GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Rubus niveus***

Rubus niveus 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Rosales	Rosaceae

Common name

Synonym

Rubus albescens , Roxb.
Rubus foliolosus , D. Don
Rubus horsfieldii , Miq.
Rubus lasiocarpus , Sm.
Rubus micranthus , D. Don
Rubus pedunculosus , D. Don
Rubus bonatii , H. L�v.
Rubus boudieri , H. L�v.
Rubus distans , D. Don
Rubus godongensis , Y. Gu & W.L. Li
Rubus incanus , Sasaki ex Y.C. Liu & Yang
Rubus lasiocarpus , var. *ectenothyrsus* Cardot
Rubus lasiocarpus , var. *micranthus* (D. Don) Hook. f.
Rubus longistylus , H. L�v.
Rubus mairei , H. L�v.
Rubus mysorensis , F. Heyne.
Rubus niveus , var. *micranthus* (D. Don) H. Hara
Rubus pinnatus , D. Don
Rubus pyi , H. L�v.
Rubus tongchouanensis , H. L�v.

Similar species

Summary

Rubus niveus is a shrub native to Asia that may form dense, impenetrable, thorny thickets that can displace native species. It produces sweet, palatable fruit enjoyed by birds, rodents, reptiles and humans and has been cultivated in many regions throughout the world for this reason. It is also used as a living fence. Mechanical management of the species is difficult due to its growth form and persistent seedbank, but chemical methods have been developed and biological means of management are being explored.

view this species on IUCN Red List

Species Description
Rubus niveus is a large perennial shrub growing up to 4.5 metres in height that may form dense thickets of intertwining stems. The flexible, arching stems may be downy when young but become glabrous and glaucous at maturity. They are covered with sharp, hooked thorns 3-7mm long. The leaves are pinnately compound into 5-9 serrated, elliptic-ovate leaflets that are 2.5-6cm long and 2-5cm wide. The leaves are dark green and glaucous above and white tomentose below. The petiolules are approximately 0.1cm long and are covered with small prickles, as are the leaf rachises. The inflorescences are short, axillary or terminal panicles of 24 or more flowers, which are pink to rose purple. The 5-petaled flowers are approximately 1.25cm broad with petals of 4-5mm in length. The fruit of *R. niveus* is a subglobose aggregate of drupelets and is 1-2cm in diameter with a purple-black colour and fine bloom at maturity. It is juicy and sweet with small seeds, and may be produced throughout the year (Morton, 1987; PIER, 1999).

Notes
Two distinct forms are found in Hawai'i, a white stemmed and red stemmed morph which is present in Maui. This morph has light pink petals and dark red to purple stems (Starr *et al*. 2003).
\r\n*R. niveus* may be preyed upon by the 2-spotted mite *Tetranychus bimaculatus* and the green stink bug *Nezara viridula*, as well as be infected with Anthracnose, *Elsinoe veneta*, at the end of the fruiting season (Morton, 1987). It is also susceptible to the *Aphis rubicola*- trasmitted raspberry leaf curl *luteovirus*, which is identified by leaf curling and stunting and small, crumbly fruits (Brunt *et al*. 1996).

Lifecycle Stages
In heavily invaded areas, *R. niveus* can form a seed bank of 7000-22800 seeds / m^2. The seeds need to be buried in the ground for at least nine months before germination. The germination rate is around 81% (Ruiz Cevallos, 1992; Landazuri, 2002, Soria, 2006). It is estimated that seeds can remain viable in the soil for several years. Although it is unknown for this species, we assume that it is similar to other temperate *Rubus* species and that the seeds could remain viable for more than 50 years (Graber and Thompson, 1978; Whitney, 1986). It is estimated that a plant takes six months to produce flowers and fruit in Galapagos where the species produces fruit all year with the quantity depending on the season. There is been increased fruiting at the end of the dry cold season (November-December) with a monthly production of up to 30 fruits per m2 (Ruiz, 1992; Landazuri, 2002).

Uses
The fruits of *Rubus niveus* are consumed by birds, rodents, and humans (PIER, 1999) and tortoises. The plant is cultivated throughout the world for its heavy production of sweet fruit (Morton, 1987; Plants For a Future, 2004), which is composed of approximately 7.8% sugar, 0.13% protein, and 0.77% ash (Plants For a Future, 2004). Humans eat the fruits fresh and make them into jams, wine, and candies (PCARRD, 1996). Additionally, the fruit may be used to create a purple to dull blue dye (Plants For a Future, 2004).
\r\nFresh root tips of the species are used to cure excessive bleeding during menses in Chhota Bhangal of Western Himalaya (Uniyal *et al*., 2006).
\r\nBefore known to be a problem, the species was planted to make living fences in the agricultural zones in Galapagos.

