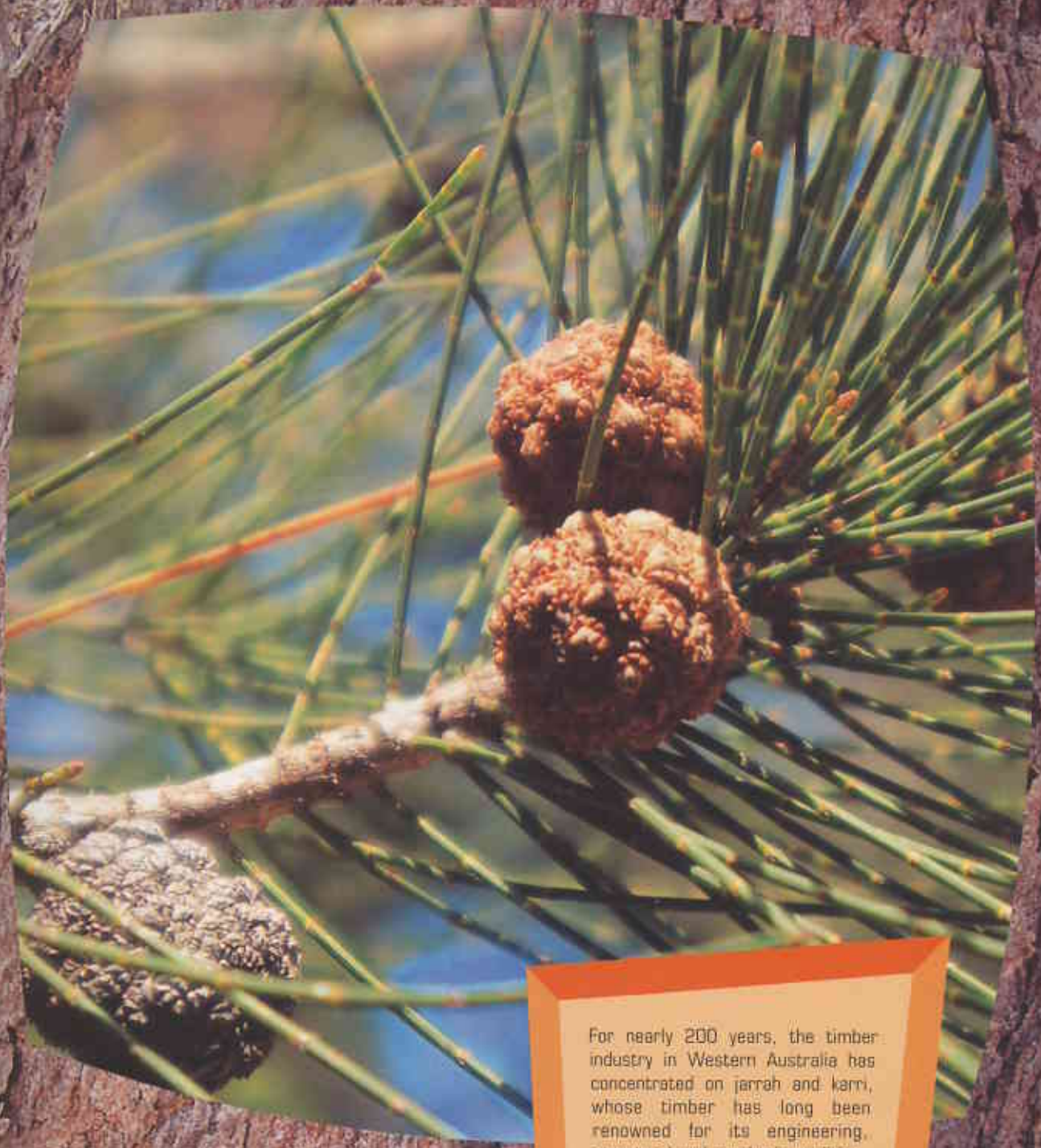
The Sheoak's Tale



For nearly 200 years, the timber industry in Western Australia has concentrated on jarrah and karri, whose timber has long been renowned for its engineering, structural and aesthetic qualities. Scattered among them, the Western Australian sheoak (*Allocasuarina fraseriana*) was largely taken for granted. But this unusual tree is finally winning recognition as an attractive timber for the home or office.

