Ochrosperma, a new genus of Myrtaceae (Leptospermeae, Baeckeinae) from New South Wales and Queensland

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Abstract

Trudgen, Malcolm E. *Ochrosperma,* a new genus of Myrtaceae (Leptospermeae, Baeckeinae) from New South Wales and Queensland. Nuytsia 6(1):9-17 (1987). *Ochrosperma* is described with three species. *O. lineare* (C. T. White) Trudgen and *O. citriodorum* (Penfold & Willis) Trudgen are new combinations and *O. monticola* Trudgen is a new species. A key, descriptions and distribution map are provided and the relationships of the genus are discussed. Within the Baeckeinae *Ochrosperma* is considered to belong to the same natural group as *Rinzia* Schauer, *Hypocalymma* Endl. and section *Euryomyrtus* of *Baeckea* L.; within this group its closest relatives are considered to be *Baeckea camphorata* R. Br. and some allied undescribed species.

Introduction

In an earlier paper reinstating *Rinzia* Schauer (Trudgen 1986), the heterogeneity of the Baeckeinae and the existence within it of three major natural groups were briefly discussed. The three species dealt with in this paper are considered to represent a new genus which falls into one of these groups, i.e. the group containing *Rinzia, Baeckea camphorata* (and related undescribed species), section *Euryomyrtus* of *Baeckea* L., *Hypocalymma* Endl. and other species (some undescribed). The species of this natural group have the following characters in common: reniform seeds (with or without an aril); anthers opening in parallel slits; external filament glands; and aborted ovules which do not develop into ovulodes but are thin, compressed and often translucent.

Although Bentham (1867) had apparently not seen material of any of the three species included in *Ochrosperma,* they would fit readily into his broad conception of *Baeckea L.*

Distinction of *Ochrosperma*

Ochrosperma can be distinguished from related taxa by its possession of the following combination of characters:

(1) Seeds arillate, 1-1.3 mm long.

(2) Testa pale straw-coloured, shiny, with a papillose surface, the papillae arranged in linear patterns and tending to merge.

(3) Stamens regularly five, one opposite each sepal lobe.

(4) Ovary adnate to the hypanthium for almost all its length.

(5) Ovules consistently two per locule.

(6) Fruit opening very widely.

(7) Flowers in metaxymonads, or less commonly in pairs on a common peduncle, peduncle, internodes and anthopodia quite short so that the flowers appear to be almost sessile.

(8) Filaments terete, or at most slightly flattened near base.

Related taxa may have one or two of these characters but none has the combination. For example, while the species in *Rinzia* have fruit which open widely and arillate seeds (most species), the ovary is only adnate to the hypanthium for at most half of its length, there are 10 stamens, one opposite each sepal and petal (except in one species which variably loses some or all of those opposite the sepals), the stamens have broad filaments and the testa is dark brown.

Baeckea camphorata and two closely related undescribed species are thought to comprise the taxon most closely allied to *Ochrosperma* because they also have the ovary adnate to the hypanthium except at the top, no stamens opposite the petals and pale seeds, all characters shared with *Ochrosperma.* This taxon also occurs in the same geographical region as *Ochrosperma* (northern New South Wales and southern Queensland). On the other hand all except two of the other species in the natural group to which *Ochrosperma* belongs are Western Australian (with one extending into the Northern Territory) or South Australian and the two exceptions are more closely related to these species.

The fact that the taxon containing *Baeckea camphorata* has no stamens opposite the petals is considered to be very important as these are the only other species in the natural group to which *Ochrosperma* belongs which have the stamens predominantly opposite the sepals rather than the petals when the stamen number is reduced. This means that there is a significant difference in the direction of the reduction of the stamens between the species found in the western part of the continent and those found in the eastern part of the continent.

The "B. *camphorata*" taxon differs significantly from *Ochrosperma* as the following points indicate:

(1) The seeds lack the aril found on the seeds of all three species of *Ochrosperma.*

(2) The testas of the seeds are a pale reddish rather than a pale straw colour, dull rather than shiny and, although they are papillose, the individual markings are more distinct than on the seeds of *Ochrosperma.*

(3) There is a stamen opposite each sepal and between each sepal and petal rather than just one opposite each sepal.

