

BERBERIDOPSIS (FLACOURTIACEAE) IN AUSTRALIA

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SUMMARY

Streptothamnus beckleri F.v.M. (Flacourtiaceae) has been misplaced and belongs to *Berberidopsis* Hook. f., until now a monotypic genus from Chile. A revision of both genera is given and the tribal name Berberidopsidae is validated.

GENERAL SURVEY

Berberidopsis was originally described by Hooker f. (1862) with as the only species *B. corallina* Hook. f., based on a collection from Chile by Pearce for the Veitch Company. Hooker thought the genus to be so intermediate between the Berberidaceae and the Lardizabalaceae that it appeared to be another proof that these two families should be united. It is a very showy climber with numerous coral-red to scarlet flowers and has fortunately been cultivated in a number of places, because in its native country it has become very local.

Baillon (1870) pointed out the great resemblance to *Erythrospermum* Lamk., which he also regarded as a Berberidacea, representing a distinct tribe, the Erythrospermeae DC. (1824). Warburg (1893) agreed with this affinity, but placed the tribe in the Flacourtiaceae, and ever since *Berberidopsis* has been considered to be a member of that family. Van Tieghem's proposal (1900) to elevate at least *Erythrospermum* to a distinct family ('Erythrospermacées', nom. inval.) has found no acceptance. Gilg (1925), on the contrary, united the tribe with the Oncobeeae. Hutchinson (1967) for obscure reasons changed the name of the Erythrospermeae to Berberidopsidae. He was the first to point out the apparent resemblance of *Berberidopsis* to *Streptothamnus* F.v.M., until now considered as a bi-specific genus from southern Queensland and northern New South Wales, Australia.

The latter genus and its species were published more or less at the same time as *Berberidopsis* by Von Mueller (1862), who included it in the Bixaceae, a name long in use for the Flacourtiaceae. His description was primarily based on *S. moorei* F.v.M., under which he added a note that perhaps there was another species of the same genus, *S. beckleri* F.v.M., of which he only had fruiting material. This taxonomic doubt does not invalidate the name, even when it was not mentioned in the index

to the pertinent volume of Von Mueller's *Fragmenta*, where the original spelling 'moorii' is corrected to 'moorei' as it has been written ever since. Von Mueller described the presence of a calyx distinct from the corolla, which is correct for *S. moorei*, and therefore the genus was until Hutchinson's publication included in the tribe Scolopieae of the Flacourtiaceae.

L.W. Jessup recently (1982) made original diagnoses, but did not realise that the numerous differences between the two species were more than just specific.

Streptothamnus moorei has a cyclic flower with usually 5 persistent calyx lobes and 5 caducous petals, no disk, many stamens on a slightly convex torus, filaments much longer than the anthers, which are straight and smooth with an inconspicuous connective and diffuse placentas. *Streptothamnus beckleri*, on the other hand, has an acyclic perianth of 15–17 caducous tepals of which the outer, smallest ones seem to have a different colour in the field, but in the dried state there is just a gradual increase in size inward without a clear differentiation. There is a large, lobed extra-staminal disk which is persistent in fruit and then superficially resembles the persistent calyx of *S. moorei*. There are only about a dozen stamens in a single whorl with short, stout filaments and more or less curved, muriculate anthers with a muriculate, wide connective. There are 5 placentas that are distinctly separate already in the ovary. These phytographical characters together with those observed in the vegetative anatomy by Baas (1984) and in the seed anatomy and pollen morphology by Van Heel (1984; both papers to be found elsewhere in this issue) indicate that *S. beckleri* resembles *B. corallina* much more than it does *S. moorei*, for which reason the first species is here transferred to *Berberidopsis*. The latter genus thus becomes another example of amphi-transpacific distribution (see also Van Steenis, 1962).

Hutchinson's suggestion that *Berberidopsis* and *Streptothamnus* are closely related seems correct although it seems to be serpendituous as in Kew he only had access to a very poor isotype of *S. moorei* consisting of but a small branchlet with a single leaf and a partial flower to which in a satchel is affixed a leaf and a fragmented fruit of *S. beckleri*. Otherwise in Kew there are a number of collections of the latter species, so in fact he was comparing two species of the same genus (*Berberidopsis*) with each other thinking they represented two genera.