By Terry Jones

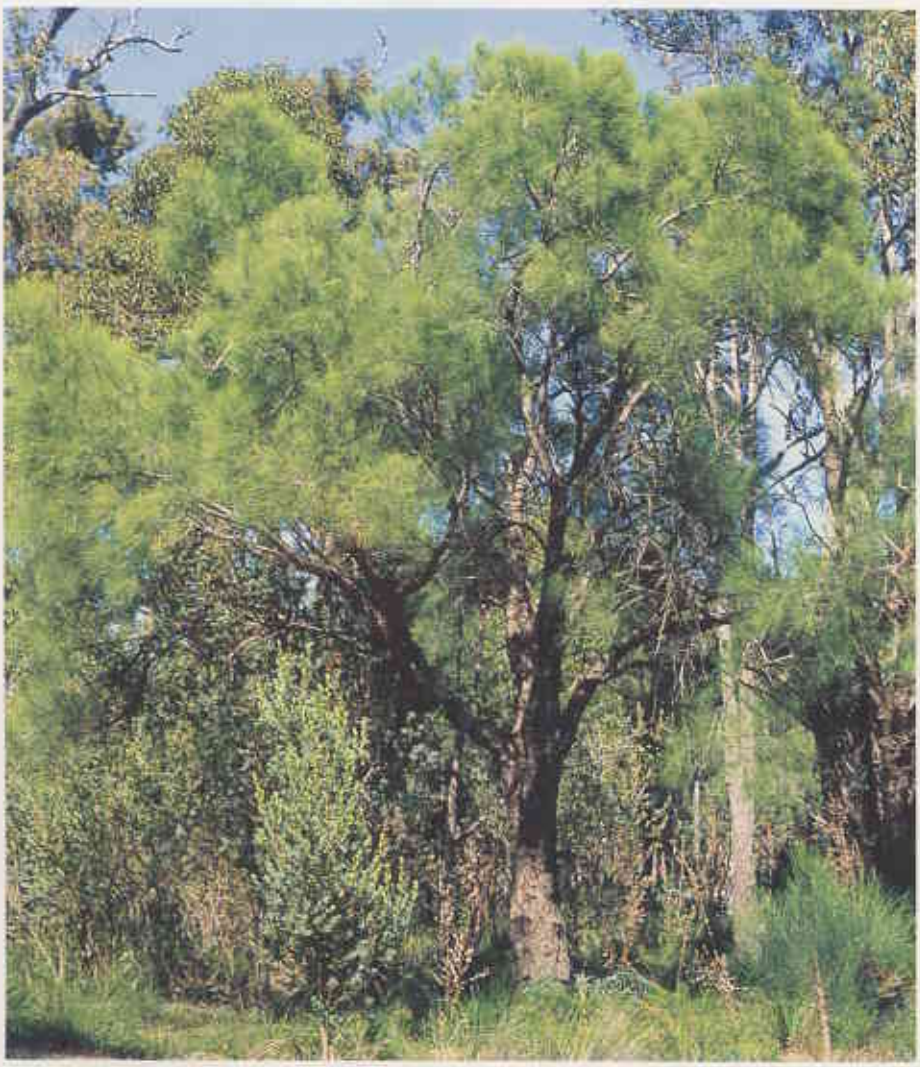
To the nineteenth-century pioneer's eye, Western Australian sheoak (*Allocasuarina fraseriana*) was not a promising tree. Typically reaching approximately 15 metres in height and up to one metre in diameter, the sheoak is at most medium-sized, occurring only singly or in small groups among the taller trees. Compared with the surrounding eucalypts, it is outnumbered and dwarfed. It is also often deformed, misshapen by fire damage. Consequently, the sheoak did not stand out as a very impressive prospect in the early days of timber harvesting. But its irregular shape is now what gives this timber great appeal, because the deformities create interesting and attractive features in the wood. Combined with its rich red colour (it used also to be known as 'beefwood'), the sheoak's unusual grain is becoming very popular in the high-value ornamental timber products that have found a niche in the marketplace.

Sheoak does not form its own forest. It is an understorey tree, typically found mixed in with other minor species. On the Swan Coastal Plain it is associated frequently with several banksia species, with the bull banksia (*Banksia grandis*) being the most dominant. Wherever it is found, however, the sheoak brings distinctive character to the forest or woodland.

