A new species of *Leptostigma* (Rubiaceae: Coprosminae) and notes on the Coprosminae in Australia

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Introduction

Subtribe Coprosminae (Rubiaceae: tribe Anthospermeae) was erected by Fosberg (1982) to distinguish a relatively uniform morphological group placed among a broadly distributed and heterogeneous assemblage of genera. The Coprosminae has a trans-Pacific distribution, occuring in Australia, New Zealand, New Caledonia, Hawaii, Central America and South America. Its make-up has undergone several modifications since its erection, and is now thought to comprise five genera, *Coprosma* J.R.Forst. & G.Forst., *Durringtonia* R.J.Hend. & Guymer, *Leptostigma* Arn., *Nertera* Banks & Sol. ex Gaertn., and *Normandia* Hook.f. Fosberg (1982) indicated that the Coprosminae were distinguished from the remainder of the Anthospermeae by drupaceous fruits containing a pair, usually, of planoconvex pyrenes and a basal attachment of ovules. *Pomax* Sol. ex DC. and *Opercularia* Gaertn. are the two Australian genera in the Anthospermeae not included in the Coprosminae.

Although the greatest diversity in subtribe Coprosminae is outside of Australia, all genera with the exception of the New Caledonian endemic *Normandia* are represented in Australia by native species. Of the approximately 113 species in the subtribe, 14 occur in Australia. Twelve of these species are native and nine are endemic. New Zealand has approximately 57 species with most of these in *Coprosma*.

Anderson *et al*. (2001) assessed the phylogeny of the subtribe using nuclear (ITS) and chloroplast (rps16 intron) data and their results suggest that the current generic classification is satisfactory at least as it relates to genera in Australia. *Nertera* and *Coprosma* were shown to be sister taxa. *Durringtonia*, when first described was placed in a tribe of its own based on a suite of peculiar characters (Henderson & Guymer 1985). However, a reassessment of the morphology by Puff and Robbrecht (1988) and the molecular findings of Anderson *et al*. (2001) both indicate that this classification was inappropriate.

***Recent taxonomic history*:** The number of native species recognised in Australia in what is now the Coprosminae was eight at the end of the

Abstract

A new species of *Leptostigma* Arn. (Rubiaceae: Coprosminae), *L. breviflorum* I.Thomps., is described from Victoria, Australia and compared to *L. reptans* (F.Muell.) Fosberg. A key to Australian genera in the Coprosminae and a revised key to *Coprosma* J.R.Forst. & G.Forst. in Australia are presented. Distribution maps and nomenclatural information are presented for all species in the Coprosminae in Australia, including those in *Leptostigma*, *Coprosma*, *Nertera* Banks & Sol. ex Gaertn. and *Durringtonia* R.J.Hend. & Guymer. The occurrence of domatia in Australian *Coprosma* is discussed, and *C. nivalis* W.R.B.Oliv. is recognised as occuring in Tasmania.

***Keywords*:** taxonomy, Coprosminae, Anthospermeae, domatia.

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Key to genera

1 Herbs with 4-angled stems; leaves sessile, with a bract-like, linear lamina < 1 mm wide; stigma solitary; pyrene solitary (coastal swamps) ..... **4. *Durringtonia***

1: Shrubs, trees or herbs with terete stems; leaves petiolate, with a green, elliptic-type lamina > 1 mm wide; stigmata 2 or more; pyrenes 2 or more **2**

2 Fruit more or less dry and dull brown at maturity, with calyx lobes 2; plants hermaphrodite, hairy ..... **1. *Leptostigma***

2: Fruit succulent and brightly coloured at maturity, with calyx lobes absent or 4 or more; plants dioecious, or sometimes hermaphrodite but then plants glabrous **3**

3 Shrubs, subshrubs or prostrate weakly woody herbs; petiole generally < 1/4 of length of lamina; plants dioecious or hermaphrodite; drupes variously coloured, mostly with calyx lobes evident; pyrenes 2–6 mm long ..... **3. *Coprosma***

3: Prostrate herbs; petiole ≥ 1/2 of length of lamina; plants hermaphrodite; drupes orange-red, lacking calyx lobes; pyrenes 1.5–2 mm long ..... **2. *Nertera***

nineteenth century. This number has now increased to 12 with the addition of new species, *Coprosma nivalis* W.R.B.Oliv. in 1935, *Durringtonia paludosa* R.J.Hend. and Guymer in 1985 and *C. niphophila* Orchard in 1986, and the recognition that *C. perpusilla* Colenso occurs in Australia as well as New Zealand (Orchard 1986). Two name changes have recently been made: *Nertera reptans* (F.Muell.) Benth. was recombined as *Leptostigma reptans* (F.Muell.) Fosberg (Fosberg 1982), and *N. granadensis* (Mutis ex L.f.) Druce has recently been recognised in Australia, replacing *N. depressa* Banks & Sol. ex Gaertn., following the prevailing view in South America that *N. granadensis* and *N. depressa* are synonymous (Andersson 1993). This topic is further discussed under *Nertera* below.

In preparing a *Flora of Australia* account of subtribe Coprosminae it was found that some aspects of the treatments of these species in recent state floras required revision. This paper has been written in order to communicate these revisions and, in particular, to describe a new species in *Leptostigma*.

Methods

Assessment of the taxonomy of the Coprosminae was based primarily on examination of herbarium material made available by AD, BRI, CANB, HO and MEL. Field collections were also made for a few species in *Coprosma* and *Leptostigma* to assist in understanding the morphology of the group. Examination of herbarium material from MEL and AD revealed several specimens of *Leptostigma* from south-central Victoria that did not conform to recent circumscriptions of *L. reptans* (e.g. in New South Wales and Victorian state floras; James 1992; Jeanes 1999) in terms of their much shorter flowers. This difference was subsequently correlated to differences in indumentum and leaf shape. Field examination of this short-flowered form at one site near Toolangi (*I.R.Thompson 1050*) indicated that floral size and general morphology was consistent within a population.

