

## Three new taxa of *Eucalyptus* subgenus *Eudesmia* (Myrtaceae) from Queensland and Western Australia

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### Abstract

Nicolle, D. Three new taxa of *Eucalyptus* subgenus *Eudesmia* (Myrtaceae) from Queensland and Western Australia. *Nuytsia* 13(2): 317–329 (2000). Two new species and a new subspecies of *Eucalyptus* subgenus *Eudesmia* (R. Br.) L.A.S. Johnson & K.D. Hill (Myrtaceae) are described. One of the new species, *Eucalyptus chartaboma* Nicolle, is endemic to the central northern region of Queensland. It is related to *E. miniata* A. Cunn. ex Schauer, differing in the flaky-papery, light-coloured persistent bark, the narrower adult leaves and the larger, ovoid fruits. The other new species, *E. extrica* Nicolle, is endemic to the southern coast of Western Australia. It is related to *E. pleurocarpa* Schauer, differing in the non-pruinose branchlets, adult leaves, buds and fruits, the longer and narrower, broad-lanceolate, green adult leaves, the slightly longer peduncles and pedicels and the ovoid fruits. The taxonomic status of the previously confused *E. tetragona* (R. Br.) F. Muell. is discussed. A new subspecies of *E. gittinsii* Brooker & Blaxell (subsp. *illucida* Nicolle) is described, endemic to the northern wheatbelt and adjacent coastal sandplain region of Western Australia. It differs from the typical subspecies in the dull, pale green to slightly blue-green, thinner adult leaves, the more effuse habit and the generally less ribbed buds and fruits. Distribution maps, keys, tables and representative illustrations for the new taxa are provided.

### Introduction

*Eucalyptus* L'Hérit. subgenus *Eudesmia* (R. Br.) L.A.S. Johnson & K.D. Hill consists of approximately 25 taxa (species and subspecies), distributed in all mainland Australian States except Victoria. The phylogeny of *Eudesmia* is poorly known in comparison to the other major eucalypt groups, viz. *Corymbia* L.A.S. Johnson & K.D. Hill and *Eucalyptus* informal subgenera *Symphyomyrtus* and *Monocalyptus* (Pryor & Johnson 1971). Although *Eudesmia* is a small and well defined subgenus, it shows a high amount of diversity and distinctiveness between species. Limited morphological (e.g. Hill 1998) and molecular studies (Steane *et al.*, unpublished) indicate there are between two and eight major lineages in the subgenus that are relatively basal in phylogeny compared to related *Eucalyptus* taxa and *Angophora* Cav. taxa. Further studies are needed to establish the phylogeny of *Eudesmia* between the subgenus and species level. Hill & Johnson (1998) provided an informal classification of the subgenus at sectional, series and subseries rank, following the system used by Pryor & Johnson (1971). Formal names at series rank only have been used here because of the uncertainty regarding natural sections within *Eudesmia*.

Two of the taxa described here (*E. gittinsii* subsp. *illucida* and *E. chartaboma*) remained unrecognized in a recent review of the subgenus by Hill & Johnson (1998). The third taxon described here (*E. extrica*) had previously been considered to represent a distinct taxon (Brooker & Kleinig, 1988), or had been included under *E. tetragona* (Hill & Johnson, 1998), because of confusion regarding the identity of *E. tetragona*.

### Taxonomy

**Eucalyptus series Heteroptera** Maiden, Critical Revision of the Genus Eucalyptus 7: 115 (1925).  
Type: *Eucalyptus tetragona* (R. Br.) F. Muell. [= intergrade between *E. extrica* Nicolle and *E. pleurocarpa* Schauer].

A series of seven species endemic to the southern part of Western Australia (except *E. eudesmioides* which also extends north to Warroora Station at 23° 30'S), distinguished within subgenus *Eudesmia* by the 3-flowered umbellasters, staminal filaments in four fascicles (bundles) and the creamy-white, or in *E. erythrocorys*, bright yellow, staminal filaments.

*Eucalyptus eudesmioides* is here taken to include the recently described *E. pallida* L.A.S. Johnson & K.D. Hill which I believe is not specifically distinct. Variably glaucous populations of *E. eudesmioides* do occur west of the Great Northern Highway in the Shark Bay region and also in the Kennedy Range, and these may warrant subspecific recognition. However, the type of *E. pallida*, and other individuals from the type locality and elsewhere along the Great Northern Highway north of Geraldton, are not prominently glaucous and are morphologically very similar to *E. eudesmioides* occurring elsewhere.