(4) The flowers have longer anthopodia than those of *Ochrosperma* and the inflorescence on many specimens is a superconflorescence built of conflorescences which are brachyblasts (short shoots) with monads in the axils of bracts. Such brachyblasts are not known for *Ochrosperma.*

(5) The fruit do not open very widely.

(6) There are nine to twelve ovules per loculus rather than two.

In conclusion *Ochrosperma* is a small, distinct genus, easily recognised by the almost sessile flowers with five stamens (one opposite each sepal) and the three-locular ovary with two ovules per loculus.

Inflorescence

The uniflorescences in *Ochrosperma* are either metaxymonads or pairs of flowers on a common peduncle but separated from it by secondary axes and with the peduncle not terminating in a flower or vegetative shoot. The latter situation could be called a metaxydiad. The uniflorescences are then part of a conflorescence.

Terminology

Aril, hypanthium and *flower size* are used as defined in Trudgen (1986).

Terminology used in the descriptions of testa surfaces follows Murley (1951) as given in Stearn (1973).

Metaxymonad, uniflorescence, conflorescence, superconflorescence and *anthopodium,* are used as defined by Briggs and Johnson (1979) and *metaxydiad* is defined above.

Materials and Methods

This paper was based on the study of the gross morphology of herbarium material borrowed from Australian herbaria. A selection of this material has been cited, based on the number of collections available, their location and the quality of label information.

The measurements given for the parts of flowers were made on material that had been boiled in water with a small amount of detergent in it. The measurements of leaves refer to dry material.

Ochrosperma Trudgen, gen. nov.

Frutex glaber. Folia parva opposita breviter petiolata. Flores parvi, axillares, solitarii vel in dichasiis bifloris. Pedunculus et axes secondarii brevissimi, bracteis bracteolisque terminati. Hypanthium obonicum ovarium paulovel usque ad ⅓ superans; lobi calycis 5 erecti, carinati. Petala parva, suborbicularia, ungue parvi vel absenti. Ovarium omnino inferum, 3-loculare, ad apicem latissimum; parietes ovarii tenui. Placentatio axillare; areae placentae ovales vel circularis; ovula 2 in quoque loculo, collateria, reniformia vel semi-circularia. Stamina 5, sepalina; filamenta ad apicem angustata; antherae dorsifixae, loculis parallelis in rimas dehiscentibus; glans connectivi globularis vel cylindracea. Stylis breviter vel profunde immersus, teres; stigma capitatum. Fructus firmus sed nec lignosus; valvae orificiis late apertae ubi dehiscentes, hypanthio demum leviter convexo vel fere applanato (nec intorso). Semina crasso-reniformia, 1-1.3 mm longa, carunculata; hilum parvum; testa crustacea, straminea, in ordinatione lineari papillosa. Ovulodia complanata, translucetia brunea, seminibus nec simulantia.

Typus: **Ochrosperma monticola** Trudgen

Shrubs to 2 m tall, glabrous. *Leaves* opposite, entire, appressed to spreading, shortly petiolate; lamina narrow-linear to broad-elliptic, flat or variously thickened (plano-convex, concavo-convex), straight or recurved, 0.8-11 mm long, 0.5-2.2 mm wide, glandular-dotted. *Flowers* 5-merous, small axillary, either solitary (in metaxymonads) or in pairs on a common peduncle (metaxydiads); peduncle and subsequent internode(s) very short, terminated by caducous or persistent bracteoles; anthopodium short in one species, extremely short in the others; bracts slightly longer than the bracteoles, both subulate to elliptic or cymbiform. *Hypanthium* obconical, slightly or up to ⅓ exceeding the ovary; base acute, rounded or truncate. *Calyx lobes* ¼-⅓ length of hypanthium, erect (incurved in dry material), strongly keeled. *Corolla* white or flushed faintly with pink, 2.5-5.0 mm in diameter; petals suborbicular, small, claw short and broad or absent. *Stamens* 5, antesepalous, slightly exceeding calyx lobes; filaments terete (slightly flattened at the base), tapering towards the apex. *Anthers* dorsifixed, loculi parallel, opening in parallel slits. *Connective gland* globular or cylindrical. Style terete, inserted shortly to deeply into the ovary; stigma capitate. *Ovary* 3-locular, thin walled, fused to hypanthium for most of its length. *Placentation* axile; placentas elliptic or circular areas on