Habitat Description
Rubus niveus is found in a wide variety of habitats, including woodlands, forest edges, riparian habitats, and disturbed sites (PIER, 1999). In the Garhwal Himalaya it is found on north aspects in consociations of *Betula utilis* and *Quercus semecarpifolia*, as well as consociations of *Quercus dilatata* and silver fir (Osmaston, 1922). It has a large climatic range, and is found at altitudes from 450 to 3000 metres in its native Asia (Morton, 1987). The species prefers well-drained soil, and may grow in either full or partial sun conditions. It can tolerate light freezes, but prolonged freezing temperatures will likely kill it (Morton, 1987). Thus, while in tropical areas the species can grow as a perennial, in areas with severe winters, the species behaves as a annual, coming back every spring for the seed bank or perhaps from root stock. The species is not tolorant of drought (Rachel Atkinson pers.comm May 2011)

Reproduction
Rubus niveus reproduces sexually through the production of thousands of seeds per bush per year (Renteria *et al*, 2006) as well as vegetatively (Starr *et al*. 2003).

General Impacts
Rubus niveus may be invasive and overrun native species. It forms dense, impenetrable, thorny thickets which may take over forest, shrubland, and areas of open vegetation. It is said to be \"one of the worst weeds threatening the Galapagos National Park\" (Rentería *et al*. 2006). It also affects agricultural land, causing serious economic problems for farmers.

Management Info
Mechanical: Mechanical control of *Rubus niveus* is difficult because the entire plant must be thoroughly removed to prevent regeneration. This is typically only successful when the plants are still small seedlings. The cutting back of plants may also be used as an initial step to chemical control (Starr *et al*. 2003). \r\nChemical: Motooka *et al*. (2003) found triclopyr ester in a crop oil carrier (either as drizzle applications at 1 lb./acre or as very low volume basal bark applications at a 15% concentration) to be successful in the management of *R. niveus*. They note that the species is supposedly resistant to triclopyr ester when water is the carrier. Applications at 1% concentration of a herbicide containing picloram and 2,4, D (commercial name Truper 101) are suggested by the Charles Darwin Foundation for the Galapagos Islands (Fundación Charles Darwin y Dirección del Parque Nacional Galapagos 2009).
\r\nIn Galapagos, tests with pre-emergent herbicides have also yielded positive results: Butarroz (active ingredient butachlor at 2.25%) and Ronstar (active ingredient oxadiazon at 0.6%). These are useful in areas to kill the seed bank, and can be used in conjunction with replanting of natives.
\r\nBiological: The use of fungal pathogens for biological control of *R. niveus* is being explored, with *Phragmidium barclayi* Dietel, *Phragmidium himalense* J.Y. Zhuang, *Phragmidium octoloculare* Barclay, *Phragmidium shogranense* Petr., and *Pseucercospora* sp. having been identified as fungal pathogens from the species' native range (Ellison and Barreto, 2004).
\r\nIn Hawai'i, five species of insect were released between 1963 and 1969 to control this species. Three of the five species established, and two were successful; *Schreckensteinia festaliella*, which completely defoliates the plant, and *Croesia zimmermani*, a leaf miner. However, as these species also attack the native *Rubus*, the programme was stopped (Nagata y Markin, 1986).
\r\nCultural: Due to the large seed bank, weed control needs to be carried out in tandem with a change of land use to, for example pasture. In Galapagos, competition between introduced grasses (eg *Brachiaria* (*Urochloa decumbens*), or Tanzania (*Panicum maximum* cultivar Tanzania) may help reduce re-invasion by *R. niveus*. In some cleared areas in the Galapagos National Park there have been plantings of the native *Scalesia pedunculata*, an endemic tree of rapid growth, with the aim to provide shade and prevent weed growth. However, the effectiveness of this management tool is not evident.

Pathway
Introduced into new regions because of the edibility of its fruit. >>more on the spread of *R. niveus via* the nursery trade.

