

A REVISION OF MACARONESIAN *RUBUS* TAXA (*ROSACEAE*)

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The taxonomy and nomenclature of the *Rubus* species (sub)endemic to Madeira and the Azores are treated. Only three species names have to be retained: *R. bollei* Focke (synonyms: *R. canariensis* Focke, *R. concolor* Lowe, *R. suspiciosus* Menezes, *R. vahlilii* Frid.), *R. hochstetterorum* Seub., and *R. serrae* Soldano (*R. grandifolius* Lowe). The last two species are described and illustrated. Three names are lectotypified. A key to *Rubus* of the Macaronesian region (five native species, one hybrid, one neophyte) is provided.

Keywords. Azores, brambles, Madeira, nomenclature, taxonomy, typification.

INTRODUCTION

The endemic brambles of the Atlantic Isles are considered to be relics of the Tertiary laurisilva. They deserve special interest as possible ancestors of the apomictic complex that now forms the extremely diverse *Rubus* flora of the European continent.

The uncertain treatment of Macaronesian *Rubi* in standard checklists and floras demonstrates the need for a basic revision: Hansen (1972) and Hansen & Sunding (1985) listed eight endemic *Rubus* L. species but abstained from an estimation of their systematic value. Press & Short (1994) classified *Rubus* as one of two critical plant groups within the Madeiran flora and concluded: 'further detailed study is required throughout Macaronesia'.

A first part of this task has recently been carried out by clarifying the taxonomy and nomenclature of the Canarian brambles (Matzke-Hajek & Weber, 1999). However, there remained a need for critical revision of other *Rubus* taxa described from the more remote island groups of the Macaronesian region.

The objects of this present study were to examine the taxonomy of the Madeiran and Azorean *Rubi*, to clarify the nomenclature including typification of all the names in question, and to provide descriptions and illustrations on the basis of standard material for those species that are insufficiently documented elsewhere.

The work was based on field observations and studies of herbarium plants at B, BM, C, COI, H, JE (now in BREM), K, L, LISU, TUB, W and private herbaria.

Standard material consists of: (i) typical leaves from the middle of a current year's barren stem with stem section of 10cm minimum; and (ii) flowering/fruitletting panicle from the middle of previous year's stem.

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Rubus bollei

Rubus bollei Focke, Abh. Naturwiss. Vereine Bremen 9: 405 (1887, '1886'). Type: La Palma (Canaren), vi 1892, *R. P. Murray* 21 (neo. BREM, formerly in JE: Matzke-Hajek & Weber, 1999: 26).

R. concolor Lowe, Man. fl. Madeira: 249 (1868) non *R. concolor* Hegetschw., Fl. Schw.: 488 (1839) nec *R. concolor* W. Ley, Verh. naturhist. Ver. preuss. Rheinl. 2: 20 (1845). *R. ulmifolius* var. *concolor* (Lowe) Menezes, Jorn. Sci. Math. Phys. Nat. ser. II 7 (28): 311 (1910, '1909'). Type: By the roadside in thickets going towards the Paul from the Cruzinhas [Madeira], 23 vii 1855, *Lowe* (lecto. K, designated here; isolecto. BM).

R. canariensis Focke, Abh. Naturwiss. Vereine Bremen 9: 405 (1887, '1886'). Type: Teneriffa, in margine silva, 15 v 1845, *E. Bourgeau*, Plantae Canarienses No. 755 (lecto. P: Matzke-Hajek & Weber, 1999: 26).

R. vahlii Frid., Botanisk Tidsskrift 27: 108 (1905, '1906'). Type: Sydsiden af Serra do Poizo, Madeira, Fyrreskov c.700 M. o. H., viii 1901, *M. Vahl* s. n. (holo. C).

R. suspiciosus Menezes, Jorn. Sci. Math. Phys. Nat. ser. II 7(28): 313 (1910, '1909'). Type: Caminho do Arrebentão, viii 1909, *C.A. Menezes* s. n. (holo. COI).

Description. Matzke-Hajek & Weber (1999).