In appearance, the tree is nothing like its imposing namesake of the northern hemisphere. With its drooping branchlets and spindly foliage, it looks more like a willow. But whoever tagged this tree with its common name knew better than to judge a book by its cover, for the sheoak's timber, with its strong medullary rays (the lines that run across the tree rings) and remarkable durability, closely resembles the beautiful wood of the European oak (*Quercus* spp.).

The 30 or 40 known species of *Casuarina* and *Allocasuarina* occur in India, Malaysia, islands of the South Pacific, and Australia. All are site-specific, meaning they have an extremely limited range of occurrence. In Western Australia, the sheoak grows on pockets of sandy soil, where its long, droopy branchlets are shed at the end of their functional life. As a result, very thick layers of litter are typically found under a sheoak tree, modifying the acidity of the soil such that very little plant life can grow there. This gives the base of the tree a distinctive cowl of bare ground scattered with branchlets, reinforcing its lonely image.

The WA sheoak occurs in the jarrah forest in the south-western corner of the State, in a belt running from the coastal and hinterland region around Perth in the north, to near Albany in the south. There are male and female trees (the 'she' was added to 'oak' in recognition of this), which rely on wind pollination to reproduce. Male and female flowers are found on different individuals, and are easily distinguished; when in bloom, the male trees take on a pleasant rusty



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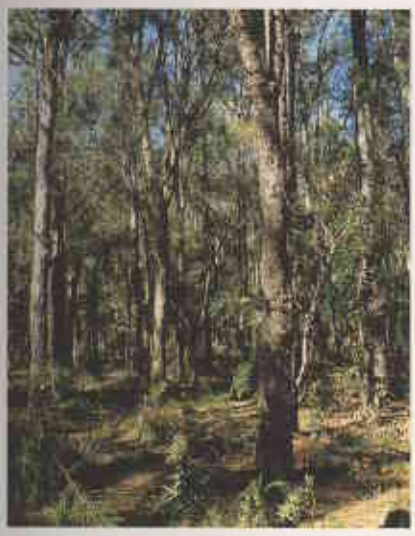
Bark from a mature WA sheoak tree. *Inset:* The sheoak's fruit and leaves.
Photos – Cliff Winfield

Above: One of the new ergonomic chair designs being produced by IPG for the export market using short sections of timber.
Photo – Franco Scioli

Left: The drooping branchlets and slender foliage of the sheoak, seen here in its normal habitat as an understorey tree in the jarrah forest.
Photo – Andrew Brown



colour. On the female tree, ripened fruits are cone-like formations, which open and shed their light winged seeds to be dispersed by the wind.

FROM SHAKES TO DESIGNER TABLES

In the early days of timber cutting, sheoak timber was not readily sought after, unlike jarrah and karri. It was not useful as engineering timber for mine props and guides, or structurally for roof and frame construction or railway sleepers. It became noted for its use in furniture, decorative woodware and turnery, roofing shingles and shakes (shingles are produced by sawing; shakes are split by hand along the rays with a wedge-shaped knife). Both shingles and shakes are suitable for roofing, but shingles are also used for wall cladding and feature shopfronts. Shingles and shakes are cut radially to avoid cupping when installed on a roof. During the pioneering era, eucalypts were used to some extent as shingles and shakes, but their often interlocked grain made them difficult to split. WA sheoak is now used in flooring and panelling, and, because of its suitability for steam-bending, was an attractive species for beer barrels until the advent of the aluminium keg. It was recognised because of its appearance, and its texture is moderately fine and even, usually with a straight grain.

But the shoeak's value as a feature wood was to become more widely known. In 1987, the WA sheoak was recognised as a speciality timber species in the Timber Strategy developed by the Department of Conservation and Land Management (CALM). The public sheoak resources are now managed by CALM as part of its integrated forest management operations. This means that sheoak is harvested simultaneously with jarrah and marri, though delivered separately to the mills. The harvested volume is 3 000 cubic metres a year.