Principal source: Rentería, Jorge Luis; Rachel Atkinson, Ana Mireya Guerrero, Johanna Mader 2006. Manual de Identification y Manejo de Malezas en las Islas Galápagos. Segunda edición, Fundación Charles Darwin, Santa Cruz, Galápagos, Ecuador.
Morton, J. 1987. *Mysore Raspberry*. p. 109–110. In: Fruits of warm climates. Julia F. Morton, Miami, FL.
Pacific Islands Ecosystems at Risk (PIER) 1999. *Rubus niveus* Thunb., Rosaceae.

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

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ALIEN RANGE

[1] AUSTRALIA
[1] COSTA RICA
[1] EL SALVADOR
[1] KENYA
[1] PUERTO RICO
[1] TANZANIA, UNITED REPUBLIC OF
[1] ZIMBABWE
[1] BOLIVIA
[7] ECUADOR
[1] HONDURAS
[1] NICARAGUA
[1] SWAZILAND
[4] UNITED STATES

Red List assessed species 1: EN = 1;

Mimus melanotis **EN**

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22 references found for **Rubus niveus**

Managment information
Charles Darwin Foundation for the Galapagos Islands (AISBL). 2006. Charles Darwin Research Station Fact Sheet: Blackberry Invasion.
Summary: This fact sheet provides information on the blackberry invasion throughout the Galapagos Islands. Includes information on the magnitude of the invasion as well as future projects by AISBL to eradicate the species.
Available from: http://www.darwinfoundation.org/files/species/pdf/blackberry-en.pdf [Accessed 31 August 207].
Ellison, C.A. & R.W. Barreto. 2004. Prospects for the management of invasive alien weeds using co-evolved fungal pathogens: a Latin American perspective *Biological Invasions 6*: 23-45.
Summary: This article reviews the prospects for the management of invasive alien weeds using co-evolved fungal pathogens, including the pathogens of *R. niveus*.
Motooka, P. , L. Castro, D. Nelson, G. Nagai, and L. Ching. 2003. Weeds of Hawai$\hat{i}$i$\hat{s}$ Pastures and Natural Areas; An Identification and Management Guide. College of Tropical Agriculture and Human Resources, University of Hawai$\hat{i}$i at M$\hat{n}$oa.
Summary: This article provides a description, the local distribution, and management information for *R. niveus* on the Hawaiian Islands.
Available from: http://www.ctahr.hawaii.edu/forestry/Data/WeedsHI/W_Rubus_niveus.pdf [Accessed 31 August 2007].
Pacific Islands Ecosystems at Risk (PIER) 1999. *Rubus niveus* Thunb., Rosaceae. Accessed 21 August 2007.
Summary: The PIER website provides information on species that have invaded Pacific Island Ecosystems, including *Rubus niveus*.
Available from: http://www.hear.org/pier/species/rubus_niveus.htm [Accessed 21 August 2007].