the floral axis, longitudinally furrowed. *Ovules* reniform or semicircular, 2 per loculus, collateral, one on either side of the placental furrow. *Fruit* a capsule enclosed by the hypanthium except at the top, campanulate or infundibular before dehiscence, firm but not woody. *Dehisced fruit* with valves opening very widely on dehiscence, the hypanthium becoming shallowly convex or almost flat. *Seeds* stoutly reniform, 1-1.3 mm long, arillate; aril white, clasping hilar region; hilum small, in centre of the concave side; testa crustaceous, stramineous, shiny, papillose with the papillosities in a linear pattern and tending to run into each other. *Embryo* filling seed; cotyledons small on a long slender neck, flattened parallel to the plane between them, cotyledons and neck appressed to the massive radicle. *Aborted ovules* flattened, translucent, brown, not developing as "chaff".

Distribution. East coast of Australia (Queensland and New South Wales) between latitudes 25° S and 35° S. *Ochrosperma lineare* and *O. citriodorum* are coastal and near-coastal while *O. monticola* grows in the Great Dividing Range.

Etymology. The name *Ochrosperma* is derived from the greek *ochros* (pale, wan) and *sperma* (seed) and refers to the pale, straw-coloured seeds of the three species in the genus.

Key to the species

1. Leaves linear, semi-terete, straight.....1. *O. lineare*
1. Leaves elliptic to obovate, not thick, usually recurved.
   2. Flowers c. 2.5 mm diameter, leaves 1.2-3.0 mm long.....2. *O. citriodorum*
   2. Flowers 3.5-5.0 mm diameter, leaves 2.5-5.5 mm long.....3. *O. monticola*

1. **Ochrosperma lineare** (C. T. White) Trudgen, comb. nov. — *Baeckea linearis* C. T. White, Proc. Roy. Soc. Queensland. 55: 65-66(1944). *Lectoype* (here designated): Tugun, S. E. Queensland, Sept. 1940, *G. H. Barker* s.n. (lecto: BRI 011121; isolecto: BRI 011122).