In view of their overall resemblance morphologically, anatomically and palynologically the two genera are probably best placed in a separate tribe in the Flacourtiaceae, which may be called Berberidopsidae. This name was already proposed by Hutchinson (1967), but was invalid as it lacked a Latin diagnosis. In his concept it would have been incorrect, as he included *Erythrospermum*, the type of the Erythrospemeae, but when the latter genus is removed, it can still be used (see also Art. 63.3 of the International Code of Botanical Nomenclature, 1983).

Because some of the differences between the two genera are the same as used to distinguish the tribes Oncobeeae and Scolopieae (viz. the differentiation between calyx and corolla) a reconsideration between the latter two's delimitation would seem in order, which of course is far beyond the scope of the present paper. To elevate the tribe to a distinct family will not solve the problem of its affinities, but on the contrary may postpone a solution.

ACKNOWLEDGEMENTS

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GENERAL KEY TO THE SPECIES

- 1a. Flowers acyclic, tepals in a spiral, 13–17, deciduous. Disk present, persistent. Stamens 6–13, in 1 whorl, filaments very short, connective broad, muriculate, anthers muriculate (*Berberidopsis*) 2
- b. Flowers cyclic. Sepals 5, quincuncial, persistent. Petals 5, quincuncial, deciduous. Disk absent. Stamens numerous, filaments longer than the anthers, filiform, connective inconspicuous except for a terminal lobe, anthers smooth (*Streptothamnus*) **Streptothamnus moorei**
- 2a. Leaves pergamentaceous, entire to slightly crenulate. Flowers solitary, rarely paired. Tepals 15–17, pink, puberulous outside. Stamens 12 or 13. Placentas 5
Berberidopsis beckleri
- b. Leaves coriaceous, coarsely, pungently dentate. Flowers in racemes. Tepals 13–15, purple, glabrous but for the ciliolate margins. Placentas 3
Berberidopsis corallina

VEGETATIVE KEY TO THE AUSTRALIAN SPECIES

- 1 a. Leaves never hastiform, pergamentaceous to subcoriaceous, both sides concolorous, waxy glaucous, domatia absent, apex folded sideways (at least when dried). Basal lateral nerves shortly concurrent with the midrib at base
Streptothamnus moorei
- b. Leaves on the vegetative shoots often hastiform, pergamentaceous, waxy glaucous and pale beneath, domatia present, apex not folded sideways when dried. Basal lateral nerves branching off immediately from the midrib
Berberidopsis beckleri

BERBERIDOPSIDEAE Veldk., *trib. nov.*

Berberidopsidae Hutch., Gen. Pl. 2 (1967) 205, nom. inval. superfl. pro *Berberidopsidi* *Streptothamnoque*.

Frutices scandentes, ligni vasis fere omnino solitariis, perforationibus scalariformibus, fibris non-septatis foveis distincte areolatis, stipulis nullis, laminis stomatibus cyclocytosis bicyclisive, floribus hypogynicis (semper?) bisexualibus, petalis bene evolutis aut sepalis distinctis aut tepalis exterioribus sepaloideis gradatim in tepalis interioribus petaloideis transientibus, sine squamis basalibus, staminibus aut in verticillo unico ubi 6–13, aut dense positos in torum ubi numerosis, cetera sine ordine manifesto, tecto pollinis imperforato, fructibus baccoidis, testa modo endotestali orienti, integumenti exterioris epidermide interiore strato singulo cellularum pallisadearum foveolarum valde lignificatarum unaquaeque uno crystallo continens, embryone minuto. – *Typus*: *Berberidopsis* Hook. f.

Scandent shrubs. Wood vessels almost exclusively solitary, perforations scalariform, fibres non-septate, with distinctly bordered pits. Stipules absent. *Leaves* with cyclocytic to bicyclic stomata. *Flowers* hypogynous, bisexual (always?). Petals well-developed, either distinct from the sepals, or outer tepals sepaloid gradually changing into the inner petaloid ones; basal scales absent. *Stamens* either in a single whorl, 6–13, or densely placed on the torus, otherwise without an apparent arrangement. *Fruit* berry-like. *Testa* developing endotestally, inner epidermis of the outer integument with a palisade layer of strongly lignified pitted cells, each with one crystal. Embryo small.