Taxonomy

Subtribe Coprosminae Fosberg, *Acta Phytotax. Geobot.* 33: 75 (1982)

Perennial herbs, *weakly woody subshrubs*, *shrubs or small trees*, hermaphrodite or dioecious. *Leaves* opposite; stipules interpetiolar, mostly collar-like or with apex somewhat deltoid, usually viscous-glandular or glandular-dentate*. *Flowers* with small or rudimentary calyx, with lobes absent, 2, 4 or 5, rarely more; stamens exserted, often greatly so; ovary inferior, 2-carpellate, functionally 1-carpellate in *Durringtonia*, carpels 1-ovulate; stigmata elongate and exserted, pilose. *Fruit* drupaceous, succulent, colourful, or more or less dry in *Leptostigma*; pyrenes1–4 per fruit, most commonly 2.

* glandular teeth described by Orchard (1986) as denticles; by Gardner (1999) as colleters.

A subtribe of the Anthospermeae (Rubiaceae) comprising five genera and c. 113 species. Four genera and 14 species in Australia, including two introduced species of *Coprosma*. Puff also published a description of Coprosminae in 1982; however, it postdated that of Fosberg.

Key to species of *Leptostigma*

1 Corolla 7–12 mm long; anthers 1.8–3.0 mm long; ovary and fruit glabrous or nearly so; stem-hairs antrorse; leaf-lamina mostly with l:w ratio > 1.4 ..... **1. *L. reptans***

1: Corolla 3–4 mm long; anthers 0.8–1.3 mm long; ovary and fruit moderately hairy; stem hairs spreading; leaf-lamina mostly with l:w ratio < 1.4 ..... **2. *L. breviflorum***

***Leptostigma* Arn., *J. Bot. (Hooker)* 3: 270 (1841)**

Perennial prostrate herbs, hermaphrodite. *Leaves* opposite, petiolate, entire, discolorous, without domatia; stipules forming a low collar, glandular-dentate, not connate with each other. *Flowers* solitary, terminal, protogynous, ±sessile; calyx 2-lobed or 4(–6)-lobed (not in Australia); corolla-tube generally elongate, predominantly 4-lobed; stamens becoming much exserted in male phase; anthers mostly rather large, without a terminal appendage; ovary inferior, 2-locular; style 2-fid from near base, with stigmata elongate, much exserted. *Fruit* pseudoaxillary, more or less dry, ellipsoid; pyrenes 2.

A genus of seven species from Central America, South America, New Zealand and Australia. In Australia perhaps most similar vegetatively to *Nertera* but with relatively shorter petioles, hairy stems and leaves, and glandular-dentate stipules. Species of *Leptostigma* in Australia and New Zealand are distinct in the genus in having a 2-lobed calyx. The chromosome number for *Leptostigma setulosum* (Hook.f.) Fosberg from New Zealand is n = 20 compared to n = 22 for *Coprosma* and *Nertera* (*fide* Gardner 1999). In Australian and New Zealand species at least, shoot development from one of the axils at the base of a terminal flower commences at anthesis and results in developing fruit being located well behind the growing points of the plant.

1. *Leptostigma reptans* (F.Muell.) Fosberg, *Acta Phytotax. Geobot.* 33: 82 (1982)

Diodia reptans F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci*. 128 (1855); *Nertera reptans* (F.Muell.) Benth., *Fl. Austral*. 3: 431 (1867); *Coprosma reptans* (F.Muell.) F.Muell., *Fragm*. 9: 186 (1875)

***Type*:** Victoria. Snowy River, *F.Mueller*, i.1855; syn: MEL 2288169–2288172 (one indicating altitude of 2000′ and so possibly in NSW, one indicating near coast and so near Orbost, Vic., the other two only specifying Snowy River).

Prostrate perennial herbs, rooting at nodes; older stolons to 1.5 mm diam. *Stems* with sparse to moderately dense indumentum of straight antrorse to subappressed hairs, mostly 0.3–0.8 mm long. *Leaves with* petiole 1–3 mm long; lamina ovate–broad-ovate, 5–17 mm long, 2–9 mm wide, l:w ratio mostly 1.4–2, drying pale to dark; base cuneate to truncate, occasionally cuneate; upper surface with sparse to scattered spreading hairs, 0.7–1.2 mm long, sometimes nearly glabrous especially medially. *Stipules* forming a low collar, with 1–3 glandular teeth, with erect hairs 1–2 mm long. *Flowers* sessile to subsessile; calyx lobes 2, triangular, 0.5–1 mm long, sometimes with additional minute glandular lobes, hairy; corolla finally 7–12 mm long, 1–1.6 mm wide at base of lobes (pressed), greenish-cream, usually tinged reddish; lobes 1–1.5 mm long, with margins red, usually with spreading hairs; stamens 4 (or 5), 25–35 mm long, filaments purple; anthers 1.8–3.0 mm long, 0.4–0.5 mm wide, cream, sometimes tinged purple; ovary nearly glabrous except at summit, stigmata to c. 15 mm long. *Fruit* short-pedicellate, broad-ellipsoid, 2–3 mm long excluding persistent calyx lobes, with longitudinal ribs, mostly nearly glabrous, sometimes with hairs in lines; pyrenes 2–2.5 mm long, 1.6 mm wide.

