

1 BACKGROUND TO CAMPHOR LAUREL

Weed control is more successful when you know all about the weeds you're dealing with. The following chapter gives a background to camphor laurel, from its introduction to Australia, its general appearance and attributes, to native species that look similar to it. Maps highlighting distribution in a number of catchments are also included.

As camphor laurels have both negative and positive values, these have been summarised in 1.4 so that they can be considered when planning control programs.

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1.1 **What are camphor laurels?**

1.1.1 Introduction to Australia

Camphor laurels (*Cinnamomum camphora*) are indigenous to China, Taiwan, Japan, parts of Vietnam and the Korean island of Cheju-do (Stubbs et. al. 1999). The earliest official date of introduction to Australia was in 1854 although it may have been as early as 1822 (Firth 1979, Stubbs et. al. 1999).

In Northern New South Wales camphor laurel was actively promoted as a shade and street tree and was planted in many school playgrounds, cemeteries and parks. Following widespread clearing of native vegetation in the late 1800's and early 1900's it was actively planted as a shade tree in agricultural areas. It is now a serious weed throughout the region, especially where rainfall exceeds 1000mm and frosts are infrequent (Firth 1981). It is most abundant on red soils in former rainforest areas.

In China camphor laurel trees can grow as old as 500 years (Firth 1979).



Plate 1:
Camphor laurel shade trees spreading on agricultural land. Source: T.Scanlon

1.1.2 General appearance

Camphor laurel is a single or multi-stemmed evergreen tree growing 20-30m tall and with a trunk 1 to 2m in diameter. It has a spreading habit when growing in the open.

Significant variation in the shape, leaf characteristics, oil content and fruiting times exists between individual trees growing in Australia.



Plate 2: (left)
Camphor laurel street trees.
Source: P.Jones

Plate 3: (right) Bark of a mature camphor laurel.
Source: T.Scanlon.



1.1.3 Bark

Grey – brown in colour. Moderately rough. Fissured or cracked when mature.

1.1.4 Leaves

Leaves are glossy green above, grey green with a waxy bloom below, 5-10cm long and 2.5-5cm wide. Characteristically 3-veined, the veins spread from near the base of the leaf. Leaves are aromatic (smelling of camphor oil) when crushed.

Camphor laurels are easily recognisable in spring when their new foliage is bright green in colour. Some leaves turn yellow or red in winter. It has red or yellow stems. It is sometimes mistaken for native laurels.



Plate 4: Camphor laurel leaves & young flower buds. Source: Steenbeeke (1999b)



1.1.5 Flowering and fruiting

Camphor laurels generally start flowering at about 7 years in age, depending on the location (Firth 1986). In Spring, masses of minute white flowers grow from the point where the leaves meet the stem (leaf axil) (see plate 3 above).

Fruits are small, green berries (about 10mm in diameter) which turn black on ripening in March-September and contain a single seed about 8mm in diameter (Harden 1990, Stewart 2000). Over 110,000 seeds can be produced per mature tree per year (Firth 1986) and most seeds generally remain viable for 2-3 years (Firth 1979, 1981).

Plate 5: Ripening camphor laurel fruit.
Source: Steenbeeke (1999b)

1.1.6 Chemistry

At least 5 different forms of camphor laurel, based on chemical composition, have been recorded in its natural range, and 2 of these have been recorded in Australia (Firth 1979, Stubbs et. al. 1999). Most research on the plant's chemistry has focused on analysing leaf oil, which comprises about 1-2% of the weight of the leaf.

Stubbs and Brushett (in press) analysed camphor laurel leaf oil from Sydney to the Tweed River using gas chromatography. They recorded a "camphor" type containing on average about 70% camphor, and a cineole type, containing about 50% 1,8-cineole with less than 1% camphor.

Firth (1979), studying trees in Grafton and Lismore, suggested that the two separate forms may also be identified by their bark characteristics and to a lesser extent their leaf odour, however further research is needed. Field workers in China can distinguish the different forms by the tree's odour (Laurence 1995, cited in Stubbs et. al. 1999).

Battaglia (1995) and Wren (1988) state that camphor oil also contains the toxic chemical safrole. Friend (1999) recorded safrole in north coast camphor laurels, however, Stubbs and Brushett (in press) found no trace of safrole in any of the samples that they analysed.

1.1.7 Why is it a weed in Australia and not China?

In areas where camphor laurel is indigenous it is not a weed because natural predators have built up over thousands of years. These predators have created a natural balance where some trees grow strongly and others are attacked and killed by insects, fungi etc. Harvesting of camphor laurel and clearing of indigenous vegetation in these countries over thousands of years has also contributed to the current distribution of the species.

In Australia there are few significant predators and camphor laurels grow and spread rapidly, invading agricultural areas and restricting regeneration of native vegetation.