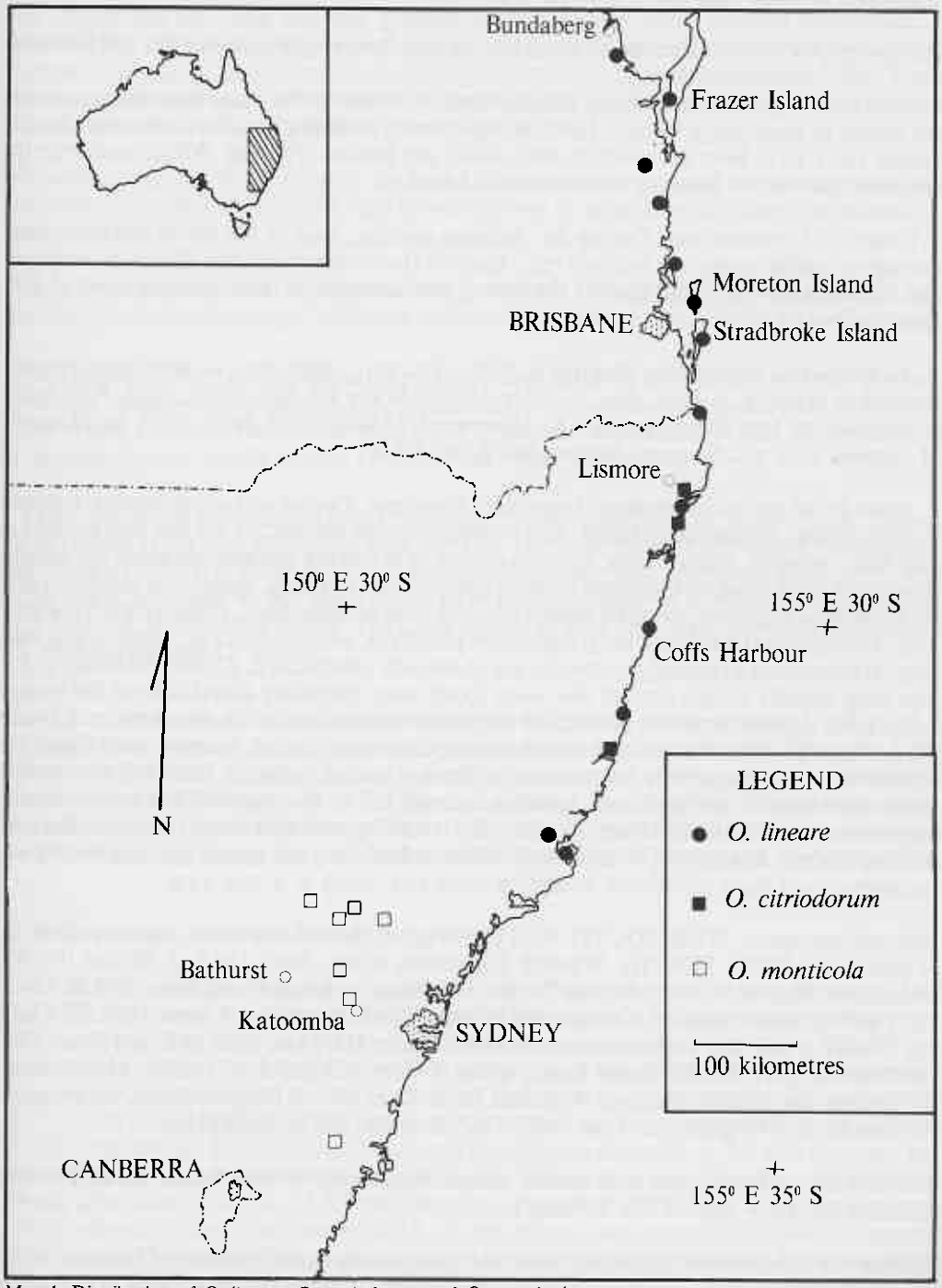
Shrub to 2 m tall, erect or spreading. *Leaves* slightly to ⅔ of length overlapping; lamina linear to linear-lanceolate, 3.5-11 mm long, 0.5-1.0 mm wide, straight, plano-convex, thickened towards apex. *Flowers* in pairs on a common peduncle or solitary in leaf axils (one side of diad aborted), with up to 8 cm of the upper branchlets in flower. *Peduncles* and subsequent internode 0.1-0.2 mm long; anthopodium 0.3-0.4 mm long; bracteoles subulate-elliptic, concave, persistent, equal to the anthopodium. *Hypanthium* obconical, 1-1.5 mm long, 1.5-2 mm diameter, fused for ⅔ length to the ovary; calyx lobes deltoid, acute to obtuse. *Corolla* white or flushed faintly with pink, c. 2.5 mm diameter; petals suborbicular, 0.8-1 mm in diameter; claw short or absent. *Stamens* with filaments terete, 0.4-0.6 mm long; connective gland cylindrical. *Style* inserted for ⅓ the length of the ovary, terete and not tapering at the base, shortly exceeding the calyx lobes; stigma capitate. *Ovary* 3-locular; placentas oval; ovules with one end somewhat pointed. *Fruit* with hypanthium campanulate before dehiscence, becoming shallowly convex on dehiscence, the valves opening widely. *Seeds* 1.3 mm long.

Selected specimens. QUEENSLAND: Burrum Heads Road, *C. H. Gittins* 1121 (NSW); Fraser Island, between the forestry station and Lake Birrabeen, *S. T. Blake* 14353 (BRI); Bribie Island, 9 km N of forestry campsite, *P. Sharp* 00115 (BRI); upper Noosa River at junction with Teewah Creek, 39 km ENE of Gympie, *I. R. Telford* 3780 (CGB, K); about 1½ miles [2.5 km] E of Noosaville, May 1968, *B. Lebler* and *P. Baxter* s.n. (BRI); Moreton Island, Blue Lagoon on the high sand dunes along the SW shore, *L. Durrington* 00431(BRI); Traverston, mouth of Burrum River, *C. T. White* 6333 (BRI, NSW).

