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Plant Portraits

When this series was started in 1977 the editors had already envisaged allowing space 'to provide records in cases where taxa may be threatened with extinction', but this was never followed up. Many of the rarer plants have not been figured because of their rarity and because they often have only small and unobtrusive flowers. In presenting here a whole series devoted to endemic, rare and endangered plants of South Australia they will not only be illustrated but the text will provide a much needed forum to publish the present knowledge of these species in a readily accessible form at a time when conservation is in the minds not only of professional biologists.

10. *Beyeria subsecta* J. Black (Euphorbiaceae)

Beyeria subsecta J. Black, Fl. S. Austral. (1924) 357.

Illustration: A-L, based on fresh material preserved under *R. Davies s.n.*, late Oct. 1983, American River, Kangaroo Island (AD 98347163); M, based on a herbarium specimen *R. Davies & W. Bushman 16*, 22.x.1983, 600 m NNE of 6-road intersection, 12.5 km SE of Cygnet River township on Kingscote to Penneshaw road (AD).

Dioecious, viscid bush to c. 60 cm high; branchlets ascending, slender, terete, with lines of white tomentum, if present, usually obscured by viscid covering, with short leafy shoots in most axils. *Leaves* ascending, petiole c. 0.5-1 mm long, lamina linear, (3) 5-8 (10) x 0.8-1.2 (1.6) mm, entire, shortly mucronate, upper surface dark green, glabrous, with margin recurved, lower surface with narrow band of white appressed tomentum on either side of glabrous midrib. *Flowers* solitary, on short shoots; *male flowers* on slender pedicels (1.2) 1.5-3 (4) mm long, white-pubescent, tepals (4) 5, imbricate in bud, spreading, ovate, unequal, 1-1.8 mm long, light green to yellow or white, reddened in parts, pubescent at base, disc narrow, obscure *in vivo*, anthers (13) 15-22 (28), 0.35-0.5 x 0.35-0.45 mm, longer than or as long as broad, with 2 parallel cells on undivided connective; *female flowers* sessile, white-pubescent, pedicel 0-0.6 mm long, tepals 5, erect, \pm imbricate, ovate, 1-1.5 (2) mm long, enclosing ovary apart from the stigmas, carpels 2, ovules 1 in each cell, stigmas 2 broad recurved flaps forming a 2-lobed cap appressed to ovary. *Fruit* borne in persistent tepals on angular attenuate pedicel 0.2-1.3 mm long, c. 0.8-1 mm broad at apex, an obliquely broad-ovoid capsule, 3-3.5 x 2.1-2.8 mm, glabrous, dark green, with persistent black stigmatic cap 0.4-0.5 mm high, 0.8-1 mm wide, with only one carpel developing seed; seed broad-ellipsoid, 2.7-3.2 (3.5) x 2-2.2 (2.5) mm, shiny, grey, dark brown, or black- and grey-mottled, topped by a sessile hemispherical brown-yellow caruncle.

Until a series of samples from different plants within a range of populations was kindly collected by Mr R. Davies and Mr W. Bushman in the course of their studies of endangered species on Kangaroo Island (*Davies & Bushman 2-11, 15-19, 20 p.p., 21, 24 p.p., 25*, housed in AD, duplicates to be distributed), female and fruiting material of *Beyeria subsecta* had been unknown. From the three specimens available that were attributable to this Kangaroo Island endemic, all male-flowered (the type from 'Cygnet River' in the J.M. Black Herbarium and collections *J.B. Cleland AD 96826376* and *M.E. Phillips 776*), I doubted the worthiness of its separation from the variable and widespread *B. lechenaultii* (DC.) Baillon which also occurs on the Island. In these specimens Black's (1924, 1948) diagnostic characters of leaf mid-rib and indumentum and anther size break down and the leaf dimensions of the two species approach each other closely. It seemed likely that *B. subsecta* was but a small-leaved island variant of *B. lechenaultii*.

