

A guide to eucalypt species identification

Peter White

There are approximately 900 currently recognized species of Eucalyptus, Corymbia and Angophora. On a handful, there can be characters that are so distinctive, that an accurate diagnosis can be achieved with minimal effort. However, with so many species, several parts of a plant often must be examined before a correct identification can be attained.

These notes have been prepared to help would be eucalypt enthusiasts overcome some of the common pitfalls associated with identifying species of this genus (and are applicable to other genera). Some features and growth habits need to be viewed cautiously as they can vary over time e.g. leaf size and bark texture, while others may be influenced by environmental conditions e.g. form. Mature leaf size of *E. occidentalis* can vary from 5 - 14cm long.

All portions of the plant selected in the identification process must be fully formed.

1. Buds

Most flowers (either in singles or multiples) are arranged on the top of a stalk (**peduncle**). Each of the multiple flowers is further arrayed on their own stalk (**pedicle**) such as *E. falcata*. These flowers without pedicles (and or peduncles) are referred to as **sessile** (*E. phenax*). Peduncles can be straight (*E. subangusta*) or recurved (*E. thamnoides*).

Individual flowers have no obvious petals or sepals. The lower part of the bud becomes the cup of the flower, enlarging or hardening to become the **hypanthium** or calyx tube. Petals are probably present; fused together to form the bud cap or **operculum**.

Usually there are two opercula, one of which falls off as the bud develops, leaving a distinctive scar. However, there are some species where this does not happen (*E. marginata*). Operculum characters can be very important, both in their shape but in relationship to the size of the hypanthium

2. Flowers

When the operculum falls off at flowering time, the stamens are exposed. In some cases, the stamens are curled in on themselves or **inflexed**, other times they are straight (*E. eremophila*) and in a few instances can be a mixture of both (*E. vegrandis* subsp. *recondita*)

The stamen consists of the filament or stalk, at the end of which are the pollen bearing anthers. How the anthers are attached to the filament is important with some being attached at the base (basifixed) such as with *E. horistes*, or attached at the back, where it is dorsifixed or versatile. On a few species, such as *E. calycogona*, the outer stamens are without anthers (staminoids).

The style or the pollen tube protrudes from the centre to the flower and is usually straight. However, a few species have a distinctively twisted style (*E. albida*)

2. Seed capsules

The stamens wither and fall off once the flower has been pollinated and fertilization has taken place. The calyx tube undergoes modification to form a woody capsule, which

contains the seed. The capsule has a series of valves that open to release the seed. Sometimes these valves are quite pronounced and persistent (**exserted** eg *E. longicornis*, *E. argyphaea*), other species are **inserted**, e.g., *E. myriadena*. As with the buds, the capsules are sessile or pedicellate. The tops of the fruit can be a distinctive shape (*E. macrocarpa*), be partially masked by the **staminophore**, which is where the stamens connected to the capsule (*E. eremophila*), but there can be numerous alternatives.

3. **Foliage**

Eucalypt leaves are simple, entire, and have a central midrib. Lateral veins diverge from the midrib, may be parallel or form a network with one another (**anastomose**). Intramarginal veins are often present close to the leaf margin (*E. loxophleba*). Leaves are commonly lanceolate or broadly lanceolate. However, leaf size and shape can vary considerably in the same plant as it matures (*E. loxophleba*, *E. flocktoniae*, *E. albida*, and *E. uncinata*). Juvenile, intermediate and adult foliage can all assist with the diagnostic process.

Leaves consist of a leaf blade (**lamina**) usually attached to the branchlet by a leaf stalk (**petiole**). Sometimes the leaf is stalkless (sessile) or may have opposite leaves that are joined or connate (*E. uncinata*). Leaves are usually arranged alternately along the branchlet or in a few cases can be opposite. Leaf arrangement can change as the plant matures.

Oil glands are embedded in the surface of many species, but not present in all species of eucalypt. Some are surrounded by the anastomose (island); others are linked (intersectional).

Leaves are usually have a glossy sheen, but can be matt (*E. hebetifolia*). Amounts of leaf gloss can alter at the plant ages (*E. phaenophylla*). Leaves are usually the same colour on either side (**concolorous**) but can be dark on the surface and paler beneath (**discolorous**) such as *Corymbia calophylla*. However, plants do not exhibit both conditions simultaneously.

Leaves are usually **glabrous** (without hairs) and can have a pale white powdery covering (**glaucous**). *E. wandoo* and *E. capillosa* are easily distinguished by absence or presence of leaf hairs. *E. neutra* is often characterised by the glaucous bloom on the leaves and the buds.

4. **Bark**

Bark can be a deceptive feature if not looked at correctly. In many cases it is the qualitative expression that is important rather than the quantitative. For example, the fact that a tree may have rough basal bark and smooth upper bark is more important than how far the rough bark goes up the stem.

Bark types common found in the Wheatbelt include;

- Persistent to and including small branches - *Corymbia calophylla*
- Persistent to lower limbs - *E. loxophleba* subsp. *loxophleba*.
- Smooth over entire trunk - *E. salubris*
- Peeling or basal accumulation - *E. phaenophylla* subsp. *phaenophylla*

Bark texture can be very variable within a species e.g. juvenile *E. wandoo* has rough bark that changes to smooth as the tree ages.

