Rubus discolor

Himalayan blackberry
Rosaceae

Forest Starr, Kim Starr, and Lloyd Loope
United States Geological Survey--Biological Resources Division
Haleakala Field Station, Maui, Hawai'i

March, 2003

OVERVIEW

Rubus discolor (Himalayan blackberry), native to western Europe, has become a pest plant in moist temperate regions of the world where it has been introduced. In North America, this species is spreading along the west coast and several north eastern states where it invades disturbed habitat forming thorny dense impenetrable thickets through rapid growth. Spread is facilitated by fruit eating birds and mammals. In Hawai'i, *Rubus discolor* is known from the islands of O'ahu and Maui, where it is still somewhat limited in distribution. It is targeted for control on O'ahu by the O'ahu Invasive Species Committee (OISC). On Maui, *Rubus discolor* is sparingly known from both West and East Maui. On West Maui, *Rubus discolor* is located near the beginning of the trail that leads to Pu'u Kukui where is thought to have originally been planted. The plant now occupies several acres and may still be eradicable if resources were available. On East Maui, *Rubus discolor* is also known from a small area in the Ainahou flats, 6,300 ft (1,920 m) elevation (P. Bily pers. comm.). These locations are all near vulnerable native mesic and wet native forest areas. Control of *Rubus* species is somewhat difficult. However, control of this plant now would help prevent its further spread on Maui.

TAXONOMY

Family: Rosaceae (rose family) (Wagner et al. 1999).
Latin name: *Rubus discolor* Weihe & Nees (Wagner et al. 1999).
Synonyms: *Rubus procerus* auct. non P.J. Muel. ex Genev (PLANTS 2003). Other synonyms include *Rubus macrostemon*, *R. fruticosus*, and *R. thyrsanthus* (Tirmenstein 1989).
Common names: Himalayan blackberry (PLANTS 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). *Rubus discolor* hybridizes with other *Rubus* species including *R. thyrsiger*, *R. calvatus*, and *R. schlechtendalii* (Termenstein 1989).
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 hawaiensis* ('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. ellipticus* (yellow Himalayan raspberry), *Rubus glaucus* Benth. (Andean raspberry),

Rubus niveus (hill or mysore raspberry), *R. rosifolius* (thimbleberry), and *R. sieboldii* (Wagner et al. 1999).

DESCRIPTION

"With pink or white petals and somewhat glaucous stems covered with stout prickles, otherwise only sparsely pilose on young stems, and leaves with 3 leaflets." (Wagner et al. 1999).

"Plants found growing at the Maui location conform to their description in all respects except that leaves commonly have five leaflets rather than three." (Gerrish et al. 1992).

"*Rubus discolor* is a robust, sprawling, more or less evergreen, glandless shrub of the Rose family (Rosaceae). The shrubs appear as "great mounds or banks" (Bailey 1945), with some of the canes standing up to 3 m tall. Other canes are decumbent, trailing or scandent up to 20-40 feet long (Bailey 1923), frequently taking root at the tips. The primocanes are pilose-pubescent, becoming nearly glabrous with age. These are strongly angled and furrowed, bearing well-spaced, heavy, broad-based, straight or somewhat curved prickles 6-10 mm long. Primocane leaves are 5-foliate, glabrous above when mature and cano-pubescent to cano-tomentose beneath. There are hooked prickles on the petioles and petiolules. The leaflets are large and broad with the terminal leaflet roundish to broad oblong. Leaflets are abruptly narrowed at the apex, unequally and coasrsely serrate-dentate. Floricane leaflets are 3-5 foliate and smaller than on the primocanes. The inflorescence is a large terminal cluster with branches in the lower axils. The peduncles and pedicels are cano-tomentose and prickly. The flowers are white or rose colored, 2-2.5 cm across, with broad petals. Sepals are broad, cano-tomentose, conspicuously pointed and soon reflexed, approximately 7-8 mm long. The roundish fruit is black and shiny, up to 2 cm long, with large succulent drupelets. The fruit ripens late compared with native blackberries and over a considerable interval (Bailey 1945), from midsummer to autumn (Bailey 1923)." (Munz and Keck 1973, Hoshovsky 1989).