***Selected specimens of c. 40 examined*: SOUTH AUSTRALIA.** The Bluff, c. 4.5 km SW of Glencoe, *A.C .Beauglehole 6580 & D.N. Kraehenbuehl* (CANB); Honans Native Forest Reserve, *D.J. Duval 976 & others*, 21.xi.2007 (AD). **NEW SOUTH WALES.** Bombala R., c. 17 km NE of Bibbenluke, N of confluence with Back Creek, *I. Crawford 5894*, 29.xi.2000 (CANB, MEL 1005972, NSW). **VICTORIA.** Gorae West, *A.C. Beauglehole 366*, xi.1945 (MEL 1505764); Jancourt Forest [South] Rd, c. 8 km S of Purrumbete South, *D.E. Albrecht 5074*, 30.xi.1992 (AD, MEL 2017505); 17.5 km NE of Yarram PO, *A.C. Beauglehole 62515*, 14.xii.1978 (MEL 304525); sources of the Brodribb River, *E. Merrall*, xi.1887 (MEL 2267884). **TASMANIA.** summit of Strathgordon–Lake Pedder Rd, Humboldt Divide, *P.J. de Lange TAS113*, 16.iv.2000 (HO).

***Distribution and habitat*:** Occurs in far south-eastern South Australia, far south-eastern New South Wales, southern and eastern Victoria, and central Tasmania (Fig. 1). Grows in forests from low to montane altitudes.

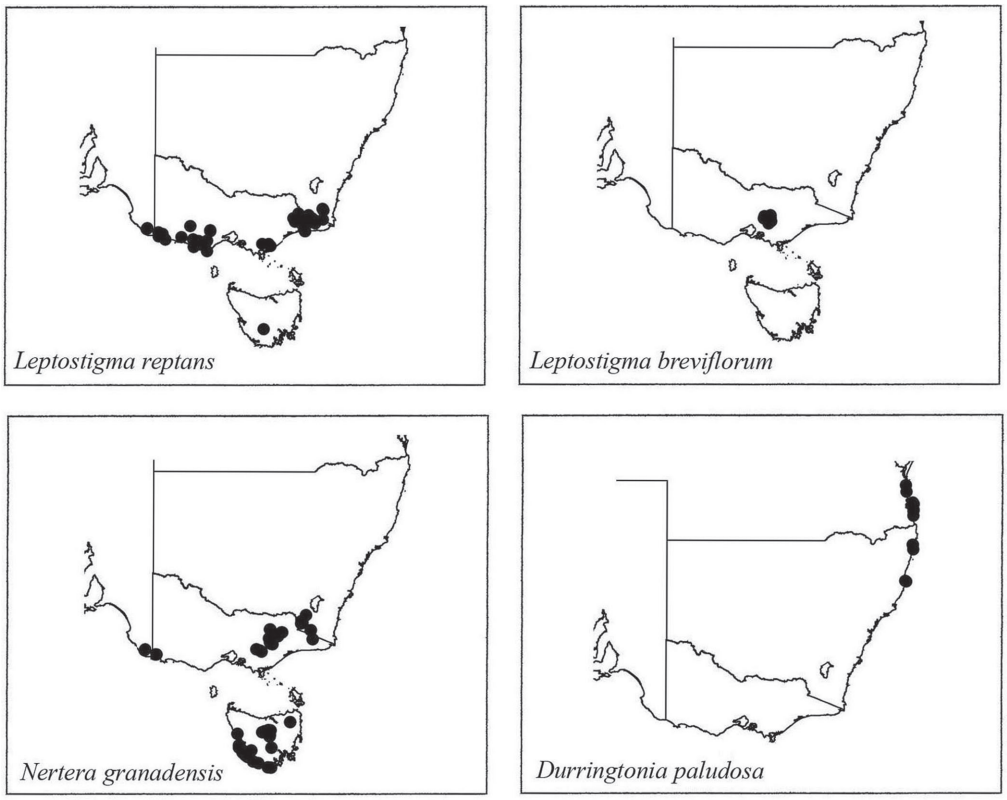

Figure 1. Distributions of *Leptostigma reptans*, *L. breviflorum*, *Nertera granadensis* **and** *Durringtonia paludosa.* **The record of** *L. reptans* **in Tasmania is thought to be an introduction.**

***Flowering period*:** Flowers late spring to early summer.

***Notes*:** *Leptostigma reptans* is protogynous and the corolla progressively elongates from male to female phases so the mature length of the corolla is unlikely to have been reached when only stigmata are exserted. Illustrations shown in Jeanes (1999) of *L. reptans* is likely to be this species rather than *L. breviflorum*. The caption for one of these illustrations stating 'male flower' is incorrect as flowers of this species are hermaphrodite. The flower is in the male phase; the stigmata are hidden within the corolla or lost.

2. *Leptostigma breviflorum* I.Thomps., *sp. nov.*

A L. reptanti (F.Muell.) *Fosberg foliis latioribus, pilis patentibus, floribus brevioribus, antheris minoribus, fructibus pilosis differt*.

***Type*:** Victoria. Turnoff of Tanglefoot track from Sylvia Creek Rd, 6 km ENE of Toolangi, *K.R.Thiele 427*, 3.xii.1982; holo: MEL 304761.