Renter�a, Jorge Luis; Rachel Atkinson, Ana Mireya Guerrero, Johanna Mader 2006. Manual de Identification y Manejo de Malezas en las Islas Gal�pagos. Segunda edici�n, Fundaci�n Charles Darwin, Santa Cruz, Gal�pagos, Ecuador.
Summary: An illustrated guide providing practical information for the effective control of the worst invasive plant species in Galapagos. Designed for farmers and other land managers, it describes manual and chemical control methods. It also includes 8 species that are potential problems for Galapagos. Language: Spanish
Una gu�a con ilustraciones que provee informaci�n para el control efectivo de las peores plantas invasoras en Gal�pagos. Esta dise�ada para los agricultores y personas involucradas en conservaci�n. De una forma clara y simple se describe los m�todos de control manuales y qu�micos; tambi�n incluye 8 especies que potencialmente podr�an ser un problema para Gal�pagos. Lenguaje: Espa�ol.
Renter�a, Jorge Luis; Rachel Atkinson & Chris Buddenhagen., 2007. Estrategias para la erradicaci�n de 21 especies de plantas. Fundaci�n Charles Darwin, Departamento de Bot�nica. Programa de Especies Invasoras en Gal�pagos potencialmente invasoras en Gal�pagos.
Summary: This document comprises costed eradication plans for 21 invasive species in Galapagos. The plans were developed as part of a GEF funded project ECU/00/G31 �Control of Invasive species in the Galapagos Archipelago�. The management plans report projects at different stages of development and for species that have invaded to different extents. Three of the projects have already been finished successfully, 5 have yet to be started, and for the rest the projects have been running for between 1 and 6 years. The cost and time needed for eradication varies considerably by species and demonstrates the importance of species eradication as soon as possible after detection
Resumen
El presente documento proporciona planes de manejo y el costo para la erradicaci�n de 21 especies que se encuentran presentes en Gal�pagos. Los planes fueron desarrollados como parte del proyecto ECU/00/G31 Control de las especies invasoras en el Archipi�lago de las Gal�pagos , suscrito por el Gobierno Ecuatoriano, representado por el Ministerio del Ambiente, con el Fondo para el Medio Ambiente Mundial (GEF). El Proyecto es implementado por el Programa de las Naciones Unidas para el Desarrollo (UNDP), tiene como instituciones ejecutoras al Servicio Parque Nacional Gal�pagos (SPNG), Instituto Nacional Gal�pagos (INGALA), Servicio Ecuatoriano de Sanidad Agropecuaria-Gal�pagos (SESA-Gal�pagos), y Fundaci�n Charles Darwin (FCD). Los planes de manejo representan proyectos en diferentes estados de desarrollo y dimensi�n. Tres de estos proyectos ya han sido desarrollados completamente, trece est�n en proceso y cinco a�n no se han iniciado. El costo y tiempo para la erradicaci�n varia considerablemente seg�n la especie y se muestra la importancia econ�mica que implica desarrollar proyectos de erradicaci�n tan pronto las especies son detectadas.
Starr, F., K. Starr, and L. Loope. 2003. *Rubus niveus* f. *a*, Hill or Mysore Raspberry, Rosaceae. United States Geological Survey - Biological Resources Division.
Summary: This fact sheet provides thorough information on *R. niveus* including management information.
Available from: http://www.hear.org/starr/hiplants/reports/pdf/rubus_niveus_f_a.pdf [Accessed 03 September 2003].

General information

Andhra Pradesh Forest Department. 2007. Forest Flora of Andhra Pradesh. Last updated 01 March 2007.
Summary: This website details the forest flora of Andhra Pradesh and provides common names for the species in various Indian languages.
Available from: http://forest.ap.nic.in/Forest%20Flora%20of%20Andhra%20Pradesh/Family/Rosaceae.htm [Accessed 21 August 2007].
Brunt, A.A., Crabtree, K., Dallwitz, M.J., Gibbs, A.J., Watson, L. and Zurcher, E.J. (eds.) 1996. Plant Viruses Online: Descriptions and Lists from the VIDE Database. Version: 20th.
Summary: This website details various viruses and the plants they parasitize, including *R. niveus*.
Available from: http://image.fs.uidaho.edu/vide/descr668.htm [Accessed 21 August 2007].
Hyde, M.A. and B. Wursten. (2007). Flora of Zimbabwe: Home page.
Summary: An online flora of Zimbabwe.
Available from: http://www.zimbabweflora.co.zw/speciesdata/species.php?species_id=125370 [Accessed 03 September 2007].
ITIS (Integrated Taxonomic Information System), 2005. Online Database *Rubus niveus* Thunb.
Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.
Available from: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=504868 [Accessed 25 July 2007].
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Summary: This article provides notes on the forest communities of the Garhwal Himalaya, including a habitat description and consociations of *R. niveus*.
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Summary: Plants For A Future is a resource center for rare and unusual plants, particularly those which have edible, medicinal, or other uses. Provides general information on *R. niveus*.
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Summary: A database of Swaziland s alien plant species.

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Uniyal S.K., K.N. Singh, P. Jamwal, and B. Lal. 2006. Traditional use of medicinal plants among the tribal communities of Chhota Bhangal, Western Himalaya. Journal of Ethnobiology and Ethnomedicine, 2 (14). 8 pages.
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USDA, ARS, 2007. *Rubus niveus* Thunb. National Genetics Resources Program. Germoplasm Resources Information Network - (GRIN) [Online Database]. 21 August 2007. National Germoplasm Resources Laboratory, Beltsville, Maryland.
Summary: GRIN taxonomic data provide the structure and nomenclature for accessions of the National Plant Germplasm System (NPGS), part of the National Genetic Resources Program (NGRP) of the United States Department of Agriculture s (USDA s) Agricultural Research Service (ARS). In GRIN Taxonomy for Plants all families and genera of vascular plants and over 40,000 species from throughout the world are represented, especially economic plants and their relatives. Information on scientific and common names, classification, distribution, references, and economic impacts are provided.
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