The female flowers and fruits, however, furnish valuable diagnostic characters, being subsessile in *B. subsecta* and distinctly pedicellate in *B. lechenaultii*. Furthermore, *B. subsecta* is remarkable for its ovary and fruit structure. The normal condition in the genus,

seen in *B. lechenaultii*, is an ovary of 3 carpels, each with a broad stigma and a single ovule capable of developing into a seed in the globular fruit. In *B. subsecta* there are only 2 carpels, each with its own ovule and stigma; only one of the ovules develops into a seed, giving the fruit an obliquely ovoid shape.

Mr Davies reports that *B. subsecta* is so restricted in its occurrence that its very survival is threatened. The species is confined to a region of a few square kilometres west of American River between Mt Thisby and Dead Horse Lagoon in *Eucalyptus cneorifolia-Melaleuca uncinata* association on acid lateritic sandy soils. Apart from a few impoverished populations on roadsides or on the very margins of regenerating vegetation, it is known from only two viable populations in well-regenerating sites. In comparison, *B. lechenaultii* is widespread on the Island in a variety of vegetation types and often on calcareous soils, but it does not occur in the specialised habitat occupied by *B. subsecta*. The degree of threat to *B. subsecta* is almost identical to *Grevillea muricata* J. Black, which is confined to the same small region.

By its anther cells adjacent and borne on an entire filament, *B. subsecta* belongs in Sect. *Beyeria*, in the sense of Bentham (1873), and shares with *B. lechenaultii*, its obviously closest relative, revolute leaves with a mat of white hairs on the underside between the midrib and margin. There is a parallel reduction to single-seeded fruits in the two Western Australian species *B. brevifolia* Baill. and *B. similis* Baill., but these have been placed in Sect. *Beyeriopsis* (Bentham 1873) on the basis of their bifid filaments (see Blackall & Grieve 1954). Both these species differ also by being monoecious and having pedicellate female flowers; furthermore the fruits of *B. similis* are 2-horned.

Distinctions of *B. subsecta* from its closest relative *B. lechenaultii*, with which it can occur sympatrically, can be summarised in the following key.

