

New records of naturalized *Rubus* in southern Africa

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ABSTRACT

Rubus niveus Thunb. and *R. phoenicolasius* Maxim. are recorded for the first time in southern Africa. Notes are given on their morphology, present distribution and weed status.

RÉSUMÉ

NOUVELLES ENRÉGISTRÉMENTS DU RUBUS NATURALISÉ EN AFRIQUE AUSTRALE

Rubus niveus Thunb. et *R. phoenicolasius* Maxim. sont enrégistrés pour la première fois en Afrique australe. Des notes sur leur morphologie leur distribution actuelle et leur statut en tant que mauvaises herbes sont données.

INTRODUCTION

As pointed out in a previous paper (Stirton, 1981), the taxonomic problems of *Rubus* in southern Africa will only be solved after years of intensive field work and genetic and taxonomic evaluation. However, because an accurate taxonomy is economically important to silviculture and agriculture, results will be published as they become available. This paper records for the first time in southern Africa two introduced *Rubus* spp., which have become naturalized, namely *Rubus niveus*, the Java bramble and *R. phoenicolasius*, the wineberry.

TAXONOMY

1. *Rubus niveus* Thunb., Dissert. Rubi 9 (1813); Focke in *Bibliotheca bot.* 72: 182 (1911); Graham in *Fl. Trop. E. Afr.*, Rosaceae 40 (1960); Hanizah, Toha & Van Steenis, *Mountain Flora of Java*, t. 45, 5 (1972). Type: *Thunberg* s.n. herb. no. 12275 (UPS, holo., photo.!).

Primocanes up to 2 m, tip-rooting, bright green but covered with dense white bloom, eglandular, glabrous, round, prickles either patent or slightly deflexed (Fig. 3.1). *Floricanes* reddish, glabrous, mostly without bloom. *Leaves* 3-5-partite on floricanes, but mostly 7-partite on primocanes; upper surface of leaflets thinly hairy, sulcinervate, dark yellow-green, lower surface white woolly with yellowish venation, occasionally armed with small recurved prickles; terminal leaflet broadly ovate or elliptic, apex acute to acuminate, base truncate to rounded, larger than laterals; petioles and petiolules tomentose, armed with falcate or deflexed prickles. *Stipules* free, ascending, becoming patent, winged at base (Fig. 3.2). *Inflorescence* broadly pyramidal or rounded, terminal, ± 12-flowered on floricanes, 2 to 4-flowered on primocanes, mostly axillary, leafy, rhachis tomentose. *Sepals* up to 6 mm long, exceeding the petals, densely pilose, tips green and glabrous. *Petals* bright pink, shorter than calyx lobes, 5 mm long and wide, suborbicular with crinkled margins, apices incurved, touching. *Anthers* black, exceeding pink stigmas; filaments pink. *Carpels* densely tomentose (Fig. 4.1); fruits orange when young, turning red and finally greyish purple. Fig. 1.

Rubus niveus has a wide Asian distribution: Himalaya (Kashmir to Sikkim), S. India. Sri Lanka. Bur-

ma, Thailand, Laos, Vietnam, Malaysia, Java, Bali, Flores, Timor, Luzon and Celebes (Kalkman, 1976). In Africa it has been recorded from Kenya, Tanzania, Zimbabwe, South Africa and Swaziland (Fig. 2). Van Steenis (1976) considers the African plants to be conspecific with the Asian plants.

TRANSVAAL.—2531 (Komatipoort): Ngomangoma Waterfall, 10 km south of Barberton (-CC), *Stirton* 1766; 12 km from Barberton on road to Havelock (-CC), *Stirton* 6857.

SWAZILAND.—2531 (Komatipoort): near Havelock Mine (-CC), *Codd* 7831. 2631 (Mbabane): Mbabane (-AC), *Miller* 5/200; The Taven (-AC), *Pritchard* s.n.; Usutu Forest (-CA), *Mott* 471; Ukutula (?), *Compton* 25060.