NEW SOUTH WALES: Evans Head, near recreation area, *R. Coveny* 4676 (AD, BRI, CANB, HO, K, L, NSW, RSA); 5 miles [8.0 km] NE of Woodburn, *R. Coveny* 3503 (BRI,

NSW); Diamond Head, *P. Burgess* 70 (NSW); South West Rocks, *R. Coveny,* NSW123018 (NSW); Wallis Island, Tuncurry, *E. Cheel* NSW123012 (NSW, PERTH).

Distribution: Between latitudes 25° 20' S and 32° 30' S on the Queensland and New South Wales coasts. Map 1.



Map 1. Distribution of *O. lineare, O. citriodorum* and *O. monticola.*

Habitat. Recorded from a number of habitats including "wallum" (*Banksia aemula*) scrub or flats where it is apparently common (Lebler 1972), dry sclerophyll forest, high sand dunes, swamp edges and heath. Batianoff and McDonald (1980) recorded *O. lineare* from three of their major vegetation types; foredune heath and scrub, rocky shore and headland vegetation and parabolic dune vegetation. It seems to prefer acidic sandy soils, with or without humus.

Flowering time. August through to May, but the best flowering is in September and October.

Notes. In the original description of *Baeckea linearis,* White (1944) states that there are about ten ovules in each ovary loculus. In all the specimens, including the Type, dissected by the author there have been consistently two ovules per loculus. Possibly White inadvertently dissected material of *Baeckea stenophylla* F. Muell.

Lebler (1972) states that "During the Autumn months, most of the leaves change colour through a reddish green to a brilliant red." that "In the young stages, the filaments are green and the anthers red." and that "...the leaves are arranged in four distinct rows..." (i.e. quadrifarious).

2. **Ochrosperma citriodorum** (Penfold & Willis) Trudgen, comb. nov. — *Baeckea citriodora* Penfold & Willis, J. & Proc. Roy. Soc. New South Wales 89: 186 (1956). *Type:* Five miles [8 km] NW of Port Macquarie, *D. K. Hammond,* 15 May 1955 (holo: NSW ex Museum of Applied Arts and Sciences, Sydney (n.v.); iso: BRI).

Shrub to 40 cm tall, spreading, branchlets divaricate. *Leaves* spreading; lamina narrow- to broad-elliptic, occasionally oblong, with a narrow hyaline margin, 1.2-3.0 mm long by 0.8-1.4 mm wide, recurved, plano-convex, concavo-convex or bi-convex and grooved along the midrib, thin at the edges, slightly thickened towards apex. *Flowers* axillary, solitary, or rarely in pairs on a common peduncle, in small groups towards ends of branchlets. *Peduncles* 0.3-0.4 mm long; anthopodia 0.4-0.5 mm long; bracteoles persistent, elliptic, concave, acute, c. 0.6 mm long. *Hypanthium* irregularly hemispherical to broadly obconical, c. 2.3 mm diameter, c. 1.2 mm long, slightly bulged around the ovary loculi, only extending shortly above the ovary; calyx lobes deltoid, acute to obtuse, ½ length of hypanthium. *Corolla* white, c. 2.5 mm diameter; petals suborbicular, c. 1 mm diameter; claw short, broad. *Stamens* with filaments 0.3-0.5 mm long (apparently lengthening as flowers mature), slightly flattened; connective gland cylindrical. *Style* terete, not tapering, inserted for ½ the length of the ovary; stigma capitate, equalling anthers. *Ovary* 3-locular. *Fruit* with hypanthium shortly campanulate and bulging slightly around the ovary loculi before dehiscence, the valves opening widely on dehiscence and the hypanthium becoming quite flat. *Seeds* c. 1 mm long.