Examples of known natural predators of camphor laurels growing in other countries include a nuclear polyhedrosis virus *Eriogyna pyretorum*, the boring and feeding larvae of *Thymiatrix* sp., the Camphor leaf caterpillar *Charaxes bernardus Fabricius*, larvae of *Actias selene ningpoana* from Taiwan and the insect *Fruhstorferiola tonkinaris*. These natural predators may not be suitable for use on the species in Australia. They may, in fact, prefer Australian species such as Eucalypts or native laurels and cause tremendous damage. Before any biological controls are introduced to Australia there must be certainty that they will only attack the target species (see Chapter 5.3 for more information).

In Australia, some native species do inflict limited damage on camphor laurels such as:

- mountain brushtail possums may eat leaves, new leaf buds and green bark;
- rodents chew green or young bark;
- several native butterflies sometimes lay their eggs on camphor leaves, and;
- several bird species such as white-headed pigeons, brush turkeys and king parrots destroy the seed when they eat them (Bower, pers. comm.).

A root fungus (possibly *Phytophthora cinnamomi*) has inflicted damage to camphor laurels in a number of locations in the region such as the Upper Orara west of Coffs Harbour, Byron hinterland, Duranbah in Tweed Shire and the Teven – Alstonville area (pers. obs., Cox, pers. comm., Bower, pers. comm.). Most damage has been observed when other factors such as ringbarking from native vines or fences has also damaged the trees.

1.2 **Look-alike species**

A number of native species have been mistaken for camphor laurel in the past, leading to time, energy and money being spent controlling plants that can, in fact help control them. It is important to get it right! If unsure, seek advice – before you control!

Following is a list of native species that have been mistaken for camphor laurels. They have been listed to help you to get to know them. Species are listed in order of their scientific names and distinguishing features are included:

Scientific name	Common name	Distribution	Part that may be confused	Distinguishing features
<i>Alphitonia excelsa</i>	Red Ash	South Coast – North Qld	Bark	Smell of cut bark
<i>Bridelia exaltata</i>	Scrub Ironbark	Manning R. – Central Qld	Bark	Smell of cut bark, leaves. High no. of lateral veins on leaves
<i>Cryptocarya glaucescens</i>	Jackwood	South Coast – North Qld	Leaves	Smell of cut bark and / or crushed leaves. Lack of domatia under leaf
<i>Cryptocarya laevigata</i>	Glossy Laurel	Richmond R. – Qld	3-veined leaves	Smell of cut bark, leaves. Red-yellow fruit. Brown-black bark
<i>Cryptocarya rigida</i>	Rose Maple	Wyong – South Qld	Juvenile leaves	Smell of crushed leaves
<i>Cryptocarya microneura</i>	Murrogun	South Coast – Central Qld	Leaves	Smell of bark, leaves
<i>Cryptocarya obovata</i>	Pepperberry	Wyong – Gympie, Qld	Glossy leaves. Black fruit. Possibly bark.	Large, buttressed. Smell of bark, leaves.
<i>Diospyros species</i>	Ebonies	Various	Leaves. Can be multi-stemmed.	Smell of crushed leaves. Zig-zag leaf arrangement.
<i>Dysoxylum fraserianum</i>	Rosewood	Wyong – South Qld	Bark	Smell of cut bark
<i>Endiandra discolor</i>	Rose Walnut	Gosford – North Qld	Leaves	Smell of leaves, cut bark. Large domatia under leaf.
<i>Endiandra floydii</i>	Crystal Creek Walnut	Near McPherson's Range only	Leaves	Smell of cut bark, crushed leaves (but threatened species: cannot be harmed)
<i>Endiandra muelleri</i>	Mueller's Walnut	Hunter Valley – Central Qld	Leaves	Smell of cut bark, leaves. Buttressed & flanged bark
<i>Glochidion species</i>	Cheese Trees	<i>G.ferdinandi</i> : South Coast – Qld	Leaves	Smell of cut bark, zig-zag leaf arrangement. Fruit looks like "minature pumpkins"
<i>Mallotus species</i>	Kamalas	Various	Leaves	Smell of cut bark, leaves. Leaves often hairy underneath. Fruit often coated in red or yellow dye.
<i>Neolitsea australiensis</i>	Smooth-barked bolly gum	Gosford – North Qld	Leaves	Smell of cut bark, leaves. Smooth bark. Large fruits.
<i>Neolitsea dealbata</i>	Hairy-leaved bolly gum	Illawarra – North Qld	Leaves, possibly fruits	Branchlets clothed in dense rusty hairs. Leaves grouped at end of branchlets.
<i>Rhodomyrtus psidioides</i>	Native guava	Gosford – Gympie, Qld	Bark (especially when medium sized)	Smell of cut bark
<i>Xylosma terra-reginae</i>	Xylosma	Ballina – Central Qld	Leaves. Possibly bark.	Smell of cut bark, leaves. Leaves with a thick gland where lateral veins meet edges. Red fruit.