Java bramble has been found in grassland, along wooded stream-banks and among rocks in tall herb communities. It easily tolerates the semi-shaded conditions prevailing in *Eucalyptus* plantations, but tends to favour higher altitude areas between 1 000 and 1 600 metres. It flowers between January and April.

The origin of Java bramble in Africa is still speculative. Graham (1960) has suggested that this species may have been introduced into east Africa from India or Malaysia, but he cited no evidence. Is this species a recent introduction or has it occurred in Africa for a very long time? This question is difficult to answer and one can only surmise from what little indirect evidence there is. It is not known whether the species occurs in Malawi and its occurrence in Zimbabwe is difficult to explain. One of the Swaziland specimens (*Miller* 5/200) has a note that suggests *R. niveus* was introduced into Swaziland from Kenya. As regards South Africa, there seems little doubt that Java bramble is a recent arrival in the south-eastern Transvaal. Firstly, it is unlikely that early collectors such as Galpin and Thorncroft would have missed collecting such a distinctive species and secondly, my own observations are that Java bramble has rapidly expanded its range over the last five years. This extension has been particularly noticeable from Havelock in Swaziland into the Transvaal towards Barberton. Compton remarks in a note on his collection 25060 that the plant is a weed in the Ukutula area. During an excursion in 1977 to the Barberton-Havelock area, I gained the impression that if not checked Java bramble could become a menace in forests of the eastern Transvaal. Its eradication should begin now, while infestations are still small and economically controllable.

Previously in South Africa *R. niveus* was referred to either *R. intercurrents* C. E. Gust. or *R. immixtus*