Selected specimens. NEW SOUTH WALES: Wardell, Richmond River, January 1944, *J. Weller* (BRI, NSW, PERTH); Wardell, Richmond River, Nov. 1943, *J. Weller* (NSW); Woodburn, May 1924, *A. R. Penfold* (NSW); Woodburn to Evans Head, Sept. 1926, *E. Cheel* s.n. (NSW); Evans Head, *R. Coveny* 4667 (BRI, NSW); Evans Head, Sept. 1927, *E. Cheel* s.n. (NSW); 1 mile [1.6 km] from seashore and 8.5 miles [13.7 km] SSW of Evans Head, *D.J. McGillivray* 2051 (NSW); Shelly Beach, about 3 miles [4.8 km] S of Yamba, March 1968, *K. Grieves* s.n. (NSW); Yuraygir National Park, 2 km SW of Diggers Camp, *K. Wagner, M. Searles & S Griffith* s.n., June 1984 (CANB, MEL, NSW, PERTH).

Distribution. A coastal and near coastal species found only in New South Wales between latitudes 28° 50' S and 31° 30' S. Map 1.

Habitat. O. citriodorum apparently does not grow in the same diversity of habitats as *O. lineare.* From information on herbarium sheets it appears that this species is found in heathland

(on sand) with a variety of other plants, particularly *Banksia serratifolia, B. aspleniifolia* and species of *Leptospermum.* Penfold and Willis (1956) recorded it growing in scattered patches in a band 2-3 miles long and 50 yards wide along the margins of a large swamp 18 miles from the coast and 3 miles from the Coraki-Grafton road, in heath at Evans Head and in heath at Port Macquarie. On each occasion the soil was recorded as grey sand. Subsequently this species has also been recorded growing with *O. lineare.* More detailed information is available for the habitat of *O. citriodorum* in the Cape Byron — Suffolk Park area where it grows in two plant associations on transgressive dunes (Gilmore and Associates 1984). These are *Leucopogon ericoides/Homoranthus virgatus* Dry Heathland and a *Banksia aemula* association which occurs on higher parts of the dunes.

Flowering time. From September through to June. However, from the condition of the available material it seems likely that flowering time is variable rather than continuous for that period.

Notes. Penfold and Willis (1956) considered incorrectly that this species "falls naturally into Bentham's section Harmogia" although they recognised its closest relative to be *O. lineare.*

According to Penfold and Willis (1956) fresh material of *O. citriodorum* gives off a strong citronella odour when crushed and the species was first discovered because it gave a citronella taint to milk from two farms from Woodburn in northern New South Wales, where the plant is apparently now locally extinct (Penfold and Willis 1956).

Two collections seen that include *O. citriodorum* are mixed with *O. lineare.* In *R. Coveny* 4674, Evans Head near recreation area, 14 Nov. 1972, the sheet at NSW is *O. citriodorum,* the sheet at CANB is *O. lineare.* This collection has also been sent to A, B, G, K, L, LE, LISE, MO, RSA and W but these sheets have not been seen. In *R. Coveny* 3501, 5 miles [8.0 km] NE of Woodburn, Feb. 1971, the sheets at BRI and NSW are both mixtures of *O. citriodorum* and *O. lineare.*

Conservation status. O. citriodorum is neither as widespread nor as commonly collected as *O. lineare* and consequently this species may not be adequately protected. However it has been recorded from Yuraygir National Park (where it grows along an ecotone between a *Banksia aemula, Melaleuca nodosa* Dry Heath and a *Banksia oblongifolia, Epacris microphylla, Xanthorrhoea* sp., *Sprengelia sprengelioides, Lepyrodia interrupta* Wet Heath). It is apparently widespread in Bundjalong National Park south of Evans Head (Gilmore and Associates 1984).

3. **Ochrosperma monticola** Trudgen, sp. nov.

Frutex densus ad 0.5 m altus, 2 m latus. Folia effusa, elliptica vel late elliptica, 2.5-5.5 x 1.6-2.2 mm, recurva, pagina superiore applanata vel aliquondo leviter carinata (apicem versus concava), inferiore leviter convexa; margo angustatus, hyalinus. Flores parvi (3.5-5.0 mm diameter), axillares, in dichasiis bifloris vel solitarii (uno lato dichasii abortivo), usque ad 3 cm ramulorum superiorum in statu florescentii. Pedunculi c. 0.1 mm longi, axillus secondariis 0.1-0.2 mm longis, pedicellis c. 0.4 mm longis; bracteae bracteolaeque cymbiformae, caducae, 0.5-0.8 mm longae. Hypanthium obconicum (1.0-1.1 mm diameter, c. 2.2 mm longum), basi rotundata, limbo parvissimo; lobi calyce deltoidei, obtusi, hypanthio dimidia parte breviores. Petala alba, suborbicularia, 1.8-2.2 mm diameter, ungue brevi vel absenti. Placentae circulares leviter sulcatae. Filamenta staminum 0.8-1.0 mm longa; glans connectivii globularis, magna. Stylis breviter immersus, teres, tenuis, stigmate lobis calyce parum superans. Fructus maturus ignotus, in statu immaturo late infundibularis.