Prostrate perennial herbs, rooting at nodes; older stolons becoming corky, to 1.5 mm diam. *Stems* with moderately dense indumentum of spreading hairs 0.5–1 mm long. *Leaves* with petiole 1–3(–5) mm long; lamina broad-ovate, 4–14 mm long, 3–13 mm wide, l:w ratio mostly 1–1.5, generally drying dark; base broad-cuneate to truncate; upper surface moderately hairy with spreading hairs 0.5–0.8 mm long. *Stipules* forming a low collar, with 3 glandular teeth, with spreading hairs 1–1.5 mm long. *Flowers* sessile; calyx lobes 2, triangular, 0.5–1 mm long, sometimes with additional minute glandular lobes, hairy; corolla 3–4 mm long, 1 mm wide at base of lobes (pressed), greenish externally with reddish tinges; lobes 0.7–1 mm long, with margins red, with spreading hairs; stamens 4, 5–8 mm long, filaments sometimes purple, anthers 0.8–1.3 mm long, c. 0.3 mm wide, usually purple; ovary covered in spreading hairs, stigmata 5–7 mm long. *Fruit* sessile, subglobose, 2–2.5 mm long excluding persistent calyx lobes, inconspicuously longitudinally ribbed, with scattered hairs; pyrenes 1.8–2.3 mm long, 1.8 mm wide (Figs 2 & 3).

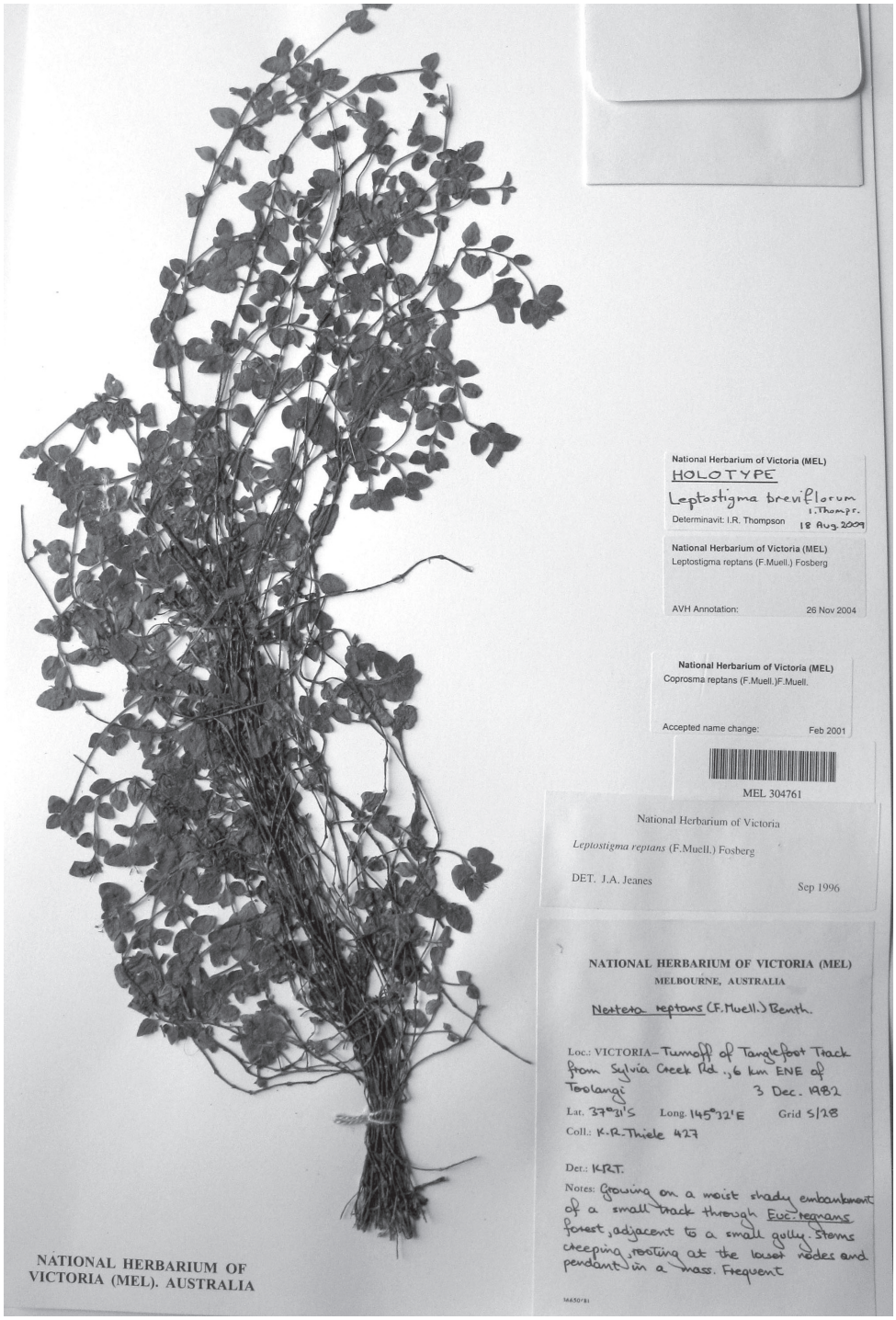

Figure 2. Holotype of *Leptostigma breviflorum* **(***K.R.Thiele 427* **MEL).**

Figure 3. *Leptostigma breviflorum*, **flowering shoot. Hairs similar to those on the corolla and calyx are also present on leaves, stipules and ovary, but are not shown here for the sake of clarity. Three glandular teeth are shown protruding from the margin of the stipular sheath. Scale**

***Selected specimens of nine examined*: VICTORIA.** Lake Mountain State Park, *A.C. Beauglehole 71665*, 23.xi.1982 (MEL 2070904); Smythe's Creek, 6 km ESE of Warburton, *J.H. Willis*, 15.v.1966 (MEL 2266985); against retaining wall of Upper Royston SEC dam, Central Highlands, *J.H. Willis*, 5.v.1963 (MEL 267887); Upper Yarra Water Catchment, *A.C. Beauglehole 71659 & C.M. Beardsell*, 23.xi.1982 (MEL 2070905); Murrindindi State Forest, *A.C. Beauglehole 70717*, 10.viii.1982 (MEL 2070903); Hardy Creek Rd, 200 m S of intersection with Sylvia Creek Rd, Toolangi State Forest, c. 10 km NE of Toolangi, *I.R. Thompson 1050*, 15.xi.2008 (AD, BRI, CANB, HO, MEL, NSW); Near picnic area, Cumberland Falls, *H.Eichler 18949*, 23.i.1967 (AD).