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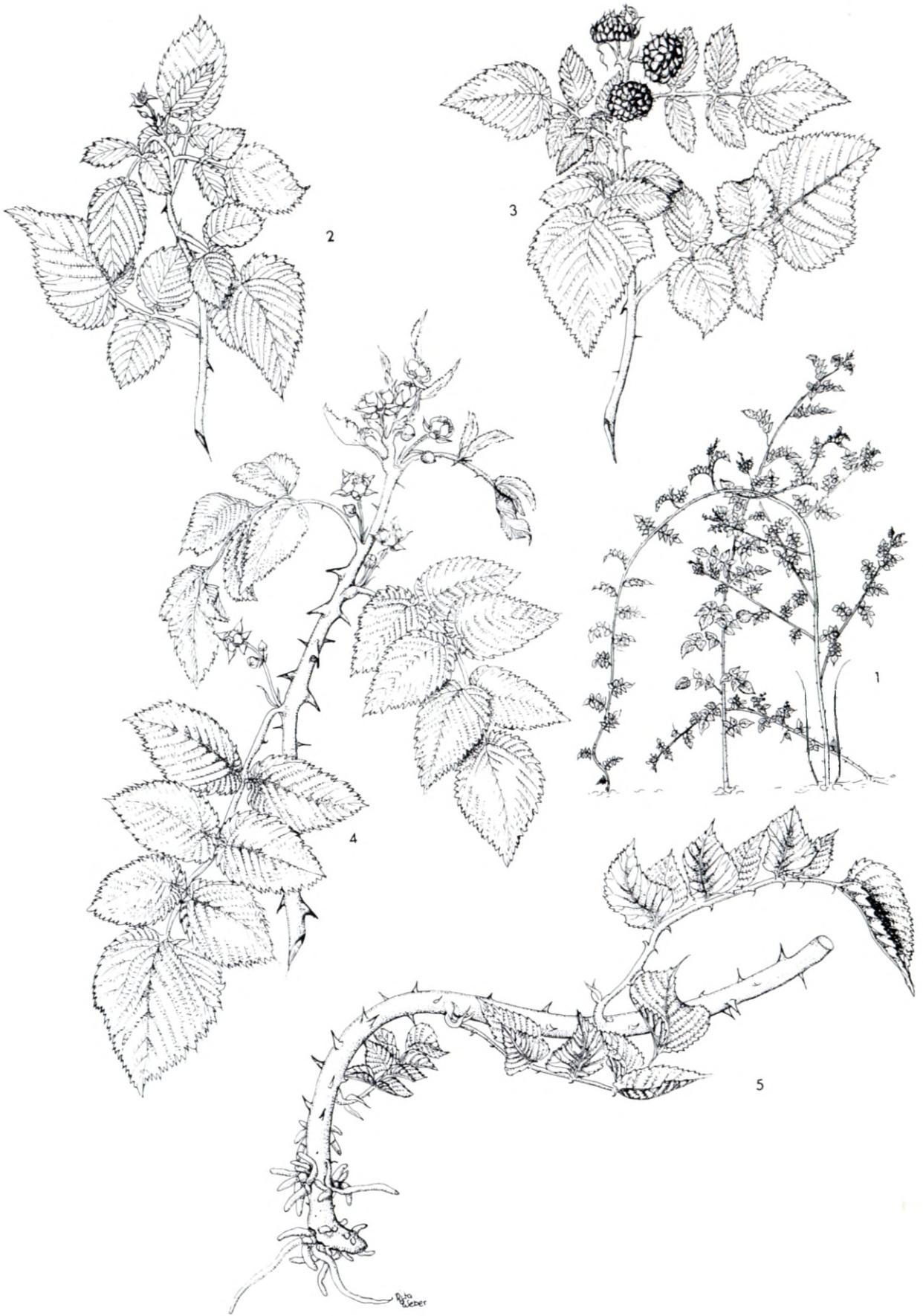