BERBERIDOPSIS

Berberidopsis Hook. f. in Curtis, Bot. Mag. III, 18 (1862) t. 5343; Benth. & Hook. f., Gen. Pl. 1 (1867) 964; Warburg in E. & P., Nat. Pfl. Fam. III, 6a (1893) 15; Gilg in E. & P., Nat. Pfl. Fam. ed. 2, 21 (1925) 394; Hutch., Gen. Fl. Pl. 2 (1967) 207. – *Typus*: *Berberidopsis coralina* Hook. f.

Scandent shrubs, branching sympodially, in flushes. Axillary buds collateral, scaly. *Leaves* estipulate, in a spiral, blades ovate to ± hastiform, entire to coarsely dentate, sub-3- or 5-plinerved. Pedicels with 1–several bracteoles. *Flowers* bisexual, acyclic, hypogynous, axillary, solitary or in many-flowered racemes. Tepals 13–17, caducous,

imbricate, the outermost smallest. Disk extra-staminal, persistent in fruit, with as many lobes as stamens. *Stamens* 6–13, in 1 row; filaments stout, short, muriculate; anthers subbasifix, muriculate, in bud with their bases in the sinuses of the disk-lobes, slightly curved inward because of the smaller and narrower inner thecae, latero-introrsely dehiscent from the top, at first with 2 pore-like apertures, which soon elongate into slits with wavy scarious margins; connective broad, dark, muriculate, apically produced into a small lobe. Style persistent in fruit, club-shaped with an apical, inconspicuous stigma. Ovary 1-locular; placentas 3 or 5, parietal; ovules epitropous, 2–many per placenta. *Fruit* berry-like, indehiscent, with a thin pericarp; exotesta fleshy, finely longitudinally ribbed when dry, \pm smooth when boiled, raphe a narrow, \pm sausage-shaped lateral wing, endotesta crustaceous; endosperm attached with a blackish disk, copious, with oily droplets; embryo minute.

Distribution. Two species, one in Chile, one in Australia.

Ecology. Montane rainforest.

1. *Berberidopsis beckleri* (F.v.M.) Veldk., *comb. nov.*

Streptothamnus beckleri F.v.M., *Fragm. Phyt. Austr.* 3 (1862) 28 ('*becklerii*'); Benth., *Fl. Austr.* 1 (1863) 108; Beadle, *Stud. Fl. N.E. New South Wales* 3 (1976) 262, f. 122 b; Sleumer, *Contr. N.S.W. Nat. Herb., Fl. Ser.* 136 (1963) 2; Williams, *Checklist Rainforests N.S.W.* ed. 2, 2 (1980) 7; Jessup in Briggs et al., *Fl. Austr.* 8 (1982) 78, f. 21d–f, map 77; Morley in Morley & Toelken, *Fl. Pl. Austr.* (1983) f. 52a. — *Lectotype*: *Beckler s.n.* (MEL, holo, no. 606823, K, NSW, photo in L), Australia, New South Wales, Clarence River, anno 1862.

Plants subglabrous. Petioles 1–4 cm long, slender, not pulvinate, glabrous; blades heterophyllous, those of the sterile shoot and lower down on the flowering ones triangular, trullate to hastiform, large, the basal two nerves not partaking in the looping nervature, but \pm straight and terminally produced as a small mucro, those of the flowering branches ovate, smaller, basal nerves partaking in the main nervature, not excurrent, always branching off immediately from the midrib, 3–8.5 by 1.8–5.5 cm, pergamentaceous, sub-3-plinerved, base rounded to slightly cordate, margin entire to slightly crenulate, slightly involute, with small glands, apex acuminate, not folded sideways (i.s.), mucronate; beneath pale, with scattered, glandular dots, waxy glaucous, at base with excavated domatia often with septate hairs, these also on the main nerves. *Flowers* on the first years' shoots, axillary, solitary, rarely paired, secund. Pedicels pendulous, slender, 1.5–5.5 cm long, glabrous, at base with 1 or 2 (–several) minute, broadly ovate, c. 0.5 mm long, abruptly acuminate bracteoles with ciliolate margins, sometimes with another along its length. Tepals 15–17, broadly sessile, the outermost broadly ovate, c. 2 mm wide, abruptly acuminate, the inner broadly elliptic to obovate to \pm spatulate, up to 8 by 7 mm, apex rounded, outside puberulous with simple hairs and minutely papillose, inside glabrous. Disk-lobes 12 or 13. *Stamens* 12 or 13; filaments 0.75–1 mm long; anthers 3–4.75 mm long, incl. the apical, triangular, c. 0.35 mm long lobe. Pistil flask-shaped, c. 6.5 mm long, glabrous, smooth; style in fruit up to 4 mm long; stigma irregularly lobed; ovary ribbed; placentas 5, each with many ascending to descending ovules. *Fruit* subglobose, 11–14

