

Rubus niveus f. *b*

Hill or mysore raspberry

Rosaceae

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OVERVIEW

Rubus niveus f. *b* is 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, a second form of *Rubus*, "form *b*" is known from Kula and the Polipoli area. In this area, *R. niveus* form *b* is common and well established in degraded pasture, shrubland, native mesic forests, and disturbed forestry plantations, 3,000-6,500 ft (914-1,981 m). In the Polipoli area, *Rubus niveus* form *b* runs rampant and is increasingly becoming a nuisance. Large thickets blanket surrounding vegetation, fills gulches, and making access to areas impossible. Control is currently done by the State Department of Land and Natural Resources, who keep the thorny plant from impeding recreational activities in the area. *Rubus niveus* is a Hawai'i state noxious weed. The population in Polipoli is well established and not likely eradicable at this time. Natural areas currently free of *Rubus niveus* form *b* should be familiar with the plant so it can be detected early and controlled as soon as possible to prevent the establishment of this species in new areas where it is not wanted.

TAXONOMY

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

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

Synonyms: *Rubus albescens* Roxb., *R. foliolosus* D. Don, *R. horsfieldii* Miq., *R. lasiocarpus* Sm., *R. micranthus* D. Don, *R. pedunculosus* 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 impenetrable thickets on Maui. *Rubus niveus* form b is spreading rapidly in the Polipoli area of Maui. Numerous seedlings and large mature thickets can be observed along trails, native shrubland, forestry plantations, and in scrub areas.

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). The Hawai'i, Kaua'i, and part of the *Rubus niveus* plants are referring to "form a" that is described by Gerrish et al. (1992). On Maui, a second "form b" is also known (see below).

Island of Maui distribution: During island wide surveys on Maui, *Rubus niveus* form b was found to be naturalized in the Kula and Polipoli areas, 3,000-6,500 ft (914-1,981 m) elevation. It is well established in disturbed areas urban areas, mesic native forest, non-native forestry plantations, and degraded shrubland and pastures. Fruits are likely dispersed by birds and numerous seedlings are observed along with large thickets along trails. *Rubus niveus* form b is spreading rapidly in this area.

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. State Department of Land and Natural Resources currently use a foliar spray (herbicide is not known, though likely Garlon) for large thickets near roads and trails of Polipoli.

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 is cultivated and naturalized on the islands of Kauai, Maui, and Hawai'i (Nagata 1995, Flynn and Lorence 1998, Wagner et al. 1999). On Maui, there are two forms known, form a, which is likely the form Wagner et al. (1999) were referring to, and form b, first discussed in Gerrish et al. (1992). *Rubus niveus* form b is well established in disturbed urban areas of Kula as well as in a variety of habitats in Polipoli, including native and non-native mesic forests, alpine shrubland, degraded pastures, and along trails and roads, at elevations from 3,000-6,500 ft (914-1,981 m). It is likely spread by fruit eating birds and mammals. This aggressive thorny plant is being controlled in the area to allow access to trails and roads, but it is too well established to completely eradicate at this time. In natural areas and other places where *Rubus niveus* form b is not wanted, it should be detected and controlled as soon as possible to avoid large infestations.

REFERENCES

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