Taxonomic and nomenclatural remarks on synonyms. The earliest name for this taxon is *R. concolor* Lowe (1868), although Lowe expressed doubts about its status: '...I must therefore commend it to the careful study of Mad. botanists on the spot, to determine whether it really is distinct from both *R. rhamnifolius* and *R. discolor*, or whether, if not the former sp., it is a mere sylvan state or form of the latter...' and 'perhaps only a local form of *R. discolor*'. Despite these doubts, the name is still to be regarded as validly published according to ICBN Art. 34.1 (Greuter *et al.*, 2000). However, *R. concolor* Lowe is illegitimate, being a later homonym of *R. concolor* Hegetschw. (1839).

The original material of *R. concolor*, collected by Lowe and quoted in his flora from 1868, comprises the following specimens (in chronological order):

- i. By the road from the Cruzinhas to the Paul in thickets of *Vaccinium*, 23 vii 1855, *Lowe* (BM): two panicles, one of them very small, both before flourishing, with partly damaged leaves.
- ii. By the roadside in thickets going towards the Paul from the Cruzinhas, 23 vii 1855, *Lowe* (K): a complete panicle of 50cm length, shortly before flourishing, with well-developed 3-nate and simple leaves.
- iii. Paul, below the Tanquinhas, on the road to S. Vicente, 27 vii 1855, *Lowe* (BM): two panicles, one of them apportioned into a basal part with damaged leaves and an apical part.
- iv. Cruzinhas do Seixal, 19 iii 1861, *Lowe* (BM, duplicate in K): two stem cuttings 15cm long with damaged leaves and slender side branches with undeveloped leaves.

All these parts of the original material belong to *R. bollei*. The shape of the panicles, the leaf serration and the stem characters provide sufficient identification features. The best-preserved specimen is (ii), which is designated as the lectotype.

Unlike most of the European brambles, which are apomicts, *R. bollei* is a sexual species with a greater variability concerning hairiness, leaf size and armature. Moreover, its morphology much depends on habitat conditions. The leaves of the type specimens of *R. concolor* are green instead of grey-felted beneath due to the high-elevated, moist and half-shady habitat in which the plant was collected ('thickets of *Vaccinium*, Heath, and *Laurus*'). *Rubus concolor* is thus a 'sylvan form' of *R. bollei*, but does not deserve specific or infraspecific rank of its own.

The same applies to *R. vahlii*. The holotype specimen consists of two broad panicles and a section of a young stem with several young leaves, which are mounted on three sheets. *Rubus vahlii* is also nothing else but a modification of *R. bollei* with green leaf undersides owing to the unfavourable light conditions of a pine forest ('Fyrreskov'). Friderichsen (1905) used only Lowe's description but did not examine authentic material of *R. concolor* when he discussed the asserted differences between the two taxa. Otherwise he may have noticed their identity.

Further heterotypic synonyms (*R. canariensis*, *R. suspiciosus*) and the hybrid *Rubus* × *wolfredoi-wildpretii* H. E. Weber (*R. bollei* × *R. ulmifolius*) are treated in Matzke-Hajek & Weber (1999).

Distribution. Canary Islands (Gran Canaria, La Gomera, El Hierro, La Palma, Tenerife) and Madeira.

Representative specimens. MADEIRA. 'Madera', s. dat., No. 653.8 (LINN). Fayal [Madeira], close above the Ch. by roadside, 11 iii 1861, Lowe '*R. discolor*' (K). Sta Anna, Madeira, 26 vii 1902, M. Vahl (C). Madeira, Sant'Anna, 1906, C. Menezes '*R. vahlii*' (COI). Fonte da Telha, viii 1914, C. Menezes '*R. vahlii*' (LISU No. P 41841, P 41842). Madeira, Arrebentoes, viii 1914, C. Menezes '*R. ulmifolius* var. *concolor*' (LISU No. P 41843, 41845, 41847). Ribeiro de José Funes(?), vii 1914, C. Menezes '*R. ulmifolius* var. *nutritus*' (LISU No. P 41850). Bushy banks above Poiso (above Funchal), 1500m, 8 ix 1984, Davis 70342 (BM). Levada running eastward from 25 Fontes, 950m, 25 xi 1989, Chilton & Turland 62 (BM). 25 Fontes, 950m, 25 xi 1989, Chilton & Turland 59 (BM). Levada do Caldeirão between Queimadas rest-house and EN101-5, 900m, 6 vi 1985, J.R. Press 800 (BM).