by 10–12 mm diam., glabrous, smooth, reddish. Seeds many, in 10 rows, ellipsoid, up to 3 by 2 mm diam.; exotesta blackish brown, mesotesta without stone-cells.

Distribution. Australia: Queensland (Mt Roberts, McPherson Range, Lamington Nat. Park), New South Wales (head of Clarence River, Big Mt Spirabo, Dorriggo Plateau, N of Daisy Plains, NNE of Ebor, N of Birdwood, head of Hastings River, Mt Comboyne, Barrington Tops); roughly between 28°–32°S and 151°45'–153°E).

Ecology. Montane rainforest and edges of secondary vegetation with *Acacia binervata*, *Acronychia* sp., *Baloghia* sp., *Cephalaria cephalobotrys*, *Cissus antarctica*, *Daphnandra* sp., *Dicksonia antarctica*, *Diploglottis australis*, *Doryphora sassafras*, *Eucalyptus fastigiatus*, *Eugenia* sp., *Heritiera actinophylla*, *Nothofagus moorei*, *Orites excelsa*, *Polyosma cunninghamii*, *Senecio linearifolius*, etc., 825–1525 m. Flowering from January to March, fruiting from (May–)July to November. (No collections seen from March, June, December.)

Vernacular name. Mountain Redberry Vine (Williams & Harden).

Collectors' notes. Scrambling shrub, vine, or liana, up to 4.5 m high or more. Wood brittle, much interlaced. Leaves above mid dull to glossy green, below (sub-)glaucous. Flowers very pretty, pink and old gold. Fruits pendulous, red when ripe. Scarce, locally common. Very floriferous.

Note. Contrary to Sleumer's remark no pulp seems to be present in the 'berry'.

Specimens. Beckler s.n. (K, NSW; MEL, n.v.), Bird & Williams s.n. (BRI, n.v.), Boorman s.n. (May, Sept. 1909, NSW), Carron s.n. (NSW), Chisholm s.n. (NSW), Colvin s.n. (NSW), Constable s.n. (NSW), 6554 (NSW), 7070 (K, NSW), Coveny et al. 6017 (L, NSW; BRI, n.v.), 8451 (L, NSW; K, MO, RSA, n.v.), Earp s.n. (NSW), Floyd 1381 (L), Fraser s.n. (Jan. 1934, NSW), id. (April 1952, K, NSW), Fraser & Vickery s.n. (NSW), Heron s.n. (NSW), Hewitt s.n. (NSW), Jackson 37 (L; A, BISH, CANB, n.v.), Johnson 135 (NSW), Johnson & Briggs s.n. (K, NSW), McGillivray & Coveny 423 (K, NSW), Moore s.n. (K, NSW), Rod 681 (NSW), Rodway 1878 (K, NSW), Schodde 3245 (E, L, NSW; CANB, n.v.), Shirley 2293/18 (NSW, same number for *Streptothamnus moorei*!), Smith 10944 (BRI, n.v.), White s.n. (Jan. 1919, NSW), 7568 (K; A, BRI, n.v.).

2. *Berberidopsis corallina* Hook. f.