*E. tetragona* is no longer recognized as a species within the series but is instead considered to represent intergrades between *E. pleurocarpa* and *E. extrica* as discussed under the latter.

#### Key to the species of *Eucalyptus* series *Heteroptera*

1. Staminal filaments sulphur yellow, operculum red ..... **E. erythrocorys**
1. Staminal filaments creamy-white, operculum green to yellow or pruinose
  2. Juvenile leaves sessile or sub-sessile, adult leaves small, 6–22 mm wide
    3. Adult leaves dull ..... **E. eudesmioides**
    3. Adult leaves glossy ..... **E. selachiana**
  2. Juvenile leaves petiolate, adult leaves large, 15–75 mm wide
    4. Branchlets, adult leaves, buds and fruits not pruinose
      5. Fruit <12 mm diameter, ± square in transverse section ..... **E. gittinsii**
      5. Fruit >13 mm diameter, terete in transverse section ..... **E. extrica**
    4. Branchlets, adult leaves, buds and fruits pruinose
      6. Leaves on mature plant lanceolate, 15–35 mm wide ..... **E. conveniens**
      6. Leaves on mature plant elliptic to ovate, 30–75 mm wide ..... **E. pleurocarpa**

**1. *Eucalyptus gittinsii*** Brooker & Blaxell, *Nuytsia* 2(4): 228 (1978). *Type*: 67 km south of 'Billabong Roadhouse', Wannoo, Highway 1 (27° 30'S, 114° 45'E), Western Australia, 9 October 1975, D.F. Blaxell W75/113 (*holo*: NSW; *iso*: CANB, K, PERTH 01389777, 01389785, 01389793).

*Notes.* *E. gittinsii* is a Western Australian endemic species with two disjunct occurrences on the west coast sandplains: between Geraldton and Wannoo (subsp. *gittinsii*) and between the Moore River and Three Springs (subsp. *illucida*). *E. gittinsii* is distinguished within *E. ser. Heteroptera* by the non-glaucous mature adult leaves, buds and fruits; the white staminal filaments; the medium-sized adult leaves and fruits; the prominent persistent sepals on the buds and fruits and the square (in transverse section) fruits.

#### Key to the subspecies of *Eucalyptus gittinsii*

- 1. Adult leaves glossy, green ..... subsp. ***gittinsii***
- 1. Adult leaves dull, light green to blue-green ..... subsp. ***illucida***

#### **1. *Eucalyptus gittinsii* subsp. *illucida*** Nicolle, *subsp. nov.*

A subspecies typica foliis adultis pallido-viridibus, hebetibus, alabastris fructibusque minus costatis differt.

*Typus*: Hi-Valley (Williams' Farm), Tootbardi Rd, north of Badgingarra, Western Australia, 21 September 1982, M.I.H. Brooker 7651 (*holo*: PERTH 01366262; *iso*: PERTH 01366297).

*Mallee*, often of sprawling or effuse habit, 2–4 m tall. *Lignotubers* present. *Bark* completely smooth, grey over tan, or with some rough, persistent ribbony bark on the lower stems. *Branchlets* not glaucous, pith glands absent. *Cotyledons* reniform. *Seedling leaves* opposite for 1–3 pairs then alternate, petiolate, ovate-elliptical, dull, grey-green, prominently hairy. *Adult leaves* alternate, petiolate, broad-lanceolate, 70–110 mm long, 20–35 mm wide, concolorous, not glaucous, dull, pale green to blue-green; reticulation sparse to moderate, with numerous island oil glands, lateral veins at 35–50° from midrib. *Inflorescences* axillary, unbranched, 3-flowered; peduncles ± flattened and broadening towards pedicels, 6–12 mm long; pedicels 6–8 mm long. *Buds* non-glaucous, clavate, 5–7 mm long, 4–6 mm wide; hypanthium obconical, tapering to pedicel, with four longitudinal ribs extending to prominent teeth-like sepals; operculum flattened-hemispherical to obtusely conical, apiculate to rounded, ± equal in width to hypanthium, smooth, pale green. *Flowers* white. *Stamens* conspicuously bundled in four clusters, inflexed, all fertile; anthers versatile, oblong to ovoid, opening by longitudinal slits. *Ovules* in 4(6) vertical rows. *Fruits* not glaucous, oblong to somewhat barrel-shaped, sepals persisting as teeth on rim, 12–16 mm long, 9–11 mm wide, with four weak longitudinal ribs, ± square in transverse section; operculum scar very narrow and partly obscured by sepals; disc descending, 1.5–2.5 mm wide; valves 3, base enclosed, tips to around rim level. *Seeds* irregularly pyramidal, 3–5 mm long, dull, dark grey-brown to almost black, with a narrow, very thin wing extending around the dorsal edge; chaff glossy, red-brown. (Figures 1, 2)