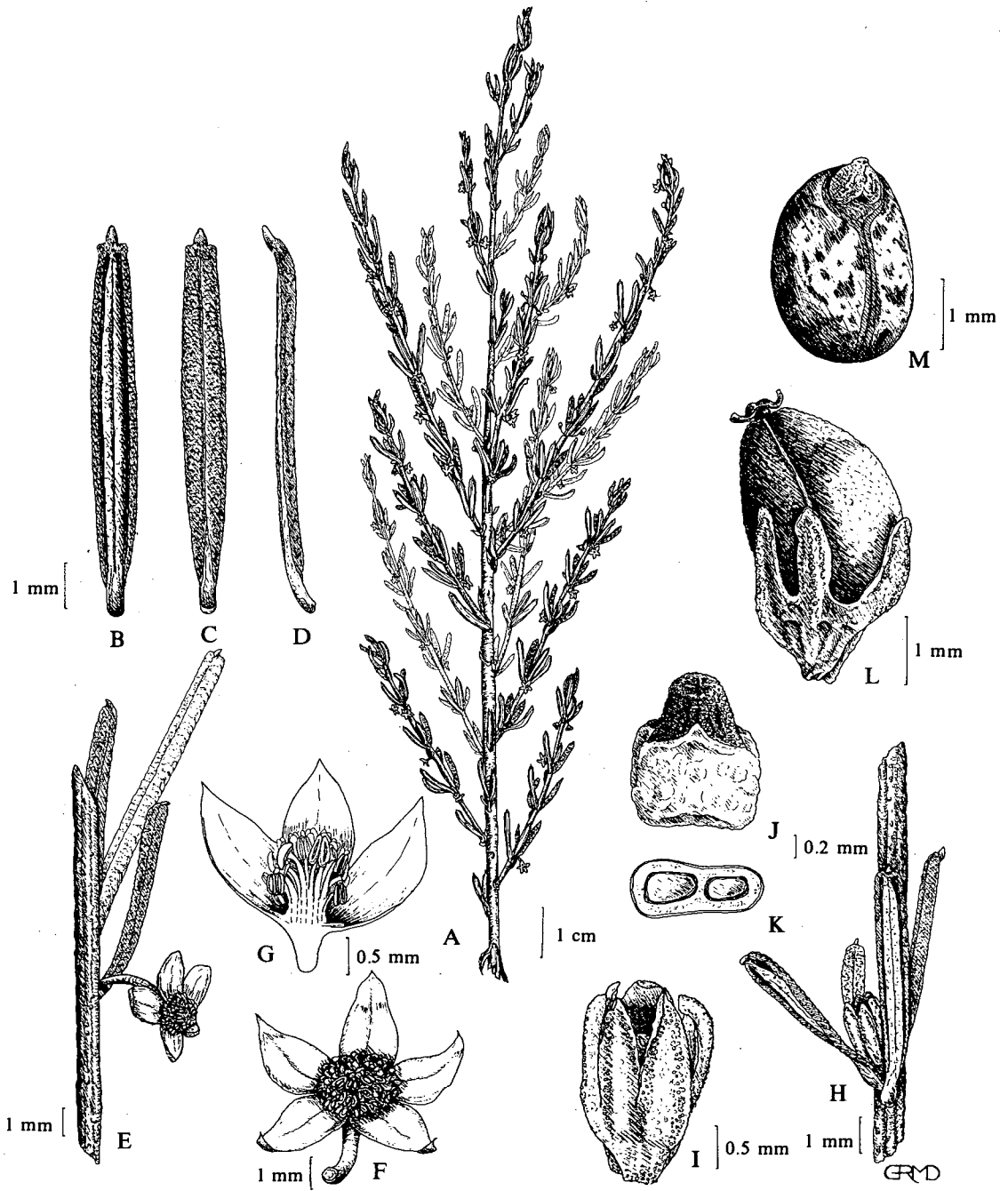
- 1a. Branchlets with viscid angles and lines of white pubescence between. Leaves (5) 8-22 or more x 1.0-4.5 (7) mm. Female flowers on pedicels 1.2-1.5 mm long, carpels 3, stigmas 3. Fruits globular with 3 1-seeded carpels, on pedicels 1.2-3 mm wide at apex; caruncle more than half diameter of seed *B. lechenaultii*
- 1b. Branchlets \pm terete, viscid all around, with pubescence, if any, usually obscured. Leaves (3) 5-8 (10) x 0.8-1.2 (1.6) mm. Female flowers on pedicels 0-0.6 mm long, carpels 2, stigmas 2. Fruits obliquely broad-ovoid with a 1-seeded carpel and another smaller with an undeveloped ovule, on pedicels 0.8-1 mm wide at apex; caruncle less than half diameter of seed *B. subsecta*

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Beyeria subsecta J. Black. A, habit; B-D, leaf in lower, upper and side views; E, F, male flowers; G, male flower in longitudinal section; H, I, female flower; J, ovary; K, ovary in transverse section; L, fruit; M, seed.

11. *Grevillea quinquenervis* J. Black (Proteaceae)

Grevillea quinquenervis J. Black, *Trans. Proc. Rep. R. Soc. S. Austral.* 33 (1909) 225.