B. corallina Hook. f. in Curtis, Bot. Mag. III, 18 (1862) t. 5343; Engl. in E. & P., Nat. Pfl. Fam. III, 2 (1891) 274; Warb. in E. & P., Nat. Pfl. Fam. III, 6a (1893) 15, f. 3 g & h; Reiche, Fl. Chile 1 (1895) 30; Engl. in E. & P., Nat. Pfl. Fam., Nachtr. (1897) 170; Gilg in E. & P., Nat. Pfl. Fam. ed. 2, 21 (1925) 394, f. 167 g & h; Bate-Smith, J. Linn. Soc. Bot. London 58 (1962) 144; Muñoz Pizarro, Sin. Fl. Chil. (1959) 153; Mus. Nac. Hist. Nat., Not. Mens. 93 (1964) 4; Gunckel, Bol. Univ. Chile 46 (1964) 24, fig.; Bol. Soc. Biol. Concepción 40 (1966) 33, map 1; Keating, Ann. Missouri Bot. Gard. 50 (1973) 277, f. 1 & 2; Grana 15 (1975) 35, f. 11–22; Miller, J. Arn. Arbor. 56 (1975) 20; v. Heel, Blumea 23 (1977) 361, f. 46–53; Blumea 25 (1979) 523, f. 46–48, phot. 8. – Type: *Pearce 126* (K, holo; B, SGO, n.v.), Chile, Prov. Arauco, S of Lota, 460–610 m, Feb. 1860 ('Prov. Valdivia, 6 August 1861' on holotype in K, but see Gunckel, 1964).

Plant subglabrous. Petioles 0.6–1.3 cm long, rather slender, pulvinate at base, with some septate hairs; blades ovate-oblong, the larger perhaps slightly hastiform, up to 7 by 3.5 cm, coriaceous, sub-3- or 5-plinerved, outer lateral nerves always branch-

ing off immediately from the midrib, partaking in the main, looping nervature, or, especially in the larger leaves excurrent into the marginal teeth; base truncate, margin coarsely, pungently dentate, teeth glandular-tipped, apex acute, apiculate, not folded sideways (i.s.); beneath slightly paler, slightly glaucous but not waxy, very finely punctate, at base with the inner nerve axils usually with 1 or 2 rows of stiff, septate hairs. *Racemes* terminal on the first years' shoots, secund, many-flowered, up to 20 cm long, leafy at base, bracts reduced upward to ovate-linear-lanceolate, septately puberulous to ciliolate to glabrous bracts. Pedicels 1 (–3) together, slender, 2–4.5 cm long, glabrous, at base with 1 or 2 bracteoles similar to the smallest bracts, occasionally with 1 or 2 bracteoles along its length. Tepals (5?–)13–15, broadly sessile, the outermost ovate, c. 1 mm wide, acuminate, the inner broadly ovate to circular, up to 8 by 8 mm, apex rounded, margin ciliolate, otherwise glabrous. Disk-lobes 6–10. *Stamens* 6–10; filaments c. 0.5 mm long; anthers c. 4 mm long, incl. the apical, triangular, c. 0.5 mm long lobe. Pistil flask-shaped, c. 6 mm long, glabrous, smooth, style in fruit up to 3 mm long; stigma 3-lobed; ovary ribbed; placentas 3, each with 2–14 ascending ovules. *Fruit* subglobose, up to 14 by 9 mm diam.; exotesta shiny, brown, mesotesta with many stone-cells.

Distribution. Chile, coastal cordilleras: Prov. Concepción (Fundo Colcura, Laraquete, Quebrada Honda), Arauco (Bahia de Lota, Centulmo, Lota), Cautín (Almagro), Valdivia (San Ramón), Osorno (Cordillera de Calminahue, Rio Bueno).

Meyer (anno 1966, no. 9766) noted that the Puente Melizos in the Fundo Colcura Forest would be the last known wild locality of the species (same date and locality for *Walker 237*), but Marticorena and party have found it still in Quebrada Honda in 1976. It may be extant yet in some gardens in Chile, e.g. the one of Mrs. Ana Manns, Tres Bocas, N of Valdivia, in the Botanical Garden of the University of Valdivia, and elsewhere, e.g. in Great Britain, where there is an enormous, richly flowering specimen in White Craggs, Ambleside, Westmoreland.

Ecology. Banks of streams, dense, shaded places, 175–610 m.

Phytochemistry. Presence of quercetin, cyanidin (derived from leucocyanidin) and small amounts of coffee- and p-cumaric acid in hydrolysed leaf extracts (Bate-Smith, 1962).

Collectors' notes. Evergreen, scrambling shrub or liana, forming dense masses over the tops of trees and shrubs, 15 m or more high, branches pendulous, weeping to the ground. Leaves bright glossy green, strongly glaucous beneath. Inflorescence terminal, flowers pendulous, coral red or scarlet, very showy, possibly pollinated by the colibri *Sephanoides sephanoides*. Seeds 12–24 per fruit. In Chile flowering from December to April, August, fruiting in December, in Great Britain flowering in September, but there never setting fruit. Marticorena et al. remarked that the species might predominantly propagate vegetatively in the field, too. It is known to be easily grown from cuttings in the spring and from layers in autumn, but also from seed, when available. It is very showy in flower.

