In some areas of Kula, it grows right next to *Rubus niveus* form b.

CONTROL METHODS

Control of *Rubus* species is not easily done. Often, the plant covers large areas, is hard to handle, is hard to kill, and re-sprouts. Chemical control in Hawai'i is done for other species of *Rubus*, but it is very difficult to completely remove established populations.

Physical control: Mechanical control of this species is tough due to sharp prickles and large thickets. It may be possible to pull or dig up small seedlings. The entire plant, above and below ground, must be carefully removed to prevent re-growth. Plants are sometimes cut back to reduce biomass before chemical control is done.

Chemical control: Various forms of chemical methods can be used to control *Rubus* spp., including foliar, stem injection, cut stump and basal stem methods using glyphosate or triclopyr products.

Biological control: Several biological control agents have been introduced to Hawai'i for the related species, *Rubus argutus* (prickly Florida blackberry).

Cultural control: The public could be discouraged from growing weedy plants such as *Rubus glaucus*. Future introductions of *Rubus* species should be done with caution.

Noxious weed acts: *Rubus niveus* is a noxious weed in Hawai'i (GRIN 2003).

MANAGEMENT RECOMMENDATIONS

Rubus niveus form a is cultivated and naturalized on the islands of Kaua'i, Maui, and Hawai'i (Nagata 1995, Flynn and Lorence 1998, Wagner et al. 1999). On Maui, *R. niveus* form a is commonly seen in Kula and is scattered in Ha'iku, Makawao, and Pi'iholo. This species tends to occupy disturbed areas on the sides of roads, in gulches, pastures, and scrub areas. It forms a thorny thicket and is a state noxious weed in Hawai'i. On Maui, it is fairly widespread and tends to invade disturbed areas. It could be detected and controlled in natural areas and other areas where it is unwanted.

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