*Selected specimens examined.* WESTERN AUSTRALIA (north to south): c. 10 miles [16 km] SW of Three Springs towards Eneabba, 7 Jan. 1970, M.I.H. Brooker 2359 (PERTH); Coomallo Nature Reserve, top of mesa near gas installation, c. 500 m to SE, 11 Sep. 1993, S. Patrick 1531 (PERTH); Lesueur National Park, 1 km N of Mt Michaud, on N/S line bisecting Mt Lesueur–Mt Michaud, on old track, 30°09'15"S, 115°11'28"E, 7 Feb. 1993, B. Evans WE 467 (PERTH); just S of Alexander Morrison National Park, 7 km S of Coorow–Green Head road along Tootbardi Rd, 24 Jan. 1979, M.D. Crisp 5450



Figure 1. Holotype of *Eucalyptus gittinsii* subsp. *illucida* (M.I.H. Brooker 7651).

(CANB, NSW, PERTH); NW of Dandaragan, 30°4'46"S, 115°34'23"E, 25 Jan. 1996, *D. Nicolle* 1651 (PERTH); S side of Mt Misery at base of hill, 30°41'50"S, 115°36'53"E, 11 Dec. 1992, *D. Nicolle* 252(AD); 3 km S of Yandan Rd on Brand Highway, 9 Apr. 1984, *M.I.H. Brooker* 8502 (AD, CANB, PERTH).

**Distribution and habitat.** Endemic to Western Australia, restricted to the northern wheatbelt and nearby coastal sandplains, from the Moore River in the south, northwards to near Three Springs (Figure 3). It usually occurs in white or grey sands or shallow gravelly sands over laterite. Associated species include *Corymbia calophylla* (Lindl.) K.D. Hill & L.A.S. Johnson, *Eucalyptus falcata* Turcz. *sens. lat.*, *E. arachnaea* Brooker & Hopper (subsp. *arachnaea*), *E. drummondii* Benth., *E. leprophloia* Brooker & Hopper, *E. pleurocarpa* Schauer, *E. macrocarpa* Hook. (subsp. *elachantha* Brooker & Hopper and *macrocarpa*), *E. albida* Maiden & Blakely, *E. rigidula* Maiden and *E. abdita* Brooker & Hopper.

**Flowering period.** December to March.



Figure 2. *Eucalyptus gittinsii* subsp. *illucida* habit north-west of Dandaragan.

*Conservation status.* Of scattered occurrence but locally abundant and not considered to be threatened. Known from several conserved areas including Lesueur National Park and Coomallo Nature Reserve.

*Etymology.* From the Latin *il* – not and *lucidus* – shining, bright, referring to the dull adult leaves compared to the glossy leaves of subsp. *gittinsii*.

*Notes and affinities.* Distinguished from subsp. *gittinsii* in the dull, pale green to slightly blue-green adult leaves (glossy and yellow-green to green in subsp. *gittinsii*). *E. gittinsii* subsp. *illucida* also differs from subsp. *gittinsii* in the generally more effuse habit, thinner adult leaves and the usually less coarse buds and fruits with less prominent ribbing.

*E. gittinsii* subsp. *illucida* is geographically separate from subsp. *gittinsii*, the nearest populations of the former occurring some 200 km to the south of the latter. No intermediates are known.

Intergrades are known between *E. gittinsii* subsp. *illucida* and *E. eudesmioides* F. Muell. (e.g. D.F. Blaxell 1996) but not between *E. gittinsii* subsp. *gittinsii* and *E. eudesmioides*, although the latter two are sometimes associated in the field.

*E. conveniens* L.A.S. Johnson & K.D. Hill is thought to be of stabilized hybrid origin (Hill & Johnson 1998), with *E. gittinsii* (subsp. *illucida*) and *E. pleurocarpa* being the hypothesized parents. It is possible that the southern race of *E. gittinsii* (subsp. *illucida*) has differentiated from the northern, type race because of long term genetic contact with *E. pleurocarpa* and later *E. conveniens* and, therefore,

may also ultimately be of complex hybrid origin. If this is the case, the populations attributed to *E. gittinsii* subsp. *illucida* have certainly now stabilized, as there is no evidence of current hybridization between *E. gittinsii* subsp. *illucida* and *E. conveniens* or *E. pleurocarpa*. A more likely hypothesis for the origin of *E. gittinsii* subsp. *illucida* is that it and the northern populations (subsp. *gittinsii*), through long term isolation, differentiated from one another because of differing environmental pressures; subsp. *gittinsii* usually occurring on much deeper, red, aeolian sands.