Notes. Engler (1891) described as few as 6 anthers, others say there may be 7–10, but I always saw 10.

Gunckel (1964) reported as few as 5 tepals, I never saw less than 13.

Specimens (Those marked G* in Hb. Gunckel, cf. Gunckel, 1966, none seen). Boom 11120 (L), Grau s.n. (3 April 1968, M, n.v.), Gunckel s.n. (Sept. 1946, G*), Hollermayer 693 (G*), Junge s.n. (11 March 1936, CONC, LIL, n.v.), Lester-Garland s.n. (Sept. 1921, K), Manns s.n. (1951, G, LIL, n.v.), Marticorena et al. 1089 (L; CONC, n.v.), 1140 (L; CONC, n.v.), Meyer 9766 (= Walker 237; K; US, n.v.), Muñoz Pizarro s.n. (Feb. 1964, G*), Pearce 126 (K; SGO, n.v.), Philippi s.n. (March 1878, SGO, US, n.v.), s.n. (March 1884, HBG, n.v.), Reiche s.n. (B, lost), Sangwin s.n. (Sept. 1886, K), Sleumer s.n. (24 Sept. 1967, L), Suárez s.n. (March 1943, G*), Wagner s.n. (21 Feb. 1943, G*), Walker 237 (= Meyer 9766; A, BR, GH, F, LL, n.v.), Wygnanki s.n. (March 1925, G*).

STREPTOTHAMNUS

Streptothamnus F.v.M., *Fragm. Phyt. Austr.* 3 (1862) 27; Benth., *Fl. Austr.* 1 (1863) 108; Sleumer, *Contr. N.S.W. Nat. Herb., Fl. Ser.* 136 (1963) 2; Hutch., *Fam. Fl. Pl.* 2 (1967) 206; Jessup in Briggs et al., *Fl. Austr.* 8 (1982) 76. – Lectotype: *Streptothamnus moorei* F.v.M.

Scandent shrubs, branching sympodially, in flushes. Axillary buds collateral, scaly. *Leaves* estipulate, in a spiral, blades ovate to elliptic, entire, not lobed, sub-3-pinnerved, not glandular-dotted. Pedicels with 2, rarely 3 bracteoles. *Flowers* bisexual (always?), cyclic, hypogynous, axillary or in a more or less leafy raceme. Calyx usually 5-lobed, lobes quincuncial, persistent. Petals usually 5, quincuncial, deciduous. Disk absent. *Stamens* numerous, densely inserted on the receptacle, not in groups, but filaments unequally long. Anthers basifix, straight, glabrous, smooth, latero-introrse with 2 longitudinal slits; connective inconspicuous, apically produced into a small lobe. Style persistent in fruit; stigma mushroom-shaped, vaguely 3-lobed. Ovary 1-locular; placentas indistinct, possibly 3, parietal; ovules epitropous, not very many. *Fruit* berry-like, indehiscent, with a thickish pericarp; exotesta leathery, thin, possibly slightly fleshy, finely, longitudinally foveolate when dry and after boiling, with a median-lateral chalazal aril, endotesta subcoriaceous with irregular, longitudinal wings; endosperm not seen; embryo reported to be minute.

Distribution. One species in Australia.

Ecology. Montane rainforest.

1. *Streptothamnus moorei* F.v.M.

S. moorei F.v.M., *Fragm. Phyt. Austr.* 3 (1862) 28 ('moorii'); (1863) 172 ('moorei'); Benth., *Fl. Austr.* 1 (1863) 108; Sleumer, *Contr. N.S.W. Nat. Herb., Fl. Ser.* 136 (1963) 3; Beadle, *Stud. Fl. N.E. New South Wales* 3 (1976) 262; Williams, *Checklist Rainforests N.S.W.* ed. 2, 2 (1980) 7; Jessup in Briggs et al., *Fl. Austr.* 8 (1982) 76, f. 21a–c, map 76. – Type: *C. Moore* s.n. (MEL, holo, no. 606827, photo in L, K, NSW? see note), New South Wales, Clarence River, in or before anno 1862.