CANARY ISLANDS. See Matzke-Hajek & Weber (1999).

Rubus hochstetterorum

Rubus hochstetterorum Seub., Fl. azor.: 48 (1844). Type: In Wäldern auf Pico, vii 1838, C. Hochstetter 44 (holo. TUB No. 011054, see Fig. 1).

R. grandiflorus Seub. & Hochst., Arch. Naturgesch. 9: 14 (1843), nom. nud.

Stem low-arching (up to 120cm) or climbing up several metres, 8–14mm diam., strongly branched, bluntly angled with flat sides or nearly round, green to purple, glabrous or glabrescent with sparse simple and appressed stellate hairs, prickles 10–20 per 5cm, not confined to the angles, subequal, with broad red base, declining, (straight or) slightly curved, 5–10mm.

Leaves digitate; *leaflets* 5, smooth, convex, bright green, shining above with 0–5 hairs per cm², usually green with simple hairs beneath, sometimes greyish green with



FIG. 1. *Rubus hochstetterorum* Seub. Holotype (TUB).

a layer of stellate hairs; *terminal leaflet* 8–11 × 6–10cm, broadly obovate-rotund to straight-sided and nearly square, with a cuspidate apex 6–15mm and an emarginate to cordate base, coarsely serrate with teeth-tips straight or the principal teeth sometimes prominent and extrorse. The petiolule of the terminal leaflet (34–)37–52(–57)% as long as the lamina; petiolules of basal leaflets 8–15mm; *petioles* usually as long as or longer than basal leaflets, coloured like the stem with scattered simple and stellate hairs and 8–25 broad-based, thick, curved prickles 3–5mm. *Inflorescence* usually very large with 3–5-foliolate leaves below and 1–2 simple ovate leaves, the conical or cylindrical apex up to 20cm broad, leafless down to about 15–40cm, with bracts up to 15mm long. *Rachis* straight with sparse to numerous simple and dense stellate hairs and per 5cm with 10–16 broad-based, declining and slightly curved prickles 3–6mm; *pedicels* greyish felted with a very variable number (0–15) of curved prickles c.1–2mm; *sepals* greyish felted, short-pointed, reflexed; *petals* c.22 × 20mm (sometimes up to 30 × 25mm), broad-ovate or round, suddenly contracted to the base, white or light pink; *filaments* coloured like petals, exceeding the green styles; usually some *anthers* with single hairs; young *carpels* hairy; *receptacle* hairy. Flowering in June–July(–September). Illustration: Fig. 2.

Taxonomic and nomenclatural remarks. Seubert quoted in the protologue ‘Coll. nr. 44’ of the Hochstetter herbarium. This specimen with Seubert’s label (‘R. Hochstetterorum mihi Ms Seubert’), which must be regarded as the (holo)type, is preserved in TUB (Fig. 1). The locality where it was collected is given more exactly in Seubert’s original description of 1844 (‘in vineis editioribus sylvisque vicinis ins. Pico’ = in higher elevated vineyards and adjacent woods of the island of Pico). It consists of a single panicle with some of the spectacular flowers opened. The inflorescence is rather small compared with average plants, but shows the characteristic armature, leaf size and serration. The colour of the flowers was noted as white by C. Hochstetter on an attached slip (‘Blüth. schön weiß’). In fact the petals are not always white but sometimes of a light pink and may fade to white after full opening.

The living plant, with its large, bright green foliage, strongly convex leaflets and dense red armature, cannot be confused with *R. ulmifolius* Schott, which is the most common member of sect. *Rubus* to be found on the Azores.

