More about *Corymbia*

Notes

Classification
Corymbia (Hill & Johnson (1995)); *Eucalyptus* subgenus *Corymbia* and subgenus *Blakella* (Brooker (2000)). In EUCLID we follow Hill & Johnson and use *Corymbia*.

General notes
Species of the genus *Corymbia* are woody trees common in northern Australia from east to west extending to the arid interior and down the eastern and western coastal fringes to the south-eastern and south-western corners of the country but are absent from other southern areas. *Corymbia* species have compound inflorescences that either terminate the branchlets or, in some species groups, are axillary. Buds have two opercula, the outer or calycine operculum with segments fully fused, the inner or petaline operculum with segments partly or fully fused, regularly inflexed stamens, versatile oblong anthers dehiscing by longitudinal slits, and ovules not regularly arranged in rows on the placentae. Fruit have the disc descending inside the orifice and valves fully enclosed (not easily visible). Seedlings have large reniform cotyledons. Juvenile growth bears setae (multicellular bristle-glands) on the stem and leaves at least for a few leaf pairs, often for many pairs. Simple unicellular hairs are sometimes also present on juvenile growth on epidermal cells and also occasionally ornament the setae. Adult leaves have wide-spreading lateral veins closely spaced (penniveined) with dense reticulation in between.

As treated in EUCLID *Corymbia* has 100 species and subspecies. The major groups within *Corymbia* are the Red bloodwoods (59 species and subspecies), Yellow bloodwoods (11 species), Ghost gums (24 species and subspecies), Spotted gums (three species) plus three species that don't fit easily in these groups.

More about Red bloodwoods

Corymbia section *Rufaria* (Hill & Johnson (1995)); *Eucalyptus* subgenus *Corymbia* section *Notiales* and section *Septentrionales* subsection *Alatae* (Brooker (2000)).

This is the largest group in *Corymbia*. Species belonging to this group are most readily identifiable in the field by looking at the fruit, bud, seed and adult leaf characters. If the fruit are large and woody with valves enclosed, adult leaves have wide-angled closely placed side-veins, buds are clustered terminal to the branchlets and lack an operculum scar, and the seeds have a terminal wing, then your specimen will belong here. Difficulties arise because three species have wingless seed and because some species retain juvenile leaves in the crown and have different leaf venation accordingly.

Important characters are: trees, forming a lignotuber, a few species also rhizomatous; bark rough or smooth, when rough often tessellated, sometimes not clearly so, rough bark thick or thin; if smooth-barked then shedding in flakes. Seedling leaves setose with multicellular bristle-glands at least for a few pairs, but simple hairs only present in some species; juvenile leaves petiolate or sessile, peltate or non-peltate; adult leaves formed in most species (in one group of species juvenile leaves persisting to the crown and adult leaves not formed); adult leaves lanceolate, discolorous or concolorous, venation pinnate at a wide angle to the midrib, reticulation dense or very dense, intramarginal vein present or not visible (confluent with the margin); inflorescence terminal and compound, obvious on the outside of the crown; buds retain outer operculum during development shedding together with the inner operculum at flowering and the inner and outer opercula may be fused to each other; fruit woody often thickly so; seed relatively large (for a eucalypt), usually brown, in most species ellipsoidal in outline, flattened with a terminal dry membranous wing often as long as the body of the seed and with the hilum placed near the margin of the body towards the wing; in three species only the seed more laterally compressed with the hilum central on a narrowly elongated ventral face and the wing absent or virtually so (only the three southern species *C. gummifera, C. calophylla, C. haematoxylon*).

More about Yellow bloodwoods

Corymbia section *Ochraria* (Hill & Johnson (1995)); *Eucalyptus* subgenus *Corymbia* section *Septentrionales* subsection *Apterae* series *Naviculares* (Brooker (2000)).

The yellow bloodwoods as a group are mostly confined to Queensland with one species, *Corymbia eximia,* endemic in New South Wales. They are easily distinguished in the field from other eucalypts by their bark, which is yellow to orange in colour, sometimes yellow-grey, and thinly flaky in texture, thickly covering the trunk and usually the banches also.

Important characters are: trees forming a lignotuber, with bark as outlined above; large reniform/orbicular cotyledons, seedling leaves setose; juvenile leaves setose or glabrous, becoming peltate for at least a few nodes after node 3–5 in most species, in some species this condition persists to the crown of the tree; adult leaves formed in most species, lanceolate, usually concolorous, venation pinnate at a wide angle to the midrib, reticulation dense or very dense; inflorescence terminal and compound, obvious on the outside of the crown;

buds shed outer operculum during development leaving a scar; fruit woody, more or less urceolate; seeds wingless, dorsi-ventrally flattened, boat-shaped (more or less elliptical, ventrally dished, often dorsally keeled), seedcoat reddish brown and glossy, often finely cracked, hilum ventral and central.

The only non-bloodwood species likely to be confused with the yellow bloodwoods generally is *Eucalyptus similis* (in *Eucalyptus* subgenus *Eudesmia*), which is a Queensland endemic. It has similar bark but differs fundamentally in having buds in simple axillary umbels of seven, and it lacks the outer operculum, having instead four calyx teeth and a single operculum of petaline origin. Bud features as well as bark colour also separate the yellow bloodwoods from species in the so-called red bloodwood group. Buds in the yellow bloodwoods shed the outer (calycine) operculum during development whereas the red bloodwoods retain the outer operculum until flowering when both sepaline and petaline opercula are shed together. Seeds of the yellow bloodwoods are weakly dorsally keeled and lack a terminal wing whereas most species of red bloodwoods in eastern Australia have seed with a prominent terminal wing. Any species lacking this wing can be distinguished by the operculum features.