Plants glabrous. Petioles ± bipulvinate, 1.2–5 cm long, slender; blades 5–11.5 by 3–10 cm, pergamentaceous to subcoriaceous, waxy glaucous on both sides, basal nerves partaking in the looping main nervature, never excurrent into the margin, shortly concurrent with the midrib before branching off, domatia absent, base obtusely rounded to slightly cordate, margin entire with minute glands, apex acuminate,

folded to one side (i.s.), somewhat apiculate, not mucronate. *Flowers* on the first years' shoots, axillary, solitary or up to 10 in a loose raceme, secund; pedicels recurved, 2–3 cm long, glabrous, bracteoles basal, minute, c. 0.3 mm long, glabrous, sometimes with a third one somewhere along the pedicel and a fourth one below the calyx. Calyx-lobes (4–)5(–6), broadly elliptic, fleshy, margin ciliolate, the outer smallest, the inner up to 2.5 by 3.25 mm, obtuse. Petals (4–)5(–7), slightly unequal, the outer largest, \pm elliptic, 8–9 by 4.75–7 mm, broadly sessile, rather thick, margin ciliolate, obtuse. *Filaments* up to 4 mm long, glabrous, smooth; anthers slightly oblique because of the smaller inner thecae, 1.5–2.25 mm long, incl. the narrow, 0.25–0.35 mm long, glabrous, smooth apical appendage. Pistil flask-shaped, up to 6 mm long, glabrous, smooth; style up to 2 mm long; stigma c. 1.5 mm diam.; ovary not ribbed. *Fruit* slightly stipitate because of the conical receptacle, ellipsoid, up to 25 by 15 mm diam., the seeds not visible outside (i.s.), smooth, glabrous, blackish red, abruptly attenuated into the style. Seeds up to c. 25, somewhat pyramidal, up to 3.5 by 2 mm diam.; exotesta brownish.

Distribution. Australia: Queensland (Mt Roberts, Lamington Nat. Park, Purling Falls, Tambourine Mts), New South Wales (head of Clarence River, Tweed Range, Lismore, Alstonville, Cangai), roughly between 28°10'–29°30'S and 152°25'–153°25' E.

Ecology. Montane rainforests and edges of secondary vegetation, sometimes together with *Berberidopsis beckleri* (q.v.), c. 1000 m (but altitude only recorded once).

Vernacular name. Coast Redberry Vine (Williams & Harden).

Collectors' notes. Scandent scrub, liana. Leaves shiny green on both sides. Flowers very fragrant. Petals pale pink to cream. Rare but locally common. Flowering in May, August, October, December, fruiting in October, but data are insufficiently given on the too few collections.

Notes. Jessup gave as type *C. Moore anno 1864* (!). The sheet cited (NSW) is indeed marked with that date, so either Moore collected the species twice and the NSW duplicate is not the type, or a mistake in labeling was made (accession date?). The sheet in K has no date, the holotype in MEL was not seen.

One closed flower of *Tomlins s.n.* (L) lacked the pistil altogether, androdioecy may therefore be possible. In view of the few collections available, it seemed wasteful to open all flowers; this can be checked easily in the field.

The flowers of *Floyd s.n.* were variable in the number of sepals and petals: in three flowers there were 5 of each, two flowers had 5 sepals, 4 petals and an intermediary sepaloid petal, one had 6 sepals and 4 petals, one 4 sepals and 6 petals, and one 5 sepals and 7 petals, the two innermost smaller than the others.

Sleumer said the fruits contained some pulp, we have not seen any.

Specimens. Bauerlen s.n. (August 1894, NSW), Clemens s.n. (20–25 Oct. 1943, L; BRI, n.v.), Dunn 381 (NSW; BRI, n.v.), Elvers & Francis s.n. (Nov. 1933, BRI, n.v.), Floyd s.n. (7 Sept. 1979, L), Johnson 37 (NSW), Johnson & Constable s.n. (14 June 1957, NSW), Moore s.n. (ante 1862, K, NSW; MEL, n.v.), Shirley 2293/18 (NSW, same nr. for *B. beckleri*!), Smith & Smith s.n. (30 Dec. 1943, BRI, n.v.), Tomlins s.n. (30 Oct. 1908, L, NSW), White s.n. (Jan. 1919, NSW).