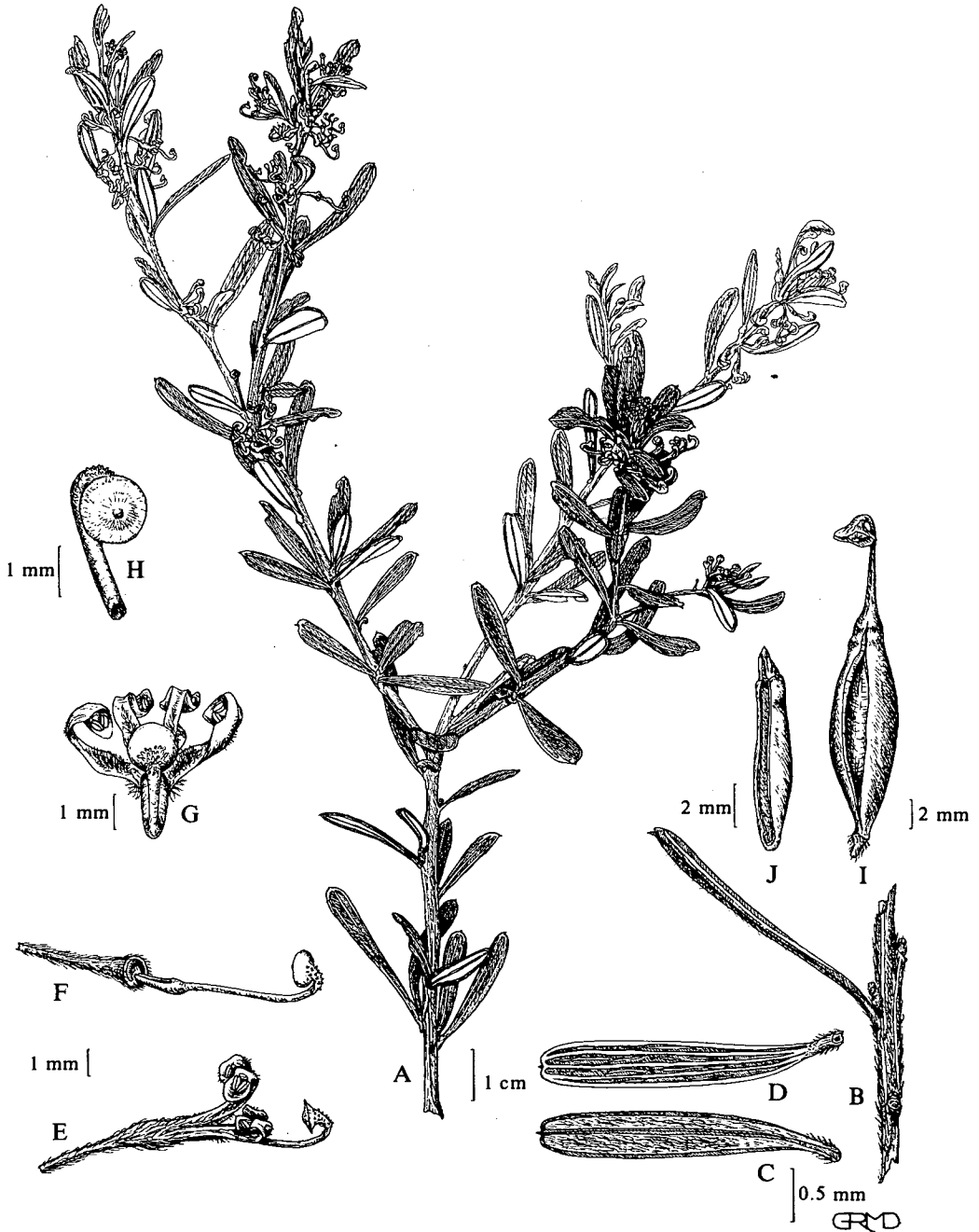
Illustration: A-H, based on fresh material preserved as *R. Davies & W. Bushman 289*, 23.x.1983, Shackle Road, Flinders Chase, Kangaroo Island (AD); I-J, based on herbarium specimen *T. Dendy 104*, xii.1980, Hundred of Gosse, Kangaroo Island (AD).