5. Form

How a plant grows can be a useful guide for identification, but care must be exercised in many instances e.g. *E. marginata* at Dwellingup is a large trees whereas at Wellstead it is reduced to a low sprawling bush.

Changes in form can be induced by site quality, crown competition, mechanical damage, insect attack, fire etc.

Various attempts have been made to define the growth habit (or regenerative requirements) of eucalypts. Contemporary descriptions are;

Sprouters

- **Mallee.** A plant with a distinctive lignotuber, which is usually multi-stemmed and resprouts from the lignotuber after fire. However, in the absence of fire, mallees can grow as a single stem plant, e.g. *E. myriadena*.
- **Tree.** Usually a single stemmed upright plant which while lignotuberous, usually resprouts along the trunk from dormant or epicormic shoots (*E. marginata*).

Non sprouters

- **Mallet.** Usually a single stemmed upright tree, but with no lignotuber or epicormic shoots. This form dies outright after a fire and regenerates from seed. This name, used here, includes the term “marlock”.

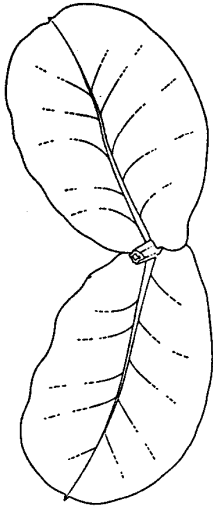
Several species have been separated recently based on the absence / presence of the lignotuber;

Mallets	Mallees
<i>E. argyphaea</i>	<i>E. falcata</i>
<i>E. astringens</i>	<i>E. thamnoides</i>
<i>E. gardneri</i>	<i>E. pluricaulis</i>
<i>E. prolixa</i>	<i>E. calycogona</i>
<i>E. urna</i>	<i>E. flocktoniae</i>

Note - photographs are a guide only. Colour will vary between collected specimens and photographs. The portions of plants photographed are not always a truly representative sample, especially on species that have a wide distribution - read the text!

You can identify eucalypts using the following easy to use software: EUCLID Eucalypts of Southern Australia, Brooker and Slee, third Edition. Format: CD-ROM & Manual ISBN/ISSN: 0643068368.

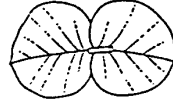
<http://www.cpbr.gov.au/cpbr/cd-keys/euclid3/index.html>



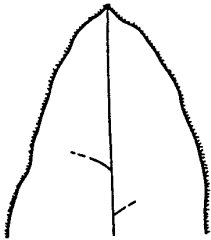
Amplexicaul leaf



Connate leaves



Orbicular leaves



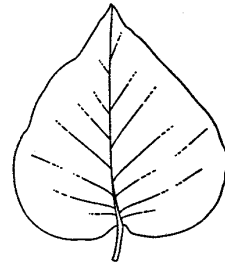
Hairy leaf



Undulate leaf



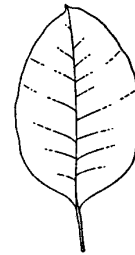
Ovate leaf



Cordate leaf



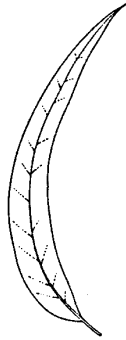
Broad-lanceolate



Elliptical leaf



Linear leaf



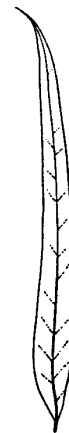
Falcate leaf



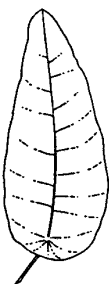
Emarginate leaf



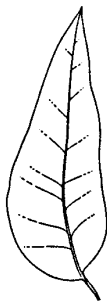
Lanceolate leaf



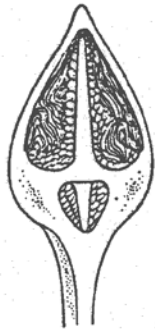
Narrow-lanceolate



Peltate leaf



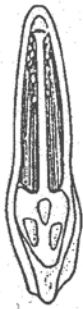
Oblique leaf



Stamens variously flexed in bud



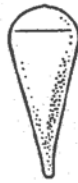
Stamens oblique in bud



Stamens erect in bud



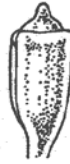
Stamens inflexed in bud



Clavate bud



Ovoid bud



Oblong bud



Cylindrical bud



Fusiform bud



Elongated bud



Double-conic bud



Globose bud



Pyriform bud



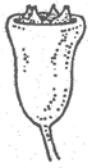
Beaked operculum



Conical operculum



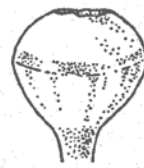
Hemispherical operculum



Fruit with exerted valves



Disc of fruit level



Disc of fruit ascending



Urceolate fruit



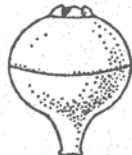
Campanulate fruit



Barrel-shaped fruit



Truncate-globose fruit



Hemispherical fruit
(base only, surmounted by
ascending disc and slightly
exserted valves)



Obconical fruit



Cupular fruit



Cylindrical fruit