Many specimens in herbaria lack sections of the current year’s stems and fully developed leaves, which are needed for a thorough morphological characterization. Obviously their large size and three-dimensional structure discouraged botanists from collecting standard material. Botanists frequently cut leaves from side branches or stem tips not being aware that those parts differ considerably in size, proportions, serration and details like prickles and density of hairs. This is probably the reason why no appropriate and complete description nor any illustration of *R. hochstetterorum* has existed in the literature so far.

The Portuguese name of the plant is ‘silvado manso’ meaning ‘meek bramble’.

Distribution and habitat. Azores (endemic): Corvo (fide Franco, 1971), Faial (map in Schäfer, 2000), Flores, Pico, Sao Jorge, Sao Miguel, Santa Maria, Terceira.

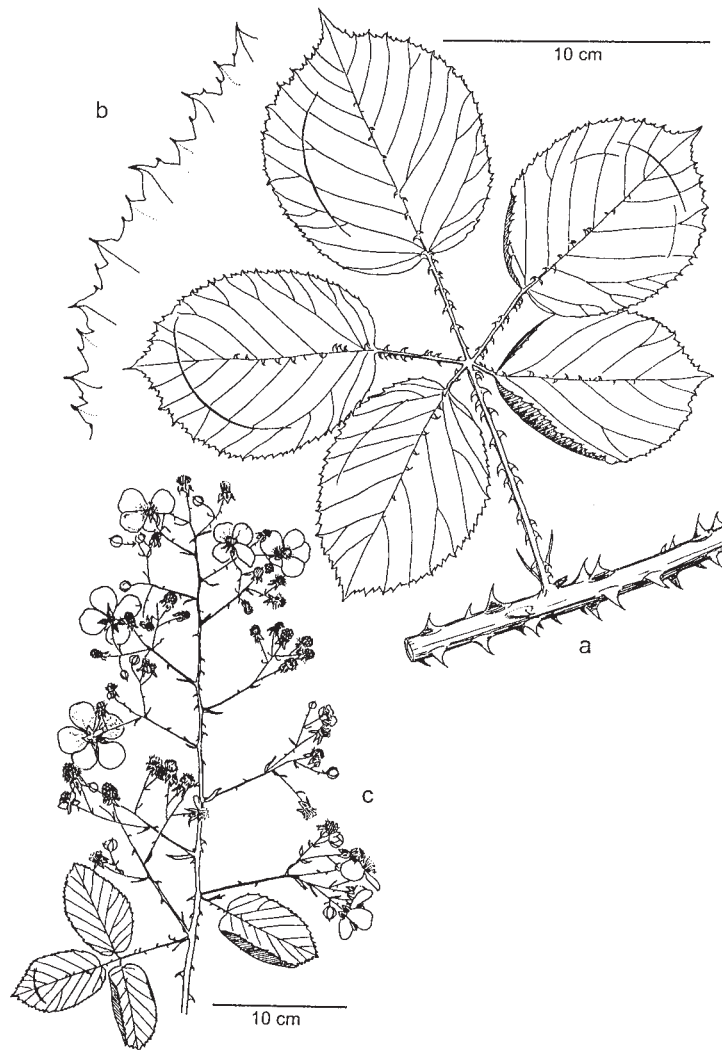


FIG. 2. *Rubus hochstetterorum* Seub.: a, leaf from middle of current year's shoot; b, leaf margin; c, panicle.

Scattered in clearings or margins of *Myrica faya*–*Erica arborea* bush and plantations of *Cryptomeria japonica*, also in hedges and thickets of *Hydrangea macrophylla*, in ravines, on roadsides and in pastures; in altitudes between 300 and 900m above sea level, often together with the abundant *R. ulmifolius* or *Frangula azorica* and *Ilex perado* subsp. *azorica*. As an Azorean endemic the plant has a very restricted distribution area but it is not threatened.