Shrub to 1 m high; branchlets appressed-tomentose with 3 glabrous ribs decurrent from each leaf base, the two outer ribs extending to node below, the middle to the next node down. *Leaves* rigid, coriaceous, ascending, simple, shortly petiolate, narrow-oblong to obovate, (1.5) 2.3-4.2 (5.5) x (0.2) 0.25-0.7 (0.8) cm, recurved, broad-obtuse to truncate with mucro c. 0.5-1 mm long, upper surface sericeous when young, soon glabrous, *in vivo* recurved with prominent midrib and 2 (3) parallel veins inside margin on either side interconnected by less prominent reticulate venation, *in sicco* revolute with parallel venation often obscure, lower surface sericeous. *Flowers* (4) 5-7 (8) in umbelliform axillary clusters on sericeous rachis 2-3.3 mm long; bracts and pedicel densely sericeous, the pedicel (3.8) 4-6 (7.5) mm long; torus horizontal, perianth pale to deep pink, sparsely sericeous outside towards base and on limb, densely woolly inside above ovary, glabrous above and below, in bud cylindrical, recurved, 4-5.5 mm long, limb 1.2-1.5 mm long; anthers 0.6-0.7 mm long; gland almost circular, (0.5) 0.6-0.8 mm diameter, c. 0.2 mm high, denticulate; pistil if straightened 8-9 (9.5) mm long, ovary midgreen, borne on grooved stipe 0.5-1 mm long, style pale to deep pink, grooved, reflexed, papillose at apex and behind the oblique broad-elliptic thin discoid pollen-presenter 1.3-1.6 x 1.1-1.4 mm, stigmatic region on tiny central cone. *Fruit* a pedicellate glabrous follicle, obliquely ovoid, 1.3-1.5 x 0.4-0.5 cm, tapering into persistent terminal recurved style; young seeds 2, narrow-oblong, 7.2-8.3 x 1.8-2.4 mm, broadly grooved on one side, brown, glabrous to finely pubescent, with cream folded apical caruncle-like protuberance 1.5-3 mm long.

Grevillea quinquenervis is confined to the western half of Kangaroo Island, where it is common on lateritic soils in a variety of plant associations ranging from *Eucalyptus remota* tall open shrublands with sclerophyll understorey to *E. obliqua* open forest (R. Davies, pers. comm. 1983).

An assessment of affinities must await the forthcoming revision of *Grevillea* by Mr D.J. McGillivray of the National Herbarium of New South Wales. Black (1909) placed his species in Sect. *Lissostylis* Ser. *Sericeae* of *Grevillea*, as delimited by Bentham (1870), and distinguished it from several species placed in this group. However, *G. quinquenervis* has similarities to another Kangaroo Island species *G. pauciflora* R. Br., which was placed by Bentham (l.c.) in Sect. *Plagiopodia*. Both species are shrubs similar in their habit, broad recurved leaves, few-flowered umbellate inflorescences, the ring of tomentum inside the perianth at the level of the ovary apex, the glabrous ovary and the oblique discoid pollen-presenter. *Grevillea pauciflora* is a species of southwest Western Australia and the peninsula region of South Australia. On Kangaroo Island, from the few collections available, it seems more widespread than *G. quinquenervis*. The two species would appear to be as common locally, but *G. pauciflora* prefers soils associated with limestone (R. Davies, pers. comm. 1983).

It is therefore not surprising that the two species have been confused with each other in identification, particularly as the distinctive parallel venation of *G. quinquenervis* is often obscured in dried herbarium material, this being the sole diagnostic character used by Black (1924, 1948) in his *Flora*. *G. quinquenervis*, however, is readily distinguished by its conspicuously ribbed branchlets; in *G. pauciflora* the branchlets are terete with an even covering of hairs. Furthermore, the T-shaped hairs which make up the indumentum in these and other species of *Grevillea* are shorter in *G. pauciflora*, and *G. quinquenervis* has an unusual patch of papillae extending from the style apex to the rear of the pollen-presenter. Further distinguishing features in *G. pauciflora* are its smaller flowers with a red



Grevillea quinquenervis J. Black A, habit; B, branch and leaf in lateral view; C, D, leaf, lower and upper sides; E, F, flower in lateral view, with and without perianth; G, flower in distal view; H, style end; I, dehiscent follicle; J, seed.

perianth and style, yellow pollen-presenter, oblique torus, perianth tube dilated in the lower half, a semi-annular gland, and the upturned margins of the pollen-presenter.