Spotted gums and un-grouped species in Corymbia

More about Spotted gums

Corymbia section *Politaria* (Hill & Johnson (1995)); *Eucalyptus* subgenus *Corymbia* section *Septentrionales* subsection *Apterae* series *Maculatae* (Brooker (2000)).

There are only three species in this group, distinguished from other bloodwoods in the field by their smooth bark, concolorous adult leaves, buds arranged in compound axillary raceme-like inflorescences, buds shedding outer operculum just prior to or at flowering, fruit woody and urceolate, and seeds dorsi-ventrally flattened with central ventral hilum and finely cracked seedcoat. Juvenile leaves are setose, peltate for a few to many pairs.

Ungrouped species in Corymbia: three unusual species

1. Corymbia jacobsiana
Corymbia section *Fundoria* (Hill & Johnson (1995)); *Eucalyptus* subgenus *Corymbia* section *Septentrionales* subsection *Apterae* series *Jacobsianae* (Brooker (2000)).
Isolated on the basis of morphology from all other bloodwoods by the combination of rough stringybark, juvenile leaves sparsely setose but densely carpeted on the underside with simple white hairs, adult leaves strongly discolorous, buds arranged in a terminal inflorescence, retaining outer operculum until flowering, fruit woody and urceolate, wingless dorsi-ventrally flattened seed with centrally placed hilum.

2. Corymbia trachyphloia
Corymbia section *Apteria* (Hill & Johnson (1995)); *Eucalyptus* subgenus *Corymbia* section *Septentrionales* subsection *Apterae* series *Trachyphloiae* (Brooker (2000)).
Isolated on the basis of morphology from the other bloodwoods by the combination of rough, soft to corky yellow-brown bark throughout, peltate juvenile leaves setose, adult leaves discolorous, buds arranged in a terminal inflorescence, retaining outer operculum until flowering, fruit woody but thin-walled compared with other bloodwood species, wingless dorsi-ventrally flattened seed with centrally placed hilum.

3. Corymbia torelliana
Corymbia section *Cadagaria* (Hill & Johnson (1995)); *Eucalyptus* subgenus *Corymbia* section *Septentrionales* subsection *Apterae* series *Torellianae* (Brooker (2000)).
Isolated on the basis of morphology from other bloodwoods by the combination of bark rough on lower trunk only, juvenile leaves alternate on stem very early (by node 3), rough with dense setae, these leaves persisting to form the reproductive crown with true adult leaves rarely developing, buds arranged in a terminal compound inflorescence, buds shed outer operculum early in development, fruit woody and obese-urceolate, seeds irregularly ovoid, wingless. This species, which, unusually for a eucalypt, occurs in rainforest, is close to the yellow bloodwoods; however, the rough bark is hard, the smooth bark sheds in large sheets and the seeds are not all that flattened.

More about Ghost gums

Corymbia section *Blakearia* (Hill & Johnson, (1995)); *Eucalyptus* subgenus *Blakella* (Brooker, (2000)).

The Ghost gums are a classic northern Australian group of eucalypts, distributed from warm temperate latitudes to the monsoonal tropics, occupying a wide range of habitats. They are trees with mid-green crowns and white smooth bark on the branches and upper trunk at least, often entirely smooth-barked. Where rough bark does occur on the trunk it is flaky to firmly attached and when firm is often clearly tessellated. The following three features together are immediate identifiers for this group of eucalypts.

1. Seeds flat or saucer-shaped, brown.
2. Leaf venation is densely reticulate and lacking in visible oil glands. Main side-veins are not numerous, nor prominent and clearly parallel (i.e. venation not classically pinnate).
3. The umbels of the inflorescence are arranged in compound (branched) structures in the leaf axils.

There are 24 species and subspecies of Ghost gum. There are two main subgroups of Ghost gums—those with condensed inflorescences where the branches within the inflorescence and often the peduncles are reduced in length and difficult to see; and those

with expanded inflorescences, where the branches and peduncles are easily seen. Confusing this picture slightly is the fact that some condensed inflorescence species have individual buds with very elongated pedicels giving a false impression of an expanded inflorescence. For this reason condensed and expanded inflorescence types are not used as key characters in EUCLID.

The most important characters used in separating species of Ghost gum are length of pedicel of bud or fruit, width of juvenile or adult leaves, and whether the adult leaves and branchlets are rough or smooth to touch (setose or not).

Some Ghost gum species from monsoonal areas are partially or completely deciduous in the dry season (May to November), although for any given species this may vary from plant to plant in a population, with some plants shedding all leaves, others shedding only part of the crown. New crown leaves develop just prior to the the return of the wet season and surprisingly in some species the flush of growth is not green but a rich claret colour. Some species develop the new season's inflorescence before the new season's leaves develop, i.e. flowering on naked branchlets.

After flowering, seed maturation is rapid with some species shedding the seed within six to eight weeks of flowering. The capsules of Ghost gum species tend to be held so they point downwards and upon dehiscence the seed falls out. No Ghost gum species seems to hold the seed on the plant in unopened capsules. It is possible to collect very small quantities of seed from masses of old dehisced capsules still hanging on the tree because it seems not every last seed falls out.

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