Representative specimens. AZORES. FAIAL: Abegoaria, 5km NW Flamengos, 500m, 5 x 1999, Matzke-Hajek 991005.1 (Hb. Matzke-Hajek). Road to Cabeco Gordo 7km NW

Flamengos, 650m, 5 x 1999, *Matzke-Hajek* 991005.2 (Hb. Matzke-Hajek). Roadside between Flamengos and Ribeira Funda (between Cabeco da Vaca and Cabouco Velho), 8 x 1999, *Matzke-Hajek* 991008.2 and 3 (Hb. Matzke-Hajek). FLORES: Insula Flores: Santa Cruz. Vagkant, 1 vi 1938, *Ragnar Storå* 1196313 (H). PICO: Canada da Serra, Travessa, 10 vi 1937, Palhinha (LISU No. P 44225). SW-facing slope of mountain Pico above Sao Caetano, 900m, 13 x 1999, *Matzke-Hajek* 991013.1 (Hb. Matzke-Hajek). Road between Ribeira do Cabo and Sao Roque, 450m, 13 x 1999, *Matzke-Hajek* 991013.2 (Hb. Matzke-Hajek). SANTA MARIA: Ravine N Malbusca, 310m, vi 2001, *H. Schäfer* (Hb. Schäfer). Pico de Faleira, 450m, vi 2001, *H. Schäfer* (Hb. Schäfer). SAO JORGE: Ribeira da Lexinia(?), 17 vi 1937, *Palhinha* (LISU No. P 44227, 44233). Ribeira Funda, Lovskogen/lovskogsområde, 23 vi 1938, *C. Cedercantz* 1196308, 09, 10, 11, 12, 14, 15, 16, 17 (H). Ribeira Funda, 12 viii 1938, *A.G. da Cunha* (LISU No. P 44222). Ribeira Funda, 19 viii 1938, *A.G. da Cunha* (LISU No. P 44224). SAO MIGUEL: Ilha da S. Miguel, vii 1847, *F. Welwitsch* (LISU No. P 44235). St Michael, Azores, sine dat. (1848?), *T. C. Hunt* (B, 2 sheets: panicles only). TERCEIRA: Pico do Cabeizo, grota do Bernardo, 4 vi 1937, *Palhinha* (LISU No. P 44218).

Rubus serrae

Rubus serrae Soldano, Mem. Accad. Lunig. Sci. 60/61: 322 (1992), nom. nov. pro *R. grandifolius* Lowe, Prim. faun. flor. Mader.: 32 (1831), nom. illeg. (ICBN 53.1), non *R. grandifolius* Salisb., Prodr. stirp. Chap. Allerton: 364 (1796). Type: Madeira, ravine W of the Alegria, 2000ft, 5 x 1827, *Lowe* (lecto. K, designated here).

R. grandifolius var. *dissimulatus* Menezes, Jorn. Sci. Math. Phys. Nat. ser. II 7(28): 313 (1910, '1909'). Type: Rib^a de Sta. Luzia, Madeira, 1906, *C. Menezes* (lecto. COI, designated here).

Stem angled and furrowed, 6–12mm diam., climbing high on other plants, reddish brown, glabrous, rarely with single (0–1 per 5cm) glandular setae 2–3mm; prickles subequal, confined to the angles, 2–10 per 5cm with a very broad triangular base, declined, (straight or) slightly curved, 3–5mm long. *Leaves* (sub)pedate; *leaflets* 5, glabrous above, sparse, small simple hairs only on the veins beneath; *terminal leaflet* 10–18 × 6–11cm, elliptical to elliptical-obovate with an entire or cordate base and an acuminate apex up to 30mm long, biserrate or unevenly serrate; *petiolule* (25–)32–45(–53)% as long as the lamina, petiolules of basal leaflets 5–12mm; *petiole* as long as or longer than basal leaflets, coloured like the stem, with 8–25 broad-based, compressed, (strongly) curved prickles (2.5–4mm long). *Stipules* linear to lanceolate, 10–25mm long, 1.5–3mm wide. *Inflorescence* large with a wide base (–40cm) of spreading, branched peduncles, with 3–5-foliate leaves below; the upper 15–30cm leafless. *Rachis* very sparsely hairy, prickles 4–10 per 5cm, subequal, broad-based, declined and slightly curved, 2–4mm; rachis and panicle branches with reddish brown glandular setae or stalked glands, sometimes forming a dense cover, sometimes very sparse and ± confined to the branches, rarely lacking. *Pedicels* 2.5–6cm long with 0–8(–15) minute acicles (–2mm long) and many 1–3mm long stalked glands. *Sepals* sometimes long-pointed, green with white margin, with few simple hairs and stalked glands, reflexed. *Petals* white, broadly obovate, 12–20mm long, 5–12mm wide. *Filaments* white, exceeding the green styles; *anthers* and *carpels*

