Timber for the Future - Pine

C. Winthold

by Dr Frank McKinnell

In these " high technology" days of space shuttles and optical fibres, why do we continue to use an old-fashioned "soft technology" material like timber? We use it because we appreciate its versatility and ease of use as a construction material and its beauty for decoration in panelling or furniture. Timber is a renewable resource which is readily recyclable