***Distribution and habitat*:** Occurs in south-central Victoria to the north-east of Melbourne in an area bounded by Lake Mountain, Toolangi and Warburton (Fig. 1). Grows in wet sclerophyll forest and at margins of *Nothofagus cunninghamii* (Hook.) Oerst. rainforest.

***Flowering period*:** Flowers late spring and summer.

***Etymology*:** The epithet refers to the short flowers (L. *brevis*, short, and *flos*, flower).

***Notes*:** *Leptostigma breviflorum* is most closely related to *L. reptans* and *L. setulosum*, the latter from New Zealand, but is readily distinguished from these species by the flowers, which have a much shorter corolla and shorter stamens with smaller anthers. Apart from the differences in floral morphology, *L. breviflorum* differs from *L. reptans* in having spreading rather than antrorse hairs on stems, leaves with a slightly lower length:width ratio and which dry darker, and ovaries and fruits that are hairier and less distinctly ribbed. Compared to *L. setulosum* (*fide* Allan 1961 and Gardner 1999), *L. breviflorum* has shorter, weaker hairs on leaves, flowers and fruit.

Nertera Banks & Sol. ex Gaertn., *Fruct. Sem. Pl.* 1: 124 (1788), *nom. cons.*

A genus of c. 15 species from Central America, South America, New Zealand and Australia. *Nertera granadensis* is the only representative in Australia and it is also native to New Zealand, Central America and South America.

Nertera granadensis (Mutis ex L.f.) Druce, *Rep. Bot. Soc. Exch.* Club Brit. Isles 1916: 637 (1917)

Gomozia granadensis Mutis ex L.f., *Suppl. Pl*. 129 (1782); *Coprosma granadensis* (L.f.) Heads, *Candollea* 51: 388 (1996).

***Type*:** South America. Precise locality unknown, Columbia, Herb. Linn. *172.1*, *Mutis*; lecto: LINN, lectotypifier unknown but cited by D.H. Lorence, *Monogr. Syst. Bot. Missouri Bot. Gard*. 73: 104 (1999).

Nertera depressa Banks & Sol. ex Gaertn., *Fruct. Sem. Pl.* 1: 124 (1788). *Type*: South America. Success Bay, Tierra del Fuego, *Banks s.n.*, no date; holo: K *n.v.*.

Australian and New Zealand material was originally referred to *N. depressa* the type of which is from far southern South America. A number of authors (e.g., Lawrence 1949, Andersson 1993) have concluded that American material of *N. depressa* is synonymous with *N. granadensis*. Extrapolating from this conclusion, the name *N. granadensis* has been introduced by authors of recent Australian state floras (James 1992; Jeanes 1999). In contrast, the name *N. depressa* appears to have been consistently maintained in New Zealand. Whether Australian and New Zealand material represents the same taxon as in America has not been critically evaluated in this study.

Nertera granadensis is illustrated in Jeanes (1999); however, the caption for the illustration is incorrect in stating 'male flower' as the flowers of this species are hermaphrodite. The distribution of *N. granadensis* in Australia is shown in Figure 1.

Coprosma J.R.Forst. & G.Forst., *Char. Gen. Pl.* 137 (1776)

A genus of c. 90 species from South America,

Australia, New Zealand, smaller islands of the Pacific Ocean and south-east Asia. The greatest diversity is in New Zealand. Ten species occur in Australia, eight of these are native, with six endemic. Of the ten species, eight are dioecious, *Coprosma moorei* is hermaphrodite, and *C. niphophila* has a variable sexual pattern with flowers structurally bisexual but functionally sometimes unisexual.

Domatia are a feature of leaves of *Coprosma*, particularly the larger-leaved species. They are small cavities in leaves which are open to the abaxial side of leaves and located in the axil formed by the midrib and secondary veins. They are sometimes bordered by cilia. On the upper surface they appear as blister-like elevations in fresh material. Treatments of *Coprosma* in recent state floras (James 1992; Jeanes 1999) do not give an accurate account of the occurrence of domatia in Australian species. Both introduced species, *C. repens* and *C. robusta*, consistently have several domatia, with those in the former species generally having a larger orifice. Sometimes in pressed specimens of *C. robusta* the orifice is not readily seen; however, a tuft of hairs usually identifies its presence. Of the native species, *C. hirtella* consistently has leaves with a few to several domatia, although they are often somewhat obscure in pressed specimens. In *C. quadrifida*, domatia are occasionally present in a proportion of leaves. As leaves of this species are small, only 1–3 domatia are likely on any one leaf. In fresh material of this species, the blister-like elevations on the upper surface are conspicuous.

Coprosma quadrifida appears to be most closely related to *C. nitida* and the two species have occasionally been confused. Both species are shrubs with pubescent branchlets, and often short, spine-tipped branchlets, with solitary flowers, and similar interpetiolar stipules. Branchlets supporting flowers and fruit become recurved in both species. The main distinguishing features are given in the key below in couplet 5. In addition, *C. quadrifida* can be distinguished from *C. nitida* by several further features including its shorter stipular sheath. The stipular sheath, which is formed by the fusion of the interpetiolar stipules, is c. 0.5 mm high adjacent to petioles in *C. quadrifida*, whereas it is generally c. 1 mm high in *C. nitida*. Domatia are occasionally developed in *C. quadrifida* but they have not been recorded in *C. nitida*. Furthermore, the spine-tipped branchlets *of C. quadrifida* are more slender, the leaf-apex is more acute, the calyx tube is better developed, and the fruit is smaller.