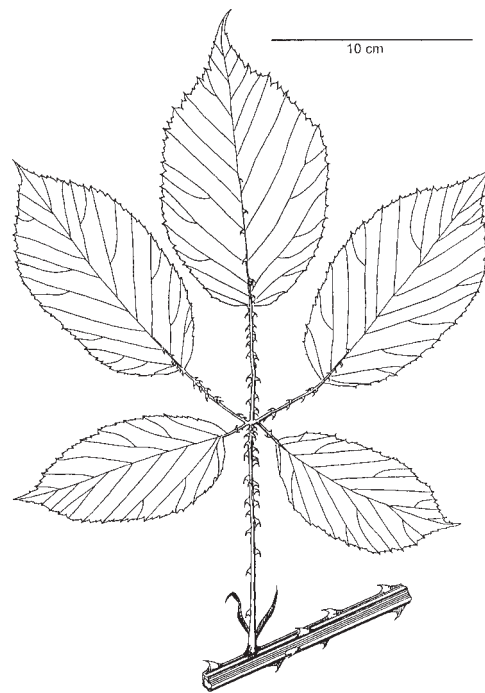


FIG. 3. *Rubus serrae* Soldano. Typical leaf from middle of current year's shoot.

glabrous. Ripe *fruit* shining black, obtusely conical to cylindrical, of numerous small drupes. Illustration: Figs 3, 4.

Nomenclatural remarks. *Rubus serrae* was published by Soldano (1992) as a new name for the well-established but incorrect name *R. grandifolius* Lowe, which is illegitimate as a later homonym of *R. grandifolius* Salisb. (1796), although the latter is a nomenclaturally superfluous name for *R. odoratus* L. and, therefore, itself illegitimate (ICBN 52.1). However, *R. grandifolius* Salisb. was validly published under ICBN (Art. 33-45) so that *R. grandifolius* Lowe has to be replaced. The epithet *serrae* is derived from the Portuguese name of the plant (*silvado da serra*), which means 'mountain ridge bramble'.

Lowe did not refer to a particular specimen in the protologue. However, the lectotype of *R. serrae* is the only herbarium material known to be used by Lowe when he described the taxon for the first time. It was collected in 1827 and the label is written by Lowe's hand. It consists of three leaves (1 normal, 2 rather small ones from the apical part of the current year's shoot) and was supplemented by a fragment of a flowering/fruiting panicle of which a larger section is mounted also on a second sheet with its own label. This inflorescence, which does not belong to the 1827 gathering, was added by Lowe about 20 years later. Its label says: 'Serra d'Agua June 27th 1846'. Therefore only the leaves represent the lectotype (although all parts belong to the same species).