*E. gittinsii* subsp. *illucida* is superficially similar to *E. extrica*, especially in leaf morphology, but can be distinguished by the complete lack of pruinosity and the smaller, more slender fruits that are prominently square in transverse section.

## 2. *Eucalyptus extrica* Nicolle, *sp. nov.*

*Eucalyptus* sp. B, "Eastern tallerack" of Brooker & Kleinig (1990).

Affinis *E. pleurocarpa* sed characteribus sequentibus distinguitur: ramulis, foliis adultis, alabastris fructibusque non-pruinosis; foliis adultis longioribus angustioribus, late-lanceolatis et viridibus; pedunculis et pedicellis longioribus; fructibus ovoideis differt.

*Typus*: c. 3 km north-east of Howick Hill, in location 251, Western Australia, 21 September 1968, A.E. Orchard 1121 (*holo*: PERTH 01441779; *iso*: AD, CANB, L).

Spreading, usually effuse *mallee*, 1–4 m tall; new growth usually lightly glaucous. *Lignotubers* present. *Bark* smooth, light grey over tan to brown, sometimes with some rough, persistent ribbony bark on the lower stems. *Branchlets* strongly quadrangular, not glaucous, pith glands absent. *Cotyledons* reniform. *Seedling leaves* opposite for many pairs, petiolate, elliptic to ovate, dull, grey-green, prominently hairy at first. *Adult leaves* alternate, petiolate, broad-lanceolate and sometimes falcate, 75–140 mm long, 25–50 mm wide, concolorous, not glaucous, dull, pale green to slightly blue-green; reticulation sparse to moderate, with scattered, mostly island, oil glands, lateral veins at 35–50° from midrib; petiole flattened. *Inflorescences* axillary, unbranched, 3-flowered; peduncles ± flattened and broadening towards pedicels, 12–20 mm long; pedicels flattened, 11–15 mm long. *Buds* not glaucous, clavate, 6–9 mm long, 4–6 mm wide; hypanthium obconical, tapering to pedicel, with four longitudinal ribs, most prominent at the base of the hypanthium, sepals present but not conspicuous; operculum flattened-hemispherical, rounded, ± equal in width to hypanthium, smooth, pale green to yellow. *Flowers* white. *Stamens* conspicuously bundled in four clusters, inflexed, all fertile; anthers versatile, oblong, opening by longitudinal slits. *Ovules* in 4–6 vertical rows. *Fruits* often conspicuous in or above crown, glossy, green to yellow-orange, not glaucous, ovoid to somewhat barrel-shaped, sepals sometimes persisting as inconspicuous teeth on rim, 10–22 mm long, 13–17 mm wide, with four very weak to prominent longitudinal ribs, terete in transverse section; operculum scar narrow and obscured by sepals; disc descending, 2–4 mm wide; valves 3 or 4, base enclosed, tips below rim level. *Seeds* irregularly pyramidal, 5–6.5 mm long, dull, dark grey-brown to almost black, with a narrow, thin wing extending around the dorsal edge; chaff glossy, dark red-brown.

*Selected specimens examined*. WESTERN AUSTRALIA (west to east): near Condingup, 33°46'56"S, 122°31'22"E, 8 Dec. 1992, D. Nicolle 171 (PERTH); 76.6 miles [123 km] E of Esperance, 25 Mar. 1968, G.M. Chippendale 402 (AD, PERTH); sandy slope on NW side of Howick Hill, c. 1 km from summit, 8 Nov. 1983, L. Haegi 2610 & P.S. Short (AD, PERTH); scrub N of Fisheries Rd, c. 10 km ESE of Howick Hill, 17 Sep. 1968, E.N.S. Jackson 1233 (AD, CANB, PERTH, K); 2.5 km S of Tower Peak, Ragged

Range, 6 Jan. 1979, *Crisp* 4827 (CANB, NSW, PERTH); near Israelite Bay, 33°35'06"S, 123°34'42"E, 21 Nov. 1994, *D. Nicolle* 1092 (PERTH).