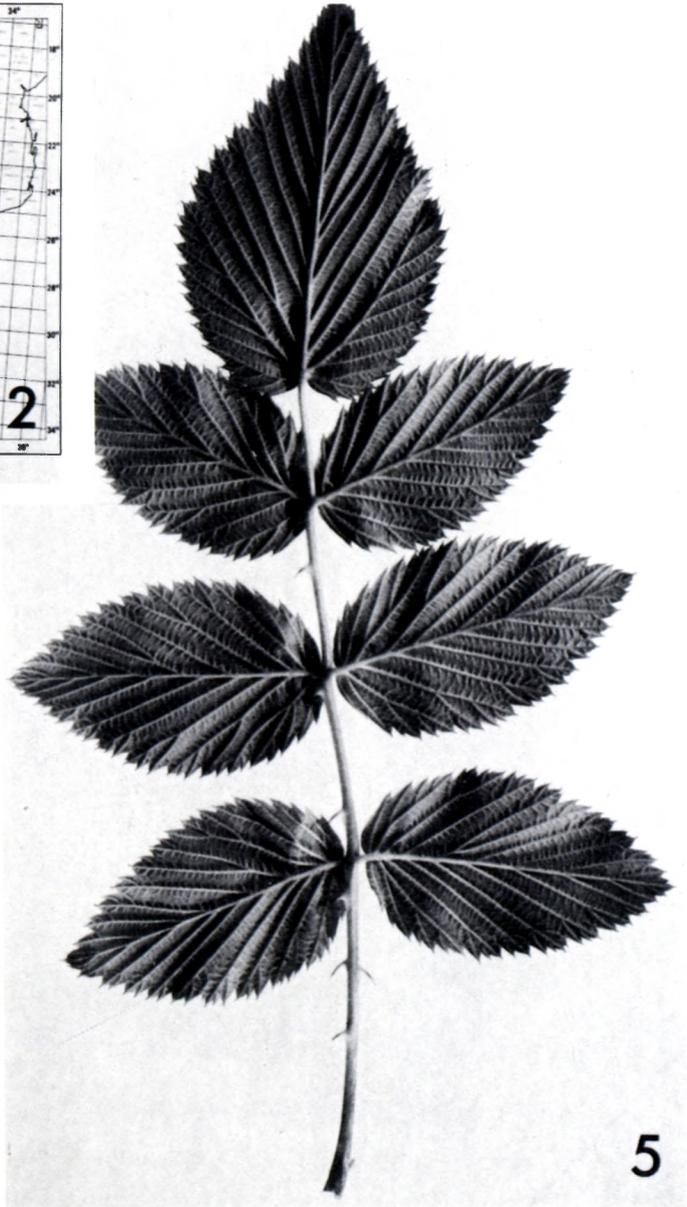
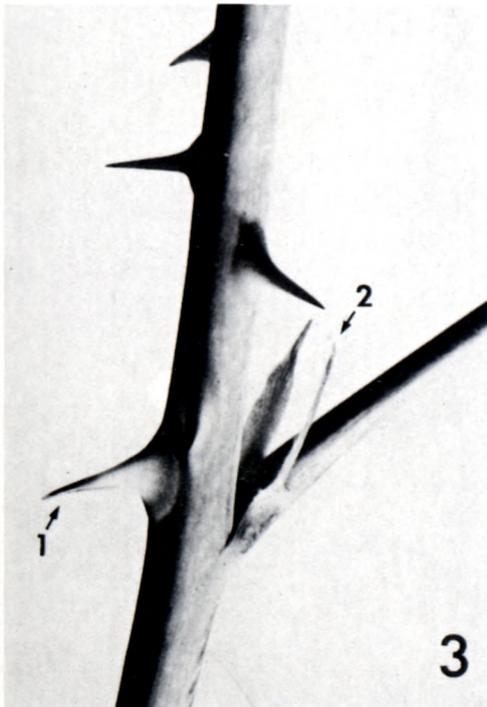