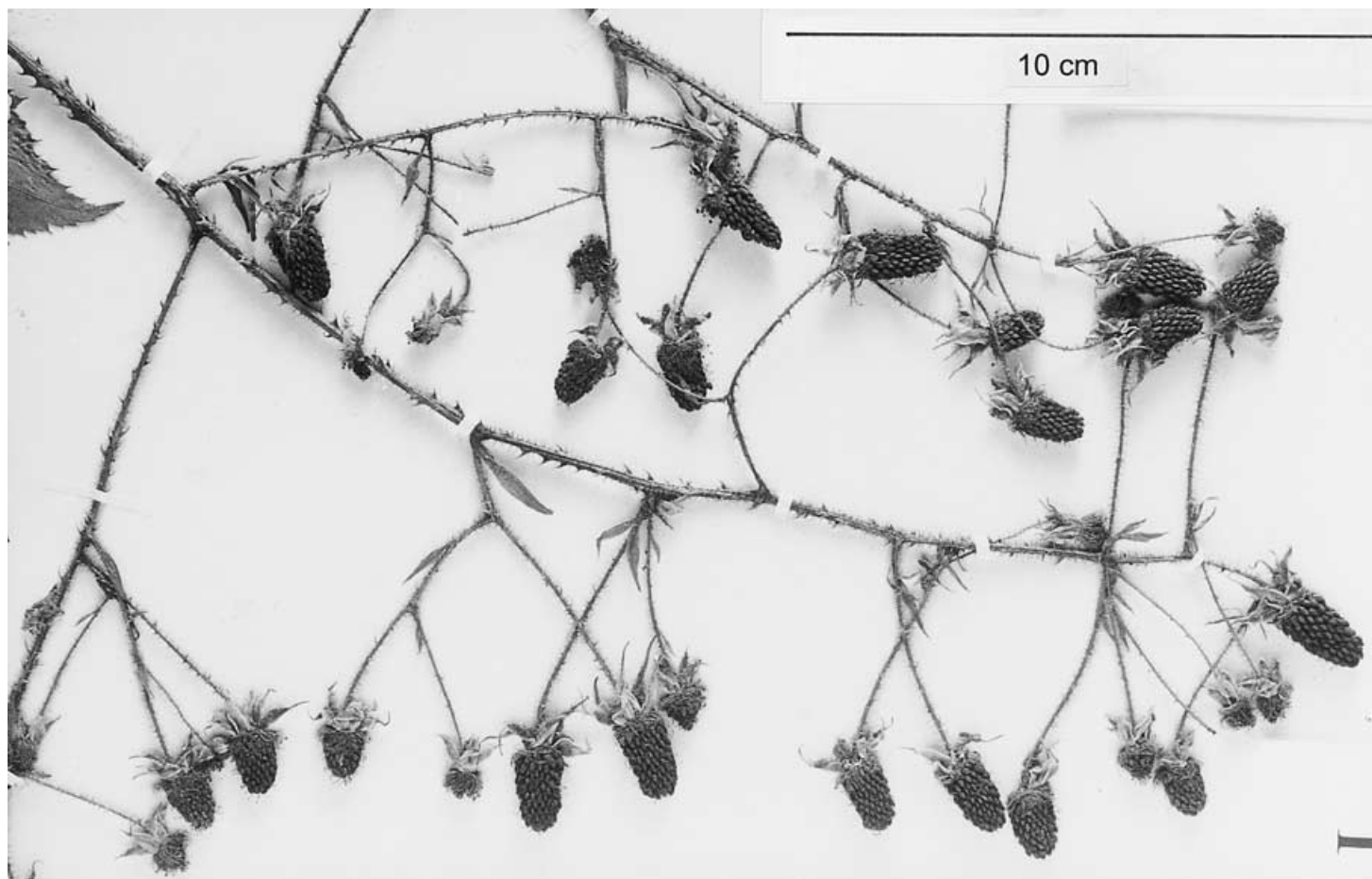


FIG. 4. *Rubus serrae* Soldano. Part of a fruiting panicle.

Rubus serrae Soldano is the type species of series *Grandifolii* Focke (1914: 205). Other members of this group include *R. incanescens* Bertol. and *R. palmensis* A. Hansen.