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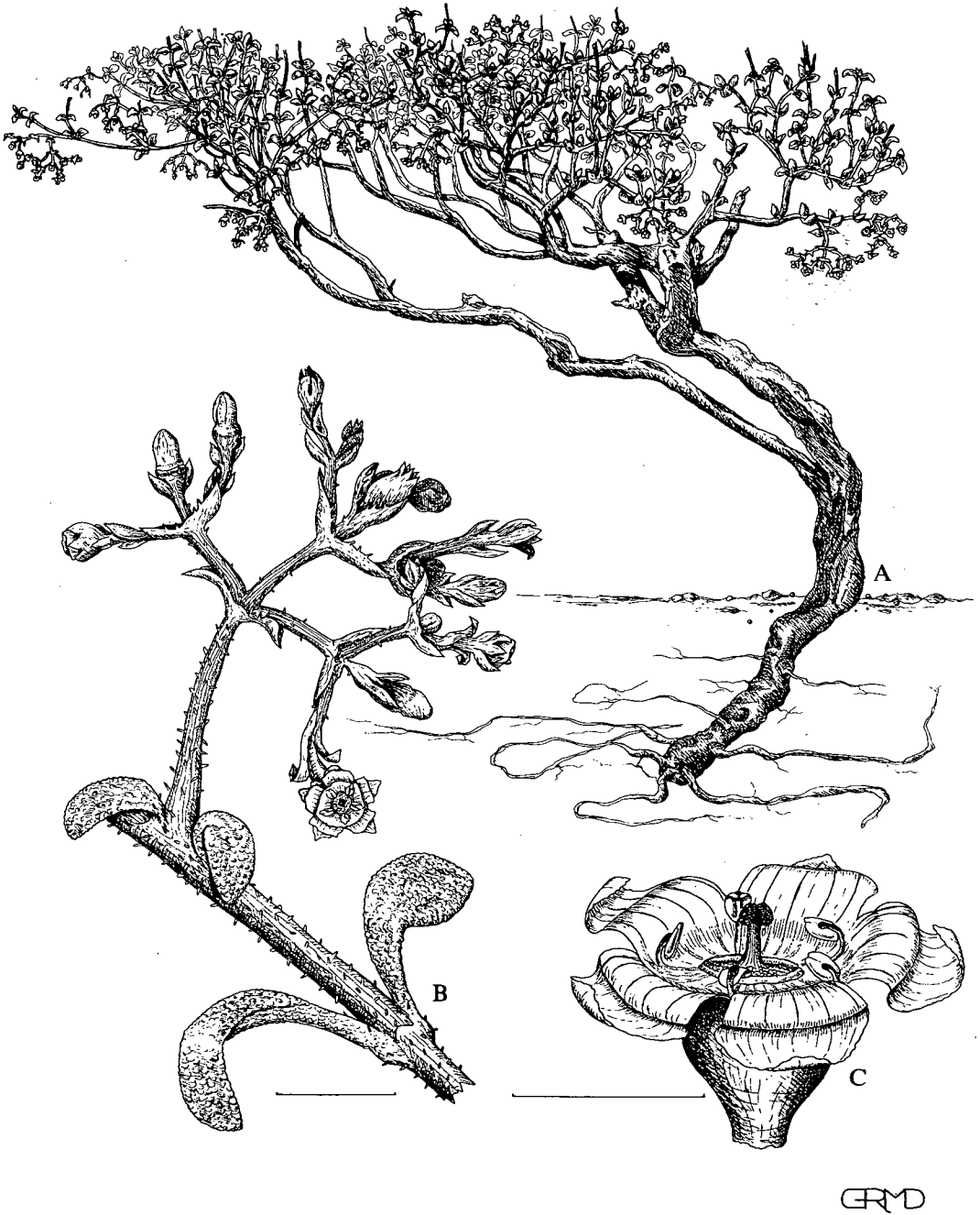
12. *Logania insularis* J. Black (Loganiaceae)

Logania insularis J. Black, *Trans. & Proc. R. Soc. S. Aust.* 50: 285 (1926); *Fl. S. Aust.* edn 2, 689, fig. 974 (1957).