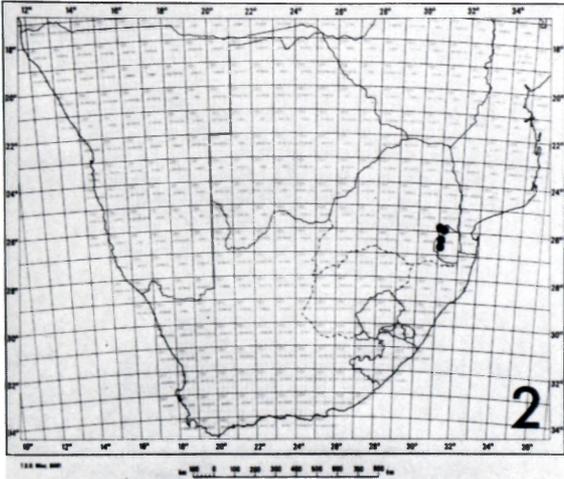
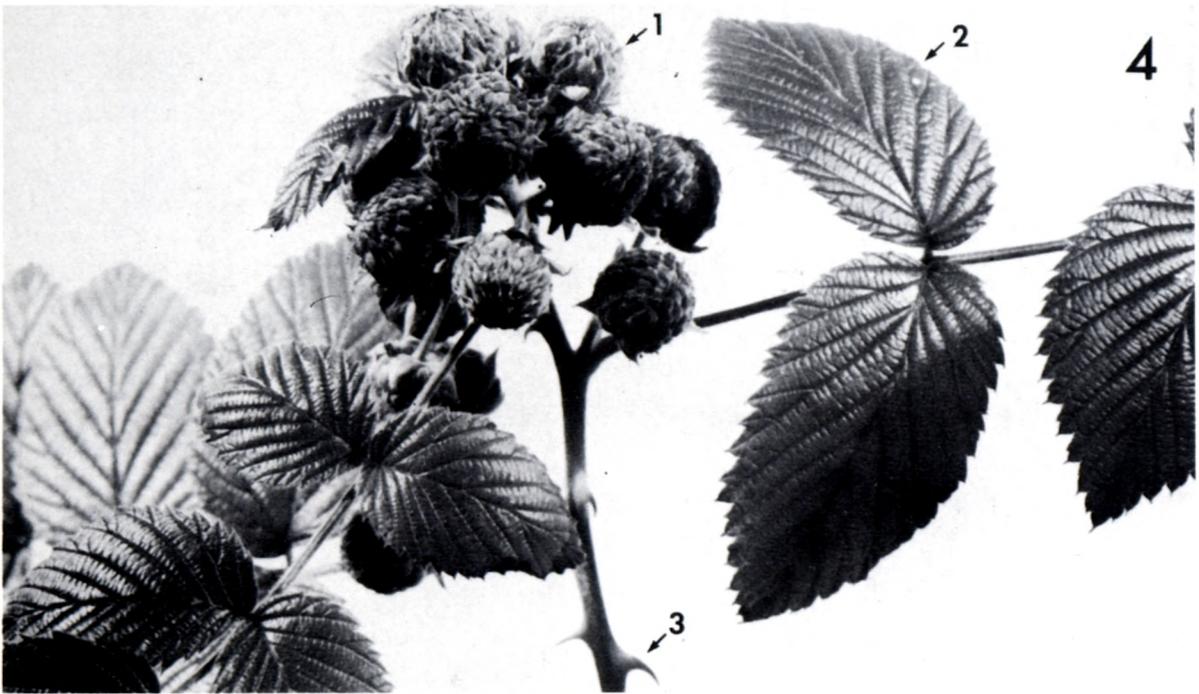