Representative specimens. MADEIRA. Madeira, sine dat., (*Banks & Solander?*) s.n., (BM as '*Rubus pedatus* Mscr.'). Serra d'Água, 27 vi 1846, *Lowe* (K). Madeira, 1856, *N.H. Mason F.L.S.*, '*R. fruticosus*' (W). Madeira, 1866, *N.H. Mason*, '*R. fruticosus*' (W). In sepibus et ad rivulos, Ribero da Metade, Jardim da Serra, 1000–1500m, v–ix, *G. Mandon*, Pl. Maderenses, 1865–1866: 99 [lithogr. label] (C: 2 panicles plus 1 leaf on 3 sheets; W). In sepibus, Ribeiro Frio, 1500m, 25 vi 1865, *G. Mandon*, Pl. Maderenses, 1865–1866 (W). Madeira, Ribeiro Frio, 900m, 8 x 1900, *Bornmüller*, Pl. Exsicc. Mad. No. 582 (W). Madeira, Ribeiro Frio, 900m, viii 1900, *Bornmüller*, Pl. Exsicc. Mad. No. 582 (JE). Ribeiro Frio (Madeira), s. dat., *Menezes* (COI, LISU No. P 43485). Ribeira de Sta. Luzia, 1903, *Menezes* (COI). Ribeira de Sta. Luzia, 1906, *Menezes* (COI, panicle only, see *Menezes* 1910, p. 313). Queimadas des Furados do Caldeiras Verde, 900m, 27 vi 1957, *C. Romariz* 763 (LISU). Encumeada-Pass, nach Pico Ruivo, 30 viii 1991, *Schönfelder* 91-197 (Hb. Weber).

Key to Macaronesian species of *Rubus*

The following diagnostic key covers seven taxa (including the frequent *R. ulmifolius*, one hybrid and one recent introduction). It may be used for plants from the whole of Macaronesia. Cultivated species and exceptional garden escapes (*R. idaeus*, *R. pinnatus* etc.) are not included. For endemic species not described in this paper (*R. bollei*, *R. palmensis*, *R. × wolfredoi-wildpretii*) see *Matzke-Hajek & Weber* (1999). *Rubus ulmifolius* is treated in *Monasterio-Huelin & Weber* (1996).

Standard material is required; leaf characters must always be checked on typical leaves from the middle of a current year's barren stem!

- 1a. Stems less than 5mm diam., creeping on the ground, leaves with 3 leaflets
(Azores, introduced from N America) _____ **R. flagellaris**
- 1b. Stems more than 5mm diam., arching, most leaves with 5 leaflets _____ 2
- 2a. Leaves beneath perfectly glabrous between the nerves; pedicels and sepals with reddish stalked glands (Madeira) _____ **R. serrae**
- 2b. Leaves beneath hairy or felted between the nerves; pedicels and sepals without stalked glands _____ 3
- 3a. Stems or petioles with few to many gland-tipped setae (W Canary Isles) _____
_____ **R. palmensis**
- 3b. Stems and petioles always without gland-tipped setae _____ 4
- 4a. Flowers >45mm diam.; inflorescence a huge (10–25cm diam. near apex)
cylindrical panicle, leaflets strongly convex (Azores) _____ **R. hochstetterorum**

- 4b. Flowers <35mm diam.; inflorescence slenderly cylindrical or conical (<10cm diam. near apex), but sometimes with a broad base, leaves flat or slightly convex _____ 5
- 5a. Terminal leaflets less than 8cm long, petals pink _____ 6
- 5b. Terminal leaflets more than 8cm long, flowers white or pale pink _____ 7
- 6a. Youngest foliage green above, stems pruinose with dense stellate hairs _____ **R. ulmifolius**
- 6b. Youngest foliage \pm bronze-red, stems a little pruinose, with few stellate hairs (W Canary Isles, Madeira) _____ **R. \times wolfredoii-wildpretii**
- 7a. Stems not pruinose, glabrous or with very few small simple hairs, petals white (rarely pale pink), inflorescence a broad-based panicle, leaves evenly or double serrate (W Canary Isles, Madeira) _____ **R. bollei**
- 7b. Stems a little pruinose, with minute stellate hairs, petals pale pink, inflorescence usually a slender panicle, leaves unevenly serrate _____ **R. \times wolfredoii-wildpretii**

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