*Distribution and habitat.* Endemic to Western Australia, from the Condingup area in the west, eastwards to at least Israelite Bay (Figure 3). It grows in white sand over limestone. Associated species include *Eucalyptus incrassata* Labill. *sens. lat.*, *E. cooperiana* F. Muell., *E. micranthera* F. Muell. ex Benth., *E. discreta* Brooker, *E. leptocalyx* Blakely, *E. tetraptera* Turcz., *E. conglobata* (R. Br. ex Benth.) Maiden and *E. lehmannii* (Schauer) Benth. The distribution of *E. extrica* is more coastal than that of its closest postulated relative, *E. pleurocarpa*, and the former is only known within 35 km of the coast. *E. pleurocarpa*, which occurs largely to the west, extends more inland, at least to Peak Charles and north-west of Lake King. The eastern distributional limit of *E. extrica* is unknown; it possibly occurs further east of Israelite Bay in inaccessible and poorly surveyed coastal mallee shrublands.

*Flowering period.* January to April.

*Conservation status.* Abundant within its known distribution and well represented in conserved areas such as Cape Arid National Park.

*Etymology.* From the Latin *extrico* – disentangled, free, referring to the identity of this species being previously confused with that of *E. tetragona*.

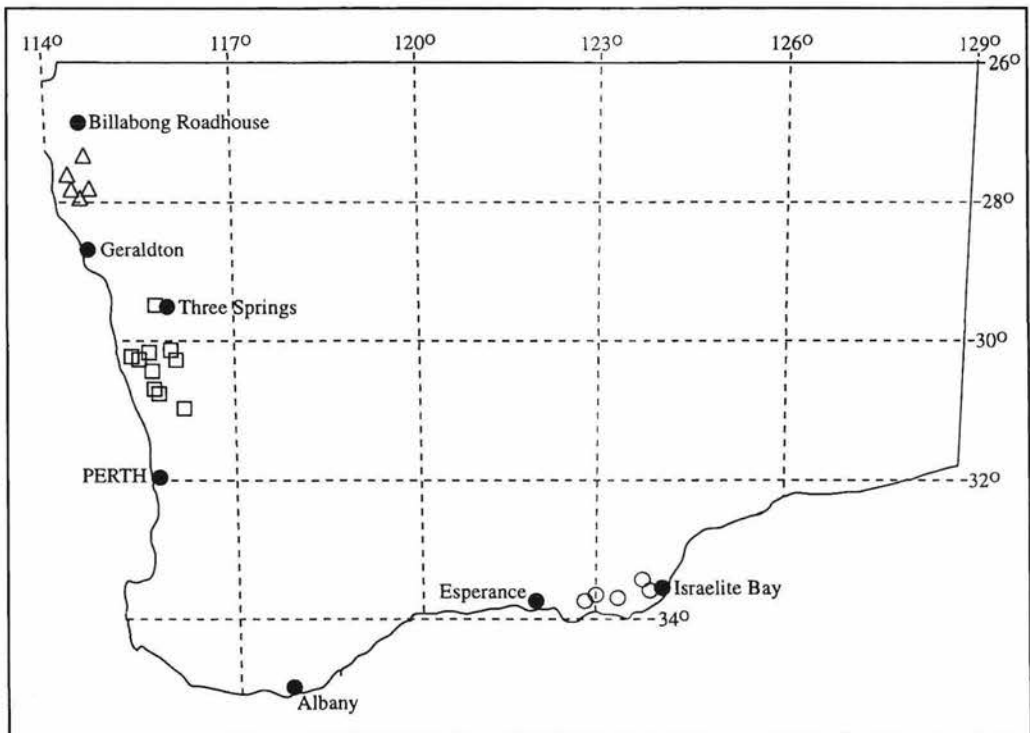


Figure 3. Map of Western Australia below 26°S, showing the distribution of *Eucalyptus gittinsii* subsp. *gittinsii*  $\Delta$  and *illucida*  $\square$  and *Eucalyptus extrica*  $\circ$ .

*Notes and affinities.* Distinguished from *E. pleurocarpa* in the non-pruinose branchlets, mature adult leaves, buds and fruits (all strongly pruinose in *E. pleurocarpa*); the longer and narrower, broad-lanceolate, green adult leaves (elliptic to ovate and grey in *E. pleurocarpa*); the slightly longer peduncles and pedicels; and the ovoid fruits (globoid in *E. pleurocarpa*).

This taxon has in the past been referred to as the "green" (Chippendale, 1988) or "non-glaucous" (Elliot & Jones, 1986) variant of *E. tetragona*. The type of *E. tetragona* is now recognized as representing an intergrade between the common and well-known tallerack (*E. pleurocarpa*, previously erroneously referred to as *E. tetragona*), and the less widespread "green variant", *E. extrica*.