A reassessment of herbarium records has revealed that *C. nivalis* occurs in Tasmania. It has been collected from the eastern side of Lake Augusta (*R.W. Purdie 3534* CANB), and the banks of Liawenee Canal (*W.M. Curtis* HO).

Flowers and stipules of *C. pumila*, *C. nivalis*, *C. perpusilla* and *C. niphophila* are well illustrated in Orchard (1986). Most species of *Coprosma* are illustrated in Jeanes (1999). On this plate, distinctions between leaves of *C. quadrifida* and *C. nitida* are accurately depicted, as are the scabrosities and leaf-apex in *C. hirtella*, and the domatia in a leaf of *C. repens*. However, the illustration of a leaf of *C. robusta* implies that domatia are absent; this is unlikely to be the case as discussed above.

Hybrids between *C. quadrifida* and introduced species of *Coprosma* have been recorded from Melbourne and the Mornington Peninsula in south-central Victoria. Collections from adjacent the Mt Tomah Botanic Gardens in the Blue Mountains, New South Wales (*C.H. Barker 12* and *29* MEL) are possibly also hybrids involving *C. quadrifida*. Possible second parents include *C. hirtella*, *C. repens* or *C. robusta*.

Native species

Species are listed alphabetically. Distributions of the eight native species are presented in Figures 4 and 5.

1. *Coprosma hirtella* Labill., *Nov. Holl. Pl.* 1: 70 (1805)

***Type*:** Tasmania. Locality unknown, icono: *Nov. Holl. Pl*. 1: tab. 95 (1805)

2. *Coprosma moorei Rodway, Pap. & Proc. Roy. Soc. Tasmania 1893:* 179 (1894)

***Type*:** Tasmania. Mount Arthur, *L.Rodway*, 3.iv.1893; syn: MEL 54909; near Mount Tyndall, *J.B. Moore*, 1891; syn: MEL 54908; Snake Plains, Mount Wellington, *L. Rodway*, 1892; syn: MEL 654170.

3. *Coprosma niphophila* Orchard, *Brunonia* 9: 134–135 (1986)

***Type*:** New South Wales. Upper Blue Lake Cirque,

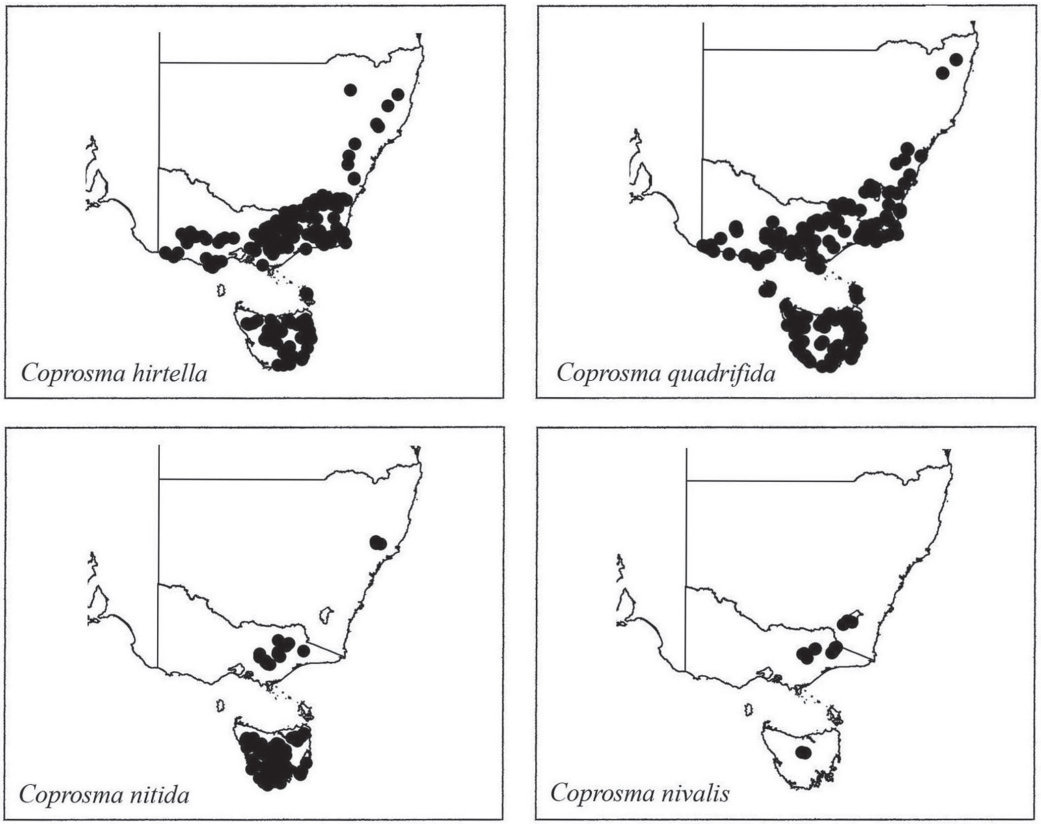

Figure 4. Distributions of *Coprosma hirtella*, *C. quadrifida*, *C. nitida* **and** *C. nivalis*.

Mt Kosciuszko Area, *M. Gray & C. Totterdell 6158*, 7.ii.1968; holo: CANB; iso: CANB.