Illustration: Based on fresh material preserved under *R. Davies & W. Bushman 131*, 8.x.1983, NW Cape Borda Lighthouse, Kangaroo Island (AD).

Delicate subshrubs or ground cover plants to 30 cm high, often with gnarled woody base; young branches covered with short stout spreading hairs and often soil-covered, glabrous later. *Leaves* opposite, petiolate to almost sessile; interpetiolar stipules broadly triangular, with one to few hairs along the margin but often becoming ill-defined on older branches; petiole up to 2.5 mm long, usually with a few short marginal cilia; lamina oblanceolate 3-8 x 1-2 (-3) mm, with cuneate base, acute to obtuse and usually more or less recurved at the apex, glabrous except for a few hairs along the recurved margins and on the raised central vein of the lower surface, thick to leathery, with upper surface at least colliculate to aculeate. *Inflorescence* a terminal thyrse with 1-5 dichasia each with few pedicellate flowers, more or less curved downwards and often overtopped by axillary branches; bracts linear-oblanceolate, fleshy to almost membranous, with few marginal cilia, acute. *Calyx*: lobes 5, lanceolate, c 1 mm long, membranous, with few to many marginal cilia. *Corolla* shallowly cup-shaped to almost saucer-shaped, cream to pale yellow; lobes usually longer than tube, obtuse to rounded, recurved-spreading. *Stamens* 5, with filaments incompletely fused to the lower parts of the corolla tube. *Ovary* superior or slightly sunk and with flat rough apex; style simple, with capitate bilobed stigma. *Fruit* not seen.

A very distinctive species in the genus because of its inflorescence which is curved downwards and cup- to saucer-shaped corolla which lacks hairs on the inside. At the base of the corolla lobes one finds a more or less clearly defined ring of fine papillae. The flowers of *L. insularis* are similar to those of *L. linifolia* which is widespread in the south-eastern parts of South Australia and adjoining parts of Victoria and New South Wales. Both species also have a rather loosely branched inflorescence and the leaf surface is colliculate at least on young leaves of *L. linifolia*. It is not clear why Black (1926) compared *L. insularis* with *L. buxifolia* F. Muell. in the original publication when the two are quite different. However, *L. linifolia* is also easily distinguished from *L. insularis* by its shrubby habit up to 1 m tall, the linear-elliptic leaves which are 10-20 mm long, the black calyx and the tubular corolla.



Logania insularis J. Black. A, habit; B, inflorescence; C, flower. (Scale = 5 mm).

Only one population of *L. insularis* has been found to date despite an extensive search by R. Davies, who provided the following field notes. This population is confined to an area of approximately 3 km² at Cape Borda where it occurs in pockets of pale brown sand (pH 7) between sheet limestone. The species occurs there under *Eucalyptus diversifolia* which ranges from open-heath to tall shrubland on an undulating plateau which slopes towards the sea cliffs to the north-west and north. Other species frequently occurring in association with *L. insularis* are *Allocasuarina muelleriana*, *Hibbertia aspera*, *Lepidosperma viscidum*, *Lhotskya glaberrima*, *Petrophile multisepta*, *Spyridium halmaturium*.

Since the species is extremely restricted in its distribution and only a small percentage of the total population is conserved in Flinders Chase National Park, it is considered to be vulnerable as defined by Leigh, Briggs & Hartley (1981).

Reference

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