Intergrades between *E. extrica* and *E. pleurocarpa* occur over a east-west range of about 30 km between the western end of Cape Le Grand National Park and Condingup, with the type of *E. tetragona* from Lucky Bay in Cape Le Grand National Park. These intergrades are recognizable by their crown of lightly glaucous leaves.

*E. extrica* is also superficially similar to *E. gittinsii* subsp. *illucida*, especially in adult leaf morphology. It can be distinguished by the generally coarser adult leaves; the longer peduncles and pedicels; the less prominent sepals on the buds and fruits and the larger, ovoid fruits that are terete in transverse section.

**Eucalyptus series Miniatae** Blakely, Key Eucalypts 14, 72 (1934). *Type: Eucalyptus miniata* A. Cunn. ex Schauer.

A series of five species of tropical Australia, distinguished within *Eucalyptus* subgenus *Eudesmia* by the persistent bark on the trunk(s), the 7- or >7-flowered umbellasters, and especially by the bright orange staminal filaments that occur in a continuous ring. Orange flowers are known elsewhere in the genus (occasional individuals of *E. petiolaris* (Boland) K. Rule have dull orange or apricot-coloured filaments), and in *Corymbia* K.D. Hill & L.A.S. Johnson (*C. ficifolia* (F. Muell.) K.D. Hill & L.A.S. Johnson often has orange-vermilion staminal filaments); however, they are never consistent amongst all individuals within a species nor the clear orange colour of those seen in all species of the *Miniatae*.

### Key to the species of *Eucalyptus* series *Miniatae*

1. Umbellasters >7-flowered
  2. Whole plant strongly glaucous ..... **E. ceracea**
  2. No adult structures glaucous ..... **E. phoenicea**
1. Umbellasters 7-flowered
  3. Branchlets, buds and fruits not glaucous ..... **E. gigantangion**
  3. Branchlets, buds and fruits glaucous
    4. Fruit 45–65 mm long, 35–45 mm wide. Persistent bark papery ..... **E. chartaboma**
    4. Fruit 30–40 mm long, 18–28 mm wide. Persistent bark fibrous ..... **E. miniata**

### 3. *Eucalyptus chartaboma* Nicolle, *sp. nov.*

Affinis *E. miniatae* sed characteribus sequentibus distinguitur: cortex in trunco pallidior squamato-chartaceus, folia adulta angustiora, fructus majores, ovoidei differt.

*Typus*: Mount Garnet to Lappa Junction Road, north of Mount Garnet, 17°32'26"S, 144°57'21"E, Queensland, 2 October 1998, D. Nicolle 2509 (*holo*: BRI; *iso*: CANB).

*Tree*, sometimes several-stemmed, 6–18 m tall. *Lignotubers* present. *Bark* rough for c. 3 m, thick, soft, flaky-papery, pinkish-brown to yellowish-brown to whitish, then smooth above, pale creamy-yellow to white. *Branchlets* glaucous, pith glands absent. *Cotyledons* reniform. *Seedling leaves* opposite for a few pairs then alternate, petiolate, ovate to elliptic, dull, green, both seedling leaves and stems prominently hairy. *Adult leaves* alternate, petiolate, narrow-lanceolate to lanceolate, 85–165 mm long, 10–24 mm wide, glabrous, discolorous, dull, pale green; reticulation dense, with numerous island and intersectional oil glands, lateral veins at 50–65° from midrib. *Inflorescences* axillary, unbranched, 7-flowered; peduncles thick, flattened, 16–25 mm long; pedicels to 3 mm long. *Buds* glaucous, ovoid, 17–20 mm long, 8–10 mm wide; hypanthium pyriform, tapering to pedicel, longitudinally ribbed; operculum hemispherical to conical, rounded, equal in width to hypanthium, smooth to ribbed, both opercula present to anthesis. *Flowers* bright orange. *Stamens* inflexed, all fertile; not bundled (in a continuous ring); anthers versatile, oblong, opening by longitudinal slits. *Ovules* in 4 vertical rows. *Fruits* sessile, glaucous, especially when young, ovoid, 45–65 mm long, 35–45 mm wide, with strong irregular longitudinal ribs; disc steeply descending, to 20 mm wide; valves (3)4, deeply enclosed. *Seeds* ovoid and angular, 5–8 mm long, ± dull, dark grey to black, hilum ventral, reticulum very finely pitted; chaff orange to brown. (Figures 4–6)



Figure 4. Holotype of *Eucalyptus chartaboma* (D. Nicolle 2509).



Figure 5. *Eucalyptus chartaboma* habit from between Pentland and Burra, Queensland.