4. *Coprosma nitida* Hook.f. in W.J.Hooker, *London J. Bot.* 6: 465 (1847), bis

***Type*:** Tasmania. Surrey Hills, *R.C. Gunn 874*, ii.1837; lecto: K, *fide* W.R.B. Oliver, *Bernice P. Bishop Mus. Bull*. 132: 57 (1935)

5. *Coprosma nivalis* W.R.B.Oliv., *Bull. Bernice P. Bishop Mus.* 132: 37 (1935)

***Type*:** Victoria. The Cobberas, Snowy Plains, *F. Mueller*, *s.d.*; holo: MEL 54916.

6. *Coprosma perpusilla* Colenso, *Trans. New Zealand Inst.* 22: 466 (1890)

***Type*:** New Zealand. River Wangaehu, near east base of Mount Tongariro, County of East Taupo, *H. Hill*, 1889; holo: WELT *n.v.*, *fide* A.E. Orchard, *Brunonia* 9: 131 (1986).

6a. *C. perpusilla* subsp. *perpusilla*

6b. *C. perpusilla* subsp. *subantarctica* Orchard, *Brunonia* 9: 133 (1986)

C. repens Hook.f., *Fl. Antarct*. 1: 22 (1844). [Macquarie Island is the only Australian locality]

***Type*:** New Zealand. Common Campbell's Island, *J.D. Hooker 1595*, *s.d.*; lecto: K, *fide* A.E. Orchard, *Brunonia* 9: 133 (1986).

7. *Coprosma pumila* Hook.f., *Fl. Antarct*. 2: 543 (1847)

***Type*:** Tasmania. Middlesex Plains, *R.C. Gunn 304*, ii.1837; syn: K, image seen MEL; near Arthurs Lakes, *R.C. Gunn 304*, 18.ii.1842; syn: K, image seen MEL.

8. *Coprosma quadrifida* (Labill.) B.L.Rob., *Proc. Amer. Acad. Arts* 45: 409 (1910)

Canthium quadrifidum Labill., *Nov. Holl. Pl*. 1: 69, t. 94 (1805); *Marquisia billardierei* A.Rich. ex DC., *Prodr*. 4: 447

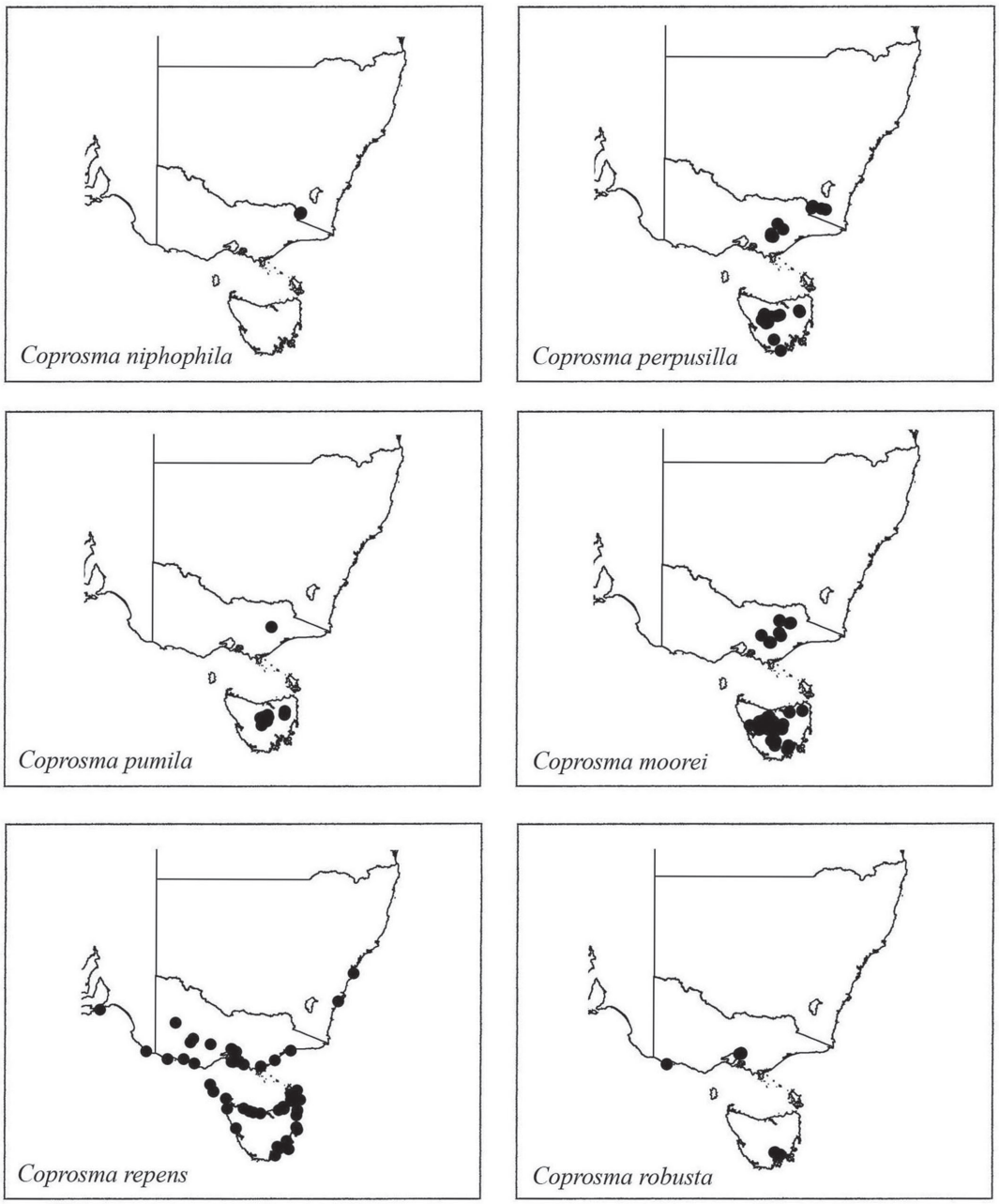

Figure 5. Distributions of *Coprosma niphophila***,** *C. perpusilla* **subsp**. *perpusilla***,** *C. pumila***,** *C. moorei***,** *C. repens* **and** *C. robusta***.**