BIOLOGY & ECOLOGY

Cultivation: *Rubus discolor* is cultivated for its edible fruit. Despite its common name, Himalayan blackberry, it apparently is not native to the Himalayans, but rather was likely introduced there as a cultivar (Bailey 1923). It was cultivated in the United States for its fruits as early as 1885 (Bailey 1945). *Rubus* species have also been introduced to Hawai'i for their edible fruit.

Invasiveness: *Rubus discolor* is a brambling vine that bears sharp prickles and forms impenetrable thickets. *Rubus discolor* spreads rapidly from plantings and is considered a pest plant in the United States, particularly on the west coast and some north eastern states (PLANTS 2003). In these areas, *R. discolor* spreads in wastelands, pastures, forest plantations, along roads, creek gullies, river flats, and fence lines (Parsons and Amor 1968, Amor 1973). In Hawai'i, *R. discolor* is spreading on Maui and O'ahu (Conant 1996, Wagner et al. 1999, R. Bartlett pers. comm.).

Pollination: Not known.

Propagation: *Rubus* species can be propagated from seeds and cuttings. Thickets can produce 7,000-13,000 seeds per square meter (Amor 1974). Seeds can remain dormant in the soil for several years (Brinkman 1974).

Dispersal: Humans transport the plant long distances for use as an ornamental or as an edible crop. *Rubus discolor* is capable of aggressive vegetative growth. It can also be spread by animals that eat the fruit, including birds and mammals. *Rubus* species are known to be dispersed by fruit eating birds.

Pests and diseases: Not known.

DISTRIBUTION

Native range: *Rubus discolor* is native to western Europe (Munz and Keck 1973).

Global distribution: *Rubus discolor* has spread in many areas of the United States and is common along the west coast and north eastern states. *Rubus discolor* is known from Alabama, Arizona, Arkansas, California, Delaware, Hawai'i, Idaho, Illinois, Kentucky, Massachusetts, Missouri, Nevada, New Jersey, New Mexico, Ohio, Oregon, Pennsylvania, Tennessee, Utah, Virginia, and Washington (PLANTS 2003). *R. discolor* has been documented at greater than 6,000 ft (1,829 m) elevation in Arizona and from 2,788-5,000 ft (850-1,525 m) in Utah (Tirmenstein 1989). *R. discolor* prefers moist sites where it forms dense thickets (Hoshovsky 1989). *Rubus discolor* is commonly found in disturbed areas such as old fields, roadways, and abandoned sites (Tirmenstein 1989). It is sometimes found in riparian habitats of California (Tirmenstein 1989).

State of Hawai'i distribution: *Rubus discolor* is known from Maui and O'ahu where it is spreading from initial plantings. In Wagner et al. (1990) *R. discolor* was described as cultivated on O'ahu and Maui, though likely to become naturalized in the future. Conant (1996) confirmed that the species was naturalized on O'ahu. Control of *R. discolor* on O'ahu is currently underway by the Fountain Grass Working Group and OISC. Gerrish et al. (1992) reported an unidentified *Rubus*, possibly *Rubus discolor*, from Pohakea, Hamakua, Hawai'i, elevation 2,000 ft (610 m). This site was located near the Pa'auilo Agriculture Experiment Stations, apparently where other *Rubus* species, including *R. glaucus* and *R. niveus*, were being grown. It is not known if the identity of this species was ever confirmed. Investigation of this site and other experimental stations where numerous species are cultivated are likely places to find new weeds.

Island of Maui distribution: On Maui, *Rubus discolor* is known Kaulalewelewe, West Maui, near the beginning of the trail to Pu'u Kukui (Wagner et al. 1999). The *R. discolor* population is located by Haela'au cabin, 2,980 ft (908 m) elevation, and is common in the grassy lawn, mixed with *R. argutus* (Gerrish et al. 1992). It is described as planted at the site (Wagner et al. 1990), but has since become naturalized (R. Bartlett pers. comm.). In 1989, volunteers pulled up *R. discolor* plants and burned them (Gerrish et al. 1992). However, the population still persists today. *R. discolor* currently covers about low double digit acres and, depending on available resources, may still be eradicable at this

time (R. Bartlett pers. comm.). On East Maui, *R. discolor* is known from Ainahou flats, 6,300 ft (1,920 m) elevation, where a few small patches (about 4) are scattered in the area, covering about 1/10th of an acre (P. Bily pers. comm.). These patches have all been treated and are periodically monitored by The Nature Conservancy. Gerrish et al. (1992) reported that a population of what appeared to be *R. discolor* as established on East Maui, near the Olinda Reservoir at 4,000 ft (1,219 m) elevation. It is not known if the identity of this species was ever confirmed for this site.