Figure 6. Bark on lower trunk of *Eucalyptus chartaboma*.

*Selected specimens examined.* QUEENSLAND (south to north): 8 miles [13 km] SW of Pentland Township, 21 June 1953, *R.A. Perry* 3583 (AD, BRI); headwaters of Bett's Creek, White Mountains National Park, W of Charters Towers, 8 Apr. 1992, *A.R. Bean* 4255 (BRI); near Croydon on the Gulf Developmental road, 18°13'17"S, 142°48'07"E, 15 Apr. 1995, *D. Nicolle* 1327 (AD); 85 km W of Georgetown, W of Gilbert River, 8 Mar. 1990, *M.I.H. Brooker* 10416 (BRI, CANB, DNA, MEL, NSW); "Mount Surprise", beside Six Mile Rd, c. 2 km from O'Brians Creek crossing, 8 Apr. 1992, *I.G. Champion* 635 (BRI); Mt Eliza, 8 km NW of Mt Surprise, 20 Jan. 1993, *A.R. Bean* 5499 & *P.I. Forster* (BRI); Stannary Hills Road 8 miles [13 km] S of Mutchilba, 31 May 1971, *G. Stocker* 728 (BRI); 20.4 miles [33 km] from Walsh's River crossing towards Wrotham Park, 27 Jan. 1972, *M.I.H. Brooker* 3373 (BRI); 36 km from the Walsh River crossing on the Mungana–Wrotham Park road, 7 Feb. 1980, *J.R. Clarkson* 2810 (BRI, CANB, NSW, Mo); 138 miles [222 km] SW of Cooktown, 171 miles [275 km] SE of mouth of Mitchell River, 19 Aug. 1966, *Story* 8014 (BRI, CANB, K).

*Distribution and habitat.* Endemic to Queensland, occurring from the Croydon area east to near Einasleigh and Mount Garnet and north to Maitland Downs on southern Cape York Peninsula (Figure 7). There is an apparently disjunct occurrence to the south in the Burra–Pentland area. Subsequent field survey will determine if the southern population is really disjunct or if it is an artefact of inadequate field survey in the area between the two populations. *E. chartaboma* usually occurs on locally elevated sites in gritty sands or gravelly soils. Recorded associated species include *Corymbia leichhardtii* (Bailey) K.D. Hill & L.A.S. Johnson, *C. ligans* K.D. Hill & L.A.S. Johnson (subsp. *novacastrensis* K.D. Hill & L.A.S. Johnson), *C. pocillum* (D.J. Carr & S.G.M. Carr) K.D. Hill & L.A.S. Johnson, *C. "serendipita"*, *C. stockeri* (D.J. Carr & S.G.M. Carr) K.D. Hill & L.A.S. Johnson, *Eucalyptus crebra* F. Muell., *E. persistens* L. Johnson & K. Hill, and *E. tetradonta* F. Muell.

*Eucalyptus miniata*, as now circumscribed, extends only into the far north-west of Queensland, west of the Burke Developmental Road between Normanton and Cloncurry.

*Flowering period.* February to May.

*Conservation status.* Widespread and not considered to be at risk. Recorded from White Mountains National Park in the south of its distribution.

*Etymology.* From the Greek *charte* – of paper and *bomos* – base, referring to the papery persistent bark on the trunk(s), especially compared to the other species of *E. ser. Miniatae*.

