

The Karri Forest - An Introduction

Refer pages 1-4 of Research Note No. 1 (Karri Silvics by B.J. White)

Occurrence

In the rainfall zone of 1000 mm/annum or more (most forest occurs within 1150+ mm/annum) where the rainfall of the driest month exceeds 16 mm. Within these rainfall limits karri only grows on podsolic soils and red earths.

Soils and Forest Types in the Karri Area

1. Red earths ('Karri loams). Reddish brown loam or sandy loam surface gradually changing to red clay at about 50cm. Generally support pure karri forest.
2. Laterites. Surface soil is light brown sand or sandy loam with a high proportion (up to 80%) of ferruginous gravel. Blocks of duricrust (laterite rock) frequently occur. Yellow mottled clay usually occurs below the gravel but within 1m of the surface. Below this is a very deep layer of generally white clay (Kaolinite).

Supports jarrah and jarrah/marri mixtures. No karri
3. Podsolic soils Characterized by a sudden change at 30-50cm depth from the sandy or loamy surface soils to clay. Surface soils vary in colour from greyish through brown to red. Underlying clays are yellow or red. These soils support mixtures of karri with marri, the two species occurring in very variable proportions
4. Undifferentiated Sands have a uniform sandy or sandy loam texture throughout the profile. Generally carry poor jarrah forest or treeless flats.
5. Alluvial soils occur in valley bottoms and on the banks of rivers. Very variable but dark grey or brown in colour and high in organic matter. Generally support native willow (Oxylobium lanceolatum), peppermint (Agonis flexuosa) and Warren river cedar (A. juniperina). Adjacent large tree species (e.g. karri, marri, and blackbutt) extend on to alluvial soils that are well drained.

Topography and Landform

The main belt of karri is dissected by the Donnelly, Warren, Gardner, Deep, Shannon and Frankland Rivers.

Topography is generally rounded and undulating and only becomes steep in the deeper river valleys.

Due to the pattern of soil occurrence, karri tends to be associated with the major drainage systems inland, and occurs as islands among flats towards the coast.

Botanical characteristics

Leaves

Juvenile; alternate stalked, ovate to broadly lanceolate 2-3.5" x 1-2". Green above, paler below.

Adult: alternate, petiolate, lanceolate, acute 4-5.5" x 1.3-1.5"; dark green above paler below. Faint or occasionally moderately conspicuous, fine, regular venation at 35° - 40° to midrib; intramarginal vein distinct.

Leaves of young Karri seedlings have a wavy edge. The colour distinction between upper and lower edges is obvious on windy days.

Crown

The crown is conical in the sapling and pole stage. In the lower crown from the pole stage onwards the branches tend to curve upwards at the extremities. Leaves are borne on branch extremities in compact "umbrellas", and tend to give an overall umbrella effect. Over-mature crowns in horizontal view may appear stepped or tiered.

Bark

Gum-type, smooth, shed over the whole of the trunk in irregular plates. Newly exposed bark is pink-brown in colour, which fades to bluish grey with time. In autumn, when most bark is shed, stems have a two-tone effect.

Inflorescence

Axillary umbels of 3-6 flowers, the individual stalks short. Buds club shaped to cylindroid 0.6-0.7 x 0.25-0.3 inches. Operculum hemispheric to ovoid conic.

Fruit

Pear shaped; ovoid or globose 0.4-0.5 x 0.4-0.5 inches. Smooth, on stalks 0.3-0.4 inches long. Disc intermediate or wide, obliquely sunken; valves small, deeply enclosed, or occasionally rim level.

Wood

Red, hard, heavy (56 lbs/cu. ft) strong, stiff and tough, moderately durable. Grain often interlocked. Splits more easily on back than quarter.

Longevity

Most of the virgin forest is aged between 150 and 200 years. Physical maturity is considered to be approximately 250 years. Degrade is frequently rapid after 400 years, although an occasional sound tree is considered to exceed 700 years.

Growth rings can be counted on selected stumps and butts with an accuracy of $\pm 5\%$. In average forest a tree of 150" GBH can be said to be roughly 150 years old. Dominants can be considered to grow at 1" girth per annum - unthinned.

Size attained

Karri is one of the very tall trees of the world, second in height in Australia to E. regnans. Typically it reaches 170' - 240', rarely 270'. The tallest measured Karri is 286 feet (Mattaband Block, Shannon River). Girths of 20' GBH are common, and 40'2" GBH has been measured.

Plant Species associated with Karri

<u>Overstorey Trees</u>	Marri - frequently
	Jarrah - not often found in mixture with Karri
	Blackbutt (<u>E. patens</u>) - on valley bottoms
	Bullich (<u>E. megacarpa</u>) - on valley bottoms (not very frequent)

Red Tingle (E. jacksoni) } - In the vicinity
 Yellow Tingle (E. guilfoylei) } of Walpole
 Rates Tingle (E. brevistylis) } only

Understorey Trees

Karri oak (Casuarina decussata)
 Bull banksia (B. grandis) - in MK stands
 Warren cedar } on stream benches and
 Peppermint } damp situations

Shrubs

Hazel (Trymalium spathulatum) - on pure Karri sites
 Netic (Bossiaea laidlawiana) - dominant shrub species
 in western parts of
 Karri forest
 Karri wattle (Acacia pentadenia) - dominant shrub
 species in eastern parts
 of Karri forest
Acacia urophylla - associated with heavier soils
 Banjine (Pimelia clavata) - scattered throughout
Bossiaea linophylla
Acacia striogsa (Brumby bush) } In marri/Karri
A. pulchella (Prickly Moses) } mixtures
Hovea elliptica
Crocea dentata
Acacia decipiens (sharkstooth)) In damp
Oxylobium lanceolatum (native willow)) situations
Lepidosperma tetraquetrum (sword grass) }