Typus: Currant Mountain Gap, 24 km by road E of Rylstone, N.S.W., dense shrub 0.5 m high and 2 m across with white flowers, *R. Coveny* 6619 and *P. Hind*, 10 August 1975, (holo: PERTH; iso: BRI, KEW, MEL, NSW).

Dense, spreading *shrub* to 0.5 m tall and 2 m across. *Leaves* spreading; lamina elliptic to broad-elliptic with a narrow hyaline margin; 2.5-5.5 mm long, 1.6-2.2 mm wide, recurved; upper surface flat or occasionally concave or concave only towards apex, abaxial surface very shallowly convex (i.e. lamina very little thickened), discolorous, paler on abaxial surface. *Flowers* axillary, in pairs on a common peduncle or solitary (one side of diad aborted), up to 3 cm of upper branchlets in flower; peduncle c. 0.1 mm long, subsequent internode 0.1-0.2 mm long; anthopodium c. 0.4 mm long; bracteoles cymbiform, caducous, 0.5-0.8 mm long. *Hypanthium* broadly obconical, c. 2.2 mm diameter and c. 1.1 mm long, rounded at the base, only extending shortly past the ovary; calyx lobes deltoid, obtuse, ½ length of hypanthium. *Corolla* white, 3.5-5.0 mm in diameter; petals suborbicular, 1.8-2.2 mm diameter; claw short and broad or absent. *Stamens* with filaments 0.8-1.0 mm long; anthers c. 0.4 mm long; connective gland globular, large. *Style* only shortly inserted into the ovary, terete, slender, just exceeding calyx lobes; stigma capitate. *Ovary* 3-locular, fused to hypanthium except at the top; placentas circular, indistinctly furrowed. *Ovules* 2 per loculus, collateral. Mature *fruit* not known; the most advanced seen had become broadly infundibular due to the outward growth of the ovary.

Selected specimens. NEW SOUTH WALES: Medlow Bath, Nov. 1914, *A.A. Hamilton* (NSW); Kekeelbon Mountains, 2 miles [3.8 km] SE of "Three Ways" along Putty Fire Trail, *T* and *J. Whaite* 32777 (NSW); Currant Mountain Gap via Rylstone, Sept. 1960, *C. K. Ingram* (NSW); Talwong, Jan. 1900, ? *W. Forsythe* (NSW); near Wolgan Pinnacle, *I. Olsen* 2905 (NSW); Blackheath, Jan. 1900, *A. A. Hamilton* NSW139563 (NSW, PERTH); Jones Hob, 1.5 miles [2.4 km] NNE of Mt Coricudgy, *D. McGillivray* and *A. Rodd* 121 (NSW, PERTH); 1.5 km S of Kandos Weir, c. 22 km E of Rylstone, *M. D. Crisp* 1278 (CBG, L, MO, PERTH).

Distribution. On the Great Dividing Range in New South Wales between latitudes 32° 50' S and 33° 40' S. Map 1.

Habitat. O. monticola grows on rocky ridges or rock outcrops (sandstone where rock type has been noted by the collector). With one specimen collected from a dry swamp on a sandstone ridge. The type of *O. monticola* comes from a sandstone ridge where it was growing with *Leptospermum parvifolium, L. arachnoides, Leucopogon muticus, Acacia hamiltoniana* and *A. obtusifolia.*

Flowering time. From early September to November with the best flowering in October and November.

Etymology. The specific name reflects the distribution of the species in the mountains and draws attention to the contrast between this and the coastal distributions of *O. lineare* and *O. citriodora.*

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