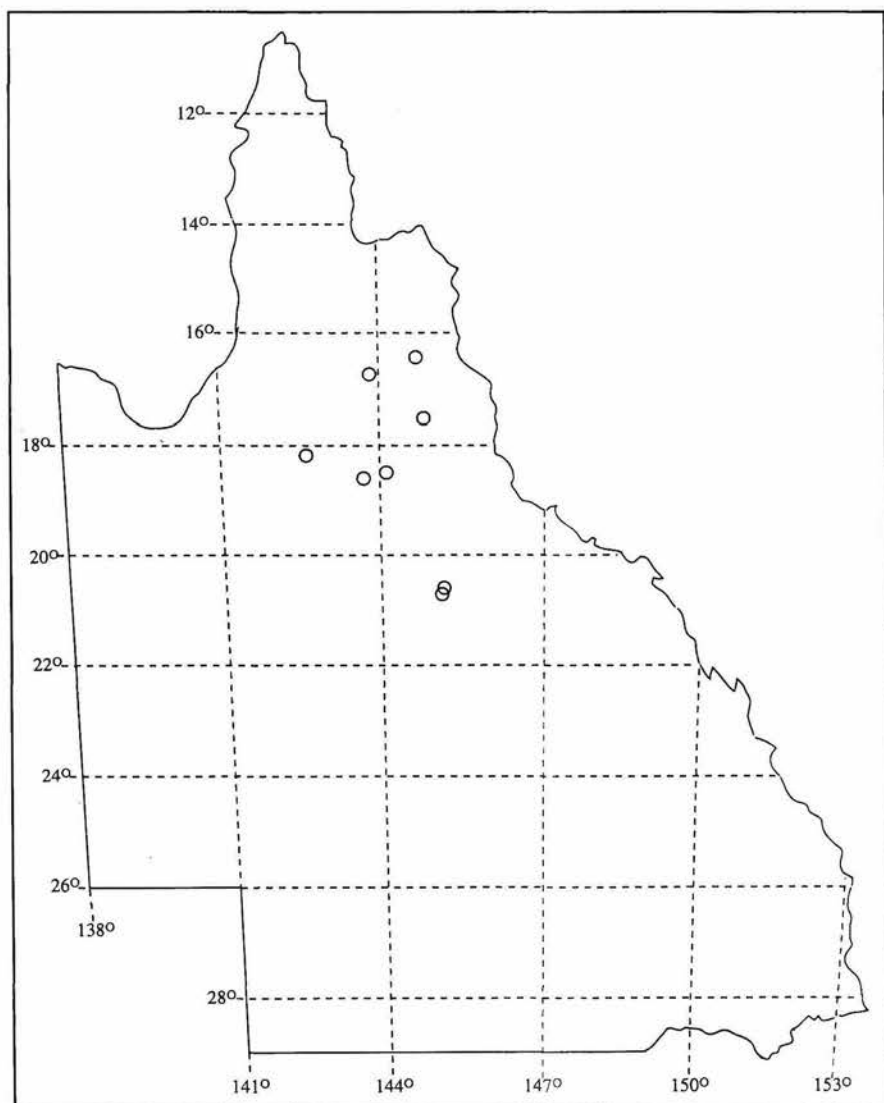


Figure 7. Distribution of *Eucalyptus chartaboma* in Queensland.

*Notes and affinities.* Distinguished from *E. miniata* by the flaky-papery, paler-coloured rough bark, the narrower adult leaves and the larger, ovoid fruits. Distinguished from *E. gigantangion* L. Johnson & K. Hill by the flaky-papery, paler-coloured persistent rough bark, the glaucous branchlets, buds and fruits, the autumn flowering time and the ovoid, ribbed fruits. The main characters distinguishing these three species are shown in Table 1.

A distinctive species in the field because of its flaky-papery rough bark on the lower trunk (Figure 6), bright orange flowers and massive fruits, which are probably the longest in the genus, possibly equalled only by the fruits of the related *E. gigantangion* and the unrelated *E. pyriformis* Turcz. and *E. youngiana* F. Muell.

On favourable sites in the wetter, northern part of its range, *E. miniata* grows up to 30 metres tall, much larger than *E. chartaboma* is known to. On less favourable sites in areas of lower rainfall, *E. miniata* is a lower woodland tree and can be indistinguishable in habit from *E. chartaboma*.

Table 1. Differentiating characters between *Eucalyptus miniata*, *E. chartaboma* and *E. gigantangion*.

	<i>E. miniata</i>	<i>E. chartaboma</i>	<i>E. gigantangion</i>
<b>Distribution</b>	tropical WA, NT, just extending into Qld	central northern Qld	Arnhem Land plateau, NT, parapatric with <i>E. miniata</i>
<b>Persistent bark</b>	fibrous (long fibres), grey-brown to reddish brown	flaky-papery (small thin scales), white to yellowish brown to pinkish brown	fibrous (long fibres), grey-brown to reddish brown
<b>Adult leaves</b>	broad-lanceolate to lanceolate, 20–40 mm wide	narrow-lanceolate to lanceolate, 10–24 mm wide	narrow-lanceolate to lanceolate, 14–23 mm wide
<b>Pruinosity</b>	strongly glaucous on branchlets, buds and fruits	strongly glaucous on branchlets, buds and fruits	absent
<b>Flowering period</b>	autumn to early winter	autumn	late winter to early spring
<b>Fruit shape</b>	cylindrical-ovoid	ovoid	urceolate with a distinct neck
<b>Fruit size</b>	30–40 mm long 18–28 mm wide	45–65 mm long 35–45 mm wide	45–70 mm long 30–50 mm wide
<b>Fruit ribbing</b>	prominently to extremely ribbed	prominently ribbed	almost smooth to weakly ribbed

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