In 1989, CALM sought expressions of interest for developing high-value-added products from 2 000 cubic metres of sheoak to be made available each year. One of the more interesting expressions of interest came from a Malaga-based company, Inglewood Products Group (IPG), which had been specialising in manufacturing outdoor furniture and joinery from jarrah. IPG's owners proposed to add sheoak to the company's

Top left: Thinned sheoak forest east of Dwellingup after a controlled burn.
Photo – Franco Scioli

Top: Sawmill log stockpile of sheoak. The tree's irregular form presents problems in sawmilling.
Photo – Terry Jones

Centre left: Sheoak boards of various lengths and dimensions being readied for production of roof shingles at Whiteland Sawmilling in Busselton.
Photo – Terry Jones

Centre right: Sheoak roof shingles on the Old Bunbury Prison.
Photo – Terry Jones

Above: Sheoak shingles on the roof of St Mary's church at Busselton.
Photo – Terry Jones

SHEOAK: THE HARD FACTS

Better-quality sheoak trees have straight boles (trunks) for two-thirds of the tree height, topped by small crowns. Generally, the bole is half or less of the total tree height, and the crown is moderately large with large branches. This means that any processing results in low recoveries of timber compared with most other species. There are advantages in 'quarter-sawing' the timber by having the face of the board at right-angles to the growth rings. This displays the medullary rays to full advantage.

WA sheoak has a 'green' density of about 1000 kilograms per cubic metre, and an air-dry density of about 720 kilograms per cubic metre. Its big advantages are very low shrinkage as the timber dries and little movement in subsequent use.

Other attributes are its high natural durability and weathering characteristics. Its durability rating is Class 2 under the CSIRO system, which ranks the service life of species when the outer heartwood is used in ground contact, and is expected to last for 8–15 years. Obviously, in-ground use results in much lower durability than when timber is used above the ground, as in outdoor furniture. Sheoak will perform extremely well even if wetted and dried regularly when used outdoors. Consequently, it is highly suited for outdoor furniture products, and sheoak shingles are known to have lasted for many years. A shingle taken from one of the first houses erected in Perth was found to be in excellent condition after 83 years of use.

To maintain consistent supply and quality of the resource, specialised sawmillers (such as Inglewood Products Group) stockpile logs during the summer because of logging restrictions in winter to help prevent the spread of dieback. Log quality is maintained by using water sprays, which reduces end-splitting of logs and discourages insect attack. Care has to be taken, however, that logs under water storage are not left for long periods of time, as the timber will eventually become stained.

repertoire. When they began milling WA sheoak logs, they trialled various sawmilling equipment and techniques for more than 12 months before purchasing a horizontal bandsaw from the UK. They have used this equipment successfully for several years, but after extensive research in Europe, they have now built a new sawmill at Mundijong, 40 kilometres south of Perth, and are using a vertical bandsaw system.

IPG now produces a range of uniquely manufactured outdoor and occasional tables and chairs. The company uses the irregularity of the timber and its natural taper in ingenious designs that incorporate these natural features into tabletops. In this way, waste is minimised and the unique design makes the furniture more valuable. IPG's products are being sold and commanding high prices in Western Australia, Italy, Germany, the Middle East, Singapore, Japan, and the USA.