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 populations of *Rubus* once established.

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 discolor*, including foliar, stem injection, cut stump and basal stem methods using glyphosate or triclopyr products. Plants on East Maui have been treated with a 10% Garlon 4 in oil basal stem method (P. Bily pers. comm.).

Biological control: Several biological control agents have been introduced to Hawai'i for the related species, *Rubus argutus* (prickly Florida blackberry). None are known for *Rubus discolor*.

Cultural control: *Rubus discolor* seedling regeneration is not as vigorous in well shaded areas. Healthy forests and pastures may help prevent germination.

Noxious weed acts: *Rubus discolor* is a category B noxious weed in the state of Oregon (INVADERS 2003).

MANAGEMENT RECOMMENDATIONS

Rubus discolor is a notorious weed along the west coast and north eastern states of North America. In Hawai'i, *Rubus discolor* is limited in distribution on the islands of Maui and O'ahu. On O'ahu, the species is currently targeted for control by OISC. On Maui, the distribution is limited in size and the locations are close to vulnerable moist habitats on both East and West Maui. Control of this species now seems feasible, and could limit its further spread on Maui.

REFERENCES

Amor, R.L. 1973. Ecology and control of blackberry (*Rubus fruticosus* L. agg.) I. *Rubus* spp. as weeds in Victoria. *Weeds Res*. 13: 218-223.

Amor, R.L. 1974. Ecology and control of blackberry (*Rubus fruticosus* L. agg.) II. Reproduction. *Weeds Res.* 14: 231-238.

Bailey, L. 1923. Certain cultivated *Rubus*. *Gentes Herbarium* 1(4): 196-197.

Bailey, L. 1945. The genus *Rubus* in North America. *Gentes Herbarium* 5(1): 851-854.

Brinkman, K.A. 1974. *Rubus*. In: C.S. Schopmeyer (ed.), Seeds of woody plants in the U.S. Agriculture Handbook No. 450. U.S. Govt. Printing Office, Washington, DC.

Conant, P. 1996. New Hawaiian pest plant records for 1995. *Bishop Mus. Occas. Pap.* 46(2): 1-2.

Gerrish, G., L. Stemmermann, and D.E. Gardner. 1992. The distribution of *Rubus* species in the State of Hawai'i. Technical Report 85, Cooperative National Park Resources Studies Unit, University of Hawai'i at Manoa, Honolulu, HI.

Hovshovsky, M.C. 1989. Element Stewardship Abstract for *Rubus discolor* (Himalayan blackberry). The Nature Conservancy, Arlington, VA.

INVADERS (Invaders Database System). 2003. Noxious Weeds. United States Department of Agriculture, Agricultural Research Service. Available: http://invaders.dbs.umt.edu/Noxious_weeds/noxlist.asp (Accessed: March 27, 2003).

Munz, P.A. and D.D. Keck. 1973. *A California Flora and Supplement*. University of California Press, Berkeley, CA.

PLANTS (National Plants Database). 2003. Online database. United States Department of Agriculture, Natural Resources Conservation Services, National Plant Data Center, Baton Rouge, LA. Available: http://plants.usda.gov (Accessed: March 27, 2003).

Tirmenstein, D. 1989. *Rubus discolor*. Fire Effects Information System. U.S. Dept. of Agriculture, Forest Service, Rocky Mountain Research Station, Sciences Laboratory. Available: http://www.fs.fed.us/database/feis/ (Accessed: March 27, 2003).

Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. *Manual of the Flowering Plants of Hawai'i*. 2 vols. Bishop Museum Special Publication 83, University of Hawai'i and Bishop Museum Press, Honolulu, HI.

Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1999. *Manual of the Flowering Plants of Hawai'i*. 2 vols. Bishop Museum Special Publication 83, University of Hawai'i and Bishop Museum Press, Honolulu, HI.