(1830), *nom. illeg*., as *Billardieri*; *Canthium billardierei* D.Dietr., *Syn. Pl*. 1: 779 (1839), *nom. illeg*., as *Billardierii*; *Coprosma billardierei* (DC.) Hook.f., *in* W.J.Hooker, *London J. Bot*. 6: 465 (1847) bis, *nom. illeg*., as *Billardieri*.

***Type*:** Tasmania. Locality unknown; icono: *op. cit*., t. 94 (1805).

Introduced species

Distributions of the two introduced species are presented in Figure 5.

A. *Coprosma repens* A.Rich., *in* J.S.C.Dumont d'Urville, *Voy. Astrolabe* 1: 264 (1832)

***Type*:** New Zealand. Astrolabe Harbour [Tasman

Key to species of *Coprosma*

Note: Microscopic examination will be necessary to identify domatia in most instances.

1 Flowers clustered; broadest leaves > 8 mm wide, domatia present (erect shrubs or small trees) **2**

1: Flowers solitary; leaves < 7 mm wide, domatia absent, or occasional in *C. quadrifida* **4**

2 Leaf apex conspicuously acuminate, apiculate; leaves commonly scabridulous above; calyx lobes > 0.5 mm long; stigmata > 10 mm long; drupes globose ..... ***C. hirtella***

2: Leaf apex not or only gradually acuminate, not apiculate; leaves smooth above; calyx lobes not or hardly developed; stigmata < 10 mm long; drupes ellipsoid, broad-obovoid or sub-globose **3**

3 Leaf apex broadly rounded to truncate; stipules with several denticles; drupes broad-obovoid to sub-globose ..... ***C. repens***

3: Leaf apex subacute, acute or slightly acuminate; stipules with a single denticle; drupes ellipsoid ..... ***C. robusta***

4 Erect or occasionally nearly prostrate shrubs; branchlets pubescent at first; short spine-tipped branchlets often present **5**

4: Prostrate subshrubs; branchlets glabrous; spine-tipped branchlets absent **6**

5 Leaves thin, margins flat to minutely recurved, secondary venation evident, petiole slender (width 1/6–1/12 of lamina-width); bracts subtending flowers 0.3–1 mm long; pyrenes 2–3 mm long ..... ***C. quadrifida***

5: Leaves generally thickened, margins conspicuously recurved, secondary venation not evident, petiole stout (width 1/3–1/6 of lamina-width); bracts subtending flowers 1–3 mm long; pyrenes 3–5 mm long ..... ***C. nitida***

6 Drupes deep blue; flowers bisexual; leaf apex acute and mostly with a minute point, margins minutely papillose ..... ***C. moorei***

6: Drupes pale slaty blue, purplish-red or orange-red; flowers unisexual, or bisexual in *C. niphophila*; leaf apex rounded to acute without a minute point, margins not minutely papillose **7**

7 Drupes pale slaty blue or purplish-red; at least some younger leaves with a few hairs on margins; l:w ratio of leaves commonly > 2.5 ..... **8**

7: Drupes orange-red; leaves glabrous; l:w ratio of leaves mostly < 2.5 ..... **9**

8 Drupes pale slaty blue; petiole < 20% of total leaf length; stipule margin ciliate; hairs absent from leaf apex ..... ***C. nivalis***

8: Drupes purplish-red; petiole > 20% of total leaf length; stipule margin glabrous; a few hairs at leaf apex in at least a proportion of leaves ..... ***C. pumila***

9 Flowers structurally unisexual; stigmata 3 or 4; pyrenes 3 or 4 per drupe; stipules < 0.8 mm long ..... ***C. perpusilla***

9: Flowers structurally bisexual; stigmata 2; pyrenes 2 per drupe; stipules 0.8–1.1 mm long ..... ***C. niphophila***

Bay], 1827, *A. Lesson*; holo: P *n.v.*, *fide* H.H. Allan, *Fl. New Zealand* 1: 584 (1961).

B. *Coprosma robusta* Raoul, *Ann. Sci. Nat., Bot. sér. 3, 2: 121 (1844)*

***Type*:** New Zealand. Akaroa, *coll. unknown*; holo: ?P *fide* H.H. Allan, *Fl. New Zealand* 1: 584 (1961).

Durringtonia R.J.Hend. & Guymer, *Kew Bull.* 40: 99–101 (1985)

A monotypic genus endemic in south-eastern Queensland and north-eastern New South Wales. Originally placed in a tribe of its own based on a suite of unusual features, including ovaries with a single functional carpel, but transferred to subtribe Coprosminae in tribe Anthospermeae by Puff and Robbrecht (1988).

Durringtonia paludosa R.J.Hend. & Guymer, *Kew Bull.* 40: 99–101 (1985)

***Type*:** QUEENSLAND. Eagers Swamp, behind the beach on the ocean (eastern) side, c. 6.5 km ENE of Tangalooma Tourist Resort, Moreton Island, *P. Sharpe 3260*, *G. Guymer & R. Henderson*, 17.xi.1982; holo: BRI; iso: CANB, NSW.

This species is illustrated in Henderson and Guymer (1985). Its distribution is presented in Figure 1.

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