Leaflet No. 3.

Western Australian Forests Department

Marri

Marri Forest, Pemberton, W.A.

Marri (*Eucalyptus calophylla, R. Br.*)

INTRODUCTION

Marri, a large and shapely tree, is the most widely distributed eucalypt in the south-west of Western Australia. The early settlers knew the tree as red-gum, no doubt because of the prevalence of a red gum or kino in the wood. The kino was often used as a tanning material. However, to avoid confusing the tree with the better known River Red Gum *(Euc. camaldulensis)*, the native name of MARRI was substituted for redgum some 50 years ago.

The tree is well known to the apiarist and farmer. In suitable seasons it gives a copious supply of nectar, usually flowering in the summer months of February and March. For the farmer its shapely form, dense crown and large white flowers make it an attractive and valuable shade tree.

The name *calophylla* signifies beautiful leaf, while children know the fruits as "hockey nuts".

HABIT AND DISTRIBUTION

Marri has been recorded as growing near Port Gregory, some 40 miles north of Geraldton; near Tinkurrin, 30 miles east of Narrogin and as far as Cape Riche on the south coast. In the marginal areas, the tree is usually stunted.

In the prime jarrah forest, mature marri trees grow to over 100 feet in height, with 40 to 50 feet of bole and diameters at breast height of four feet or more. In the wetter karri regions they frequently attain heights in excess of 150 feet with a correspondingly greater bole length.

The largest tree yet recorded grows about two miles west of Pemberton in a farmer's paddock, and has a height of 201 feet, a bole of 71 feet, a girth at breast height of 20 feet 10 inches and a merchantable log volume of 1,215 cubic feet. A second large tree occurs some 20 miles south-west of Collie with the corresponding measurements of 178 feet, 98 feet, 18 feet 10 inches and 1,295 cubic feet.

Marri usually occurs in mixture with jarrah or karri and is not often seen in pure formation, although small pure stands do occur south of the Blackwood where the species reaches its best development.

Growing in forests yielding high quality clear timber of jarrah and karri, marri until recently has been by-passed in logging. However, it is now coming into wider use following appreciation of its good properties.

TIMBER PROPERTIES

In mature trees the heartwood is light brown and the sapwood varies in width from ½ to 1½ inches. The grain is slightly interlocked and the wood is nonfissile, with a uniform medium-coarse texture.

It is easily worked, but the prevalence of gum veins and the occasional loose ring has, in the past, inhibited its use as a saw timber. Nevertheless, it is stronger than jarrah, seasons with much less shrinkage than jarrah and karri and takes paint well. It is not difficult to nail and does not tend to split as much as some of the lighter eucalypts. One sawmill is now cutting only marri and producing mainly scantling.

It steam bends satisfactorily. Although better than karri, the timber is not as durable in the ground as jarrah.

Marri is of particular interest because it shows little decay or fibre breakdown, even in the heart of the tree. In wood-chip and pulp mills, this will enable the species to be chipped as a whole tree operation, avoiding costly segregation of faulty material. In this respect marri is unique among the hardwoods of Australia available for this purpose.

SEASONING AND DURABILITY

Marri seasons well but somewhat slowly by air or kiln drying, with medium shrinkage and practically no distortion. Degrade resulting from gum vein and ring shake separation may be serious, particularly in quarter sawn stock. Collapse is slight and reconditioning unnecessary.

The sapwood is susceptible to lyctus attack and should be removed in sawing any timber intended for use where appearance will be important. Alternatively, the sapwood can be readily treated by a suitable preservative process as is the case with the many marri poles being used by the Postmaster General's Department.

The heartwood is moderately resistant to attack by termites and fungus, but experience shows that it is not as resistant as jarrah. Beams in damp situations have been proven sound after 12 years, and it is considered that their life as bridge stringers can be reckoned as 25 years. As fence posts, marri heartwood gives a service life of about 20 years. Piles have satisfactory driving qualities in both green and dry conditions. Marri has been used in small quantities for marine piling on the West Australian coast from Geraldton to Albany, and has lasted 10 to 15 years. Its corrosive action on bolts and spikes is negligible.

Marri is in C.S.I.R.O. durability Class C. Treated at 200 p.s.i. the timber retains an average of 4.2 lb. of creosote-oil mixture per cubic foot.

AVAILABILITY

Marri is not stocked by all timber merchants, but there is a regular supply available in small and large sections and in lengths up to 30 feet. Sections above 10 square inches often contain a fair amount of kino in the form of gum veins or pockets. Marri is also readily available in pole and pile sizes and the total quantities available in either form are very large.

GENERAL USES

Marri has adequate strength and durability for use as piles, sills and beams in bridge construction and it is satisfactory for marine piling where the hazard from marine borers is of low intensity. Preservative treatment makes marri suitable for use as poles, and a considerable number are now in use with the Postmaster General's Department. Experimental lots of sleepers have been used by the West Australian Government Railways, and they are also in use in New Zealand.

The timber is being used successfully for handles, shafts and oars, and for bats and other sporting goods. In the sawmilling areas it has been used quite extensively in cottage construction for framing, weatherboards, flooring and tile battens, and it is coming into more general use in this field in Perth. It is being used for the framing of flush panel doors and in select quality it would be excellent for furniture construction. It has also been found to make satisfactory fruit and beer cases.

MARRI STRENGTH PROPERTIES

(Tests on small clear specimens)*

Property	Green	12% M.C.
Density	lb. cub. ft. 76	lb. cub. ft. 49.8
Static Bending—Centre Loading—	lb./sq. in.	lb./sq. in.
Fibre stress at limit of proportionality	7,630	11,300
Modulus of rupture	11,300	18,200
Modulus of elasticity	1,960,000	2,410,000
Compression Parallel to Grain—		
Stress at limit of proportionality	4,130	5,860
Maximum crushing strength	5,880	9,590
Modulus of elasticity	2,270,000	2,660,000
Compression Perpendicular to Grain—		
Stress at limit of proportionality—		
Radial	1,550	1,330
Tangential	1,360	1,470
Torsion—		
Stress at limit of proportionality	959	1,160
Maximum torsional shear stress	1,810	2,240
Modulus of rigidity	121,000	153,000
Hardness, Janka Test—	lb.	lb.
Radial	1,490	1,580
Tangential	1,480	1,620
End Grain	1,420	1,480
Shear—	lb./sq. in.	lb./sq. in.
Radial	1,330	1,890
Tangential	1,330	1,750
Cleavage—	lb./in.	lb./in.
Radial	319	389
Tangential	399	433
Impact Bending Strength—		
Denison—	in./lb.	in./lb.
Radial	188	209
Tangential	191	201
Izod—	ft./lb.	ft./lb.
Radial	14.2	17.1
Tangential	15.5	17.4
Shrinkage, green, to 12% M.C.—	Before reconditioning	After reconditioning
Radial	3.7%	3.4%
Tangential	6.6%	5.6%

* Data not to be used for designing.

PREPARED UNDER THE DIRECTION OF W. R. WALLACE, CONSERVATOR OF FORESTS.