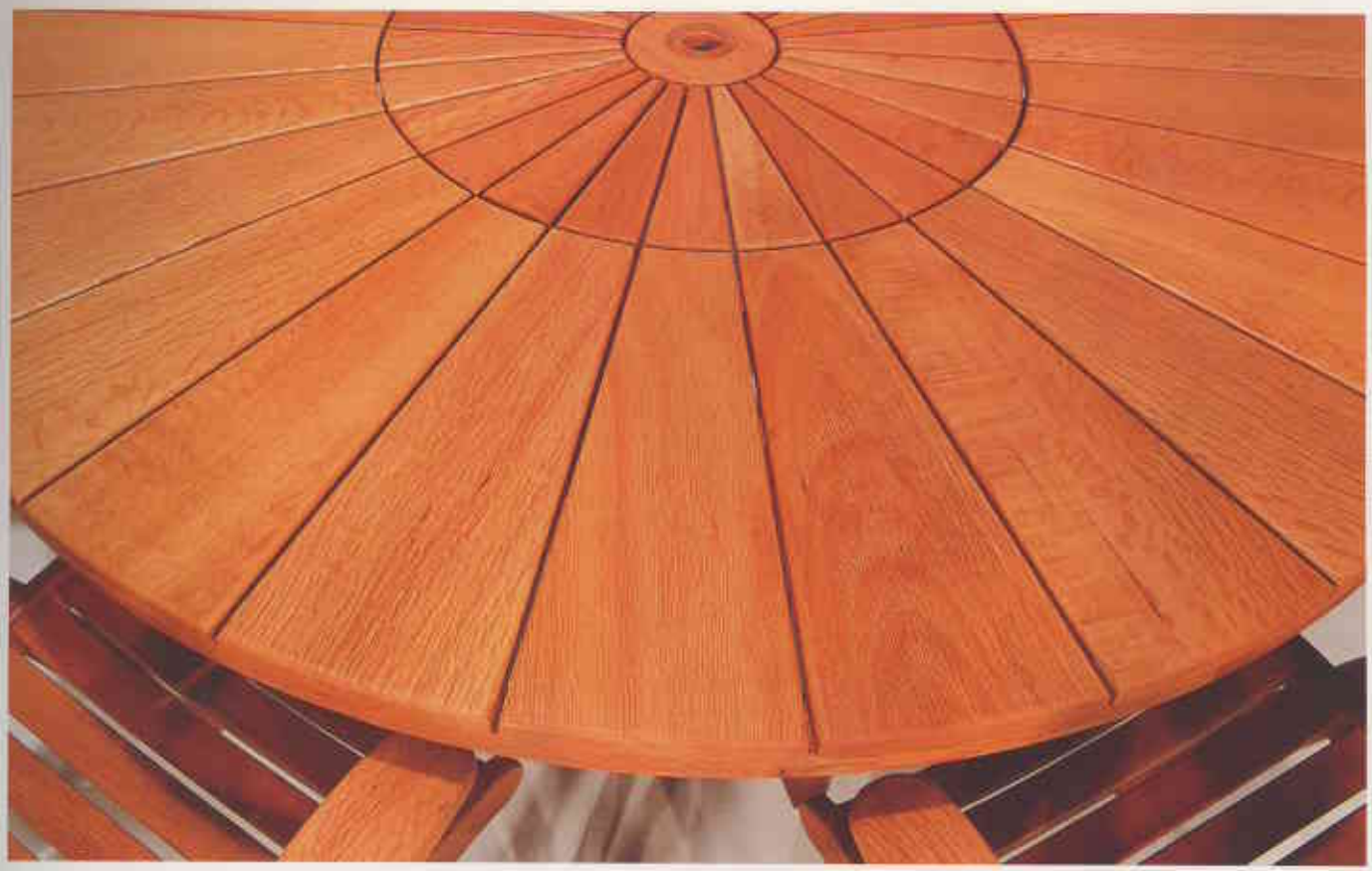
Another developing high-value market for sheoak is in speciality flooring. Parquetry and block flooring, and, more recently, overlay flooring, are becoming more popular. Sheoak flooring products can be manufactured from small sections of timber that are otherwise considered useless. Overlay floors (layers of plywood covered with a 3–5 mm face) require a relatively low volume of face timber, but create a high-value-added product. Flooring materials are showing great potential.

Other products available on the market come from finewood craftspeople. Both individuals and companies are handcrafting exquisite dining and lounge furniture using the natural features and characteristics of WA sheoak.

IN THE LONG TERM

CALM is committed to preserving the value of this worthy timber resource. At CALM's Timber Technology Research and Development Centre at Harvey, sheoak, along with other native

Left: Small-diameter sheoak trees. The boles are straight for two thirds of the tree's height, providing saw logs up to five metres long.
Photo – Franco Scioli



and plantation species, is undergoing continuous study, including logging trials, storage, sawmilling, drying, machining, glueing, workability, and finishing. Workshops and seminars are conducted in conjunction with the timber industry to keep manufacturers, distributors and users aware of the technical issues associated with these resources.

With ecologically sustainable management of the forests being undertaken by CALM on behalf of the State, and successful market-driven strategies by innovative sawmillers and manufacturers, Western Australian sheoak will increasingly be one of our most highly prized timber species.

Top: One of the ingenious outdoor tables designed by IPG. The design makes use of the natural taper of the sheoak tree while using short lengths of timber, minimising waste.
Photo – Franco Scioli

Above: A complete table and chair setting. The maximum length used in this setting is 900 millimetres.
Photo – Franco Scioli

Left: Sheoak male flower.
Photo – Andrew Brown

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'Conserving the western ringtail possum' tells a story of rehabilitation, release and repopulation.

LANDSCOPE

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What have rabbits done to our land and what have we done about them? Find out in 'Run, Rabbit' on page 49.

Discover the fascinating world of 'Starfish, Urchins and their Relatives' on page 10.

Learn about a study of life in the tropical mudflats of Roebuck Bay on page 16.

FEATURES

REGULARS

COVER

Computers and the Internet are putting CALM's Western Australian Herbarium within easy reach of researchers, students and wildflower enthusiasts. See 'From Here to Eternity' on page 40.

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