FIG. 1.—*Rubus niveus*. 1, mature second year plant with autumn primocanes; 2, 3-foliolate leaf from floricane; 4, 7-foliolate leaf from primocane; 5, autumn-induced morphological change in stem apices, showing stem tip rooting (Stirton 7146).



FIGS 2-5.—*Rubus niveus*. 2, Distribution in southern Africa. 3, part of primocane showing: 1, patent and slightly deflexed prickles; 2, ascending paired stipules. 4, tip of a 5-foliolate floricanne showing: 1, densely tomentose carpels; 2, glabrous, shiny sulcinate upper surface of leaflets; 3, recurved prickles. 5, under surface of a 7-foliolate primocane leaf showing strong nervation and under surface pubescence.

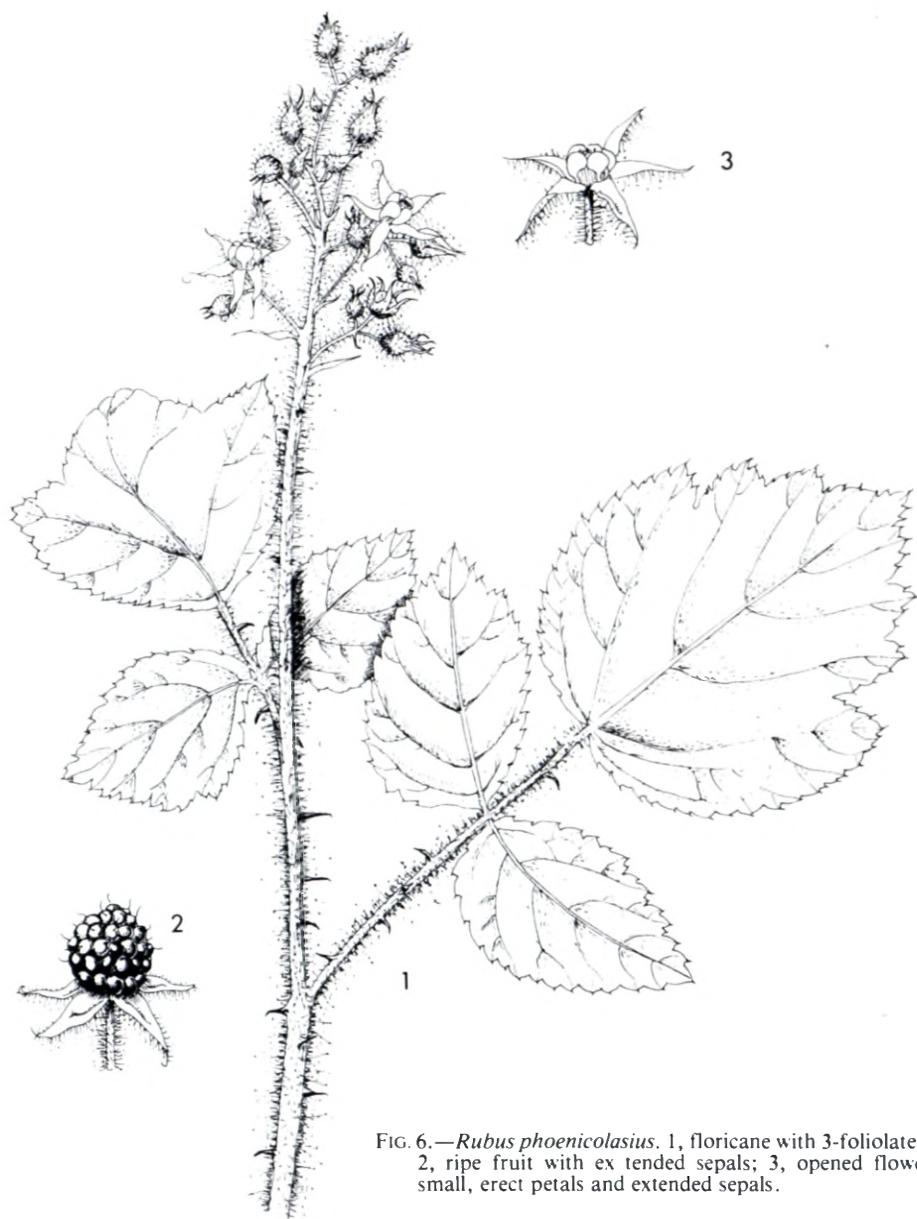


FIG. 6.—*Rubus phoenicolasius*. 1, floricane with 3-foliolate leaves; 2, ripe fruit with extended sepals; 3, opened flower with small, erect petals and extended sepals.

C. E. Gust. There is, however, only a superficial resemblance to these species. *R. niveus* is easily separated from these and most other *Rubus* spp. in South Africa by its distinctive concolorous leaves, almost paralleled secondary sulcate-venation (Fig. 5) together with its small pink flowers, tomentose fruits and white bloom on the primocanes. The nearest species which could be confused with it is *R. ludwigii* Eckl. & Zeyh., which also has similar flowers, hairy fruits, concolorous leaves and a white bloom. It differs from *R. niveus*, however, in its deeply incised leaflets and few secondary veins, regardless of the size of the leaflets.

R. niveus, like many European brambles of the subgenus *Eubatus* Focke, produces positively geotropic cane tips during the Autumn equinox when its fruits are ripening. By May the cane tips have entered the ground and have proliferated a mass of adventitious roots (Fig. 1.5).

2. *Rubus phoenicolasius* Maxim. in *Izv. imp. Akad. Nauk.* 17: 160 (1872); Hooker in *Curtis's bot. Mag.* t. 6479 (1880); Bailey in *Gentes Herb.* 5: 902 (1945).

Primocanes up to 2 m tall, robust, arching, tip-rooting, axis terete with scattered, straight or falcate prickles, densely covered by red acicles, stalked glands and a fine wispy white pubescence. *Floricane axis* similarly covered. *Leaves* 3-partite, or uppermost simple; petioles and petiolules with a thin wispy pubescence, short acicles and reddish glandular hairs, armed with falcate pricklets; upper surface of leaflets thinly-hairy, green or greyish green, lower surface densely white tomentose with straight pricklets scattered along the nerves; terminal leaflet broadly ovate, 7–10 cm long, 3–6 cm wide, cordate or subtruncate at base, apex abruptly short pointed, margins coarsely biserrate, apices of teeth apiculate; lateral leaflets smaller, oval, assymmetrical, 3–5 cm long. *Stipules* linear, persistent, adnate to base of petiole. Inflorescence a short 8 to 14-flowered terminal raceme. *Sepals* large, exceeding petals, glandular inside, glandular hairy outside, lanceolate, spreading in flower, closed during fruit maturation but open in ripe fruit. *Petals* white, shorter than sepals, erect, curved inwards, spatulate, apex crenate, outside ciliate. *Stamens* short. *Carpels* hairy; fruits ovoid, 1–2 cm long, composed of \pm red, ellipsoid glabrous drupes; seeds strongly reticulate. Fig. 6.

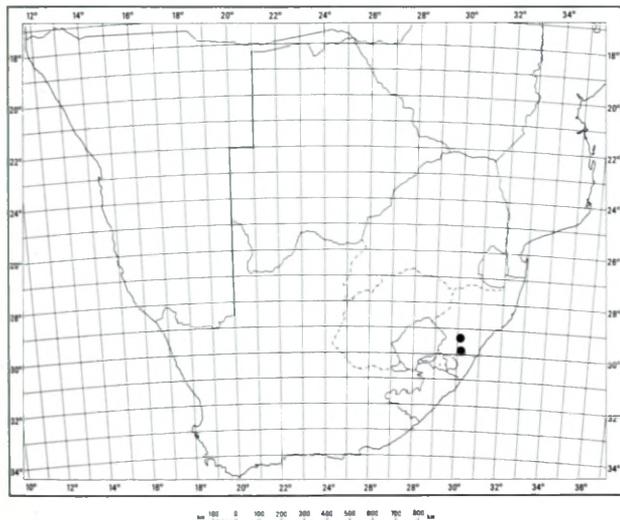


FIG. 7.—Distribution of *Rubus phoenicolasius* in southern Africa.

R. phoenicolasius is an introduced ornamental and berry plant that has escaped from gardens and is now locally naturalized in parts of the Natal Midlands (Fig. 7). It has been found in wasteland and in natural veld and is fairly rare. The earliest record of escape is 1950.

NATAL.—2930 (Pietermaritzburg): Balgowan (—AC), Marr & Scotney 8; Highlands, Richmond area (—CD), Beald 719.

Wineberry is native in Japan, North Korea, South Korea and northern China (Bailey, 1923). In Japan it occurs in plagiocseral grassland of the subarctic macroclimatic zones and is one of the principal species in the fourth (shrubby stage) of the six successional stages to climax (Numata, 1974). It was introduced from Japan into Europe by Maximovicx in the 1870's (Hooker, 1880) and is today still cultivated for its ornamental value and its edible fruit (Heslop-Harrison, 1968). In 1890 it was introduced into the United States by John Childs from seeds obtained in Japan by G. Georgeson and sent to J. T. Lovett of New Jersey (Bailey, 1941). It has since escaped cultivation and is now established along roadsides, in thickets and in open woods in several parts of the north-eastern United States (Ferral, 1950). It is also naturalized in parts of Europe.

Wineberry undergoes normal meiosis, with $n = 7$ (Chomisury, 1927) and $2n = 14$ (Darrow, 1937; Jinno, 1951; Britton & Hull, 1957). A number of attempts have been made to hybridize wineberry with commercial crops such as the European raspberry, *R. idaeus* L., especially to develop insect and disease-resistant strains. Wineberry is rather susceptible to raspberry mosaic virus (Zeffer, 1923; Giddings & Wood, 1925), α and β — leaf-curl viruses (Converse, 1962) and strawberry necrotic shock virus (Frazier, 1966). The raspberry mosaic virus is transmitted either by aphid vectors such as *Amphoraphora rubi* or by grafting (Converse, 1962). The leaf-curl viruses are also transmitted by an aphid vector, *Aphis idaei*

(Stace-Smith, 1962). As this plant hosts a number of important raspberry diseases, it should be eradicated. Marr & Scotney 8 collected in Richmond was severely affected by a necrotic viral disease.

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UITTREKSEL

Rubus niveus Thunb. and *R. phoenicolasius* Maxim. word hier vir die eerste keer in Suid-Afrika erken. Die morfologie, verspreiding en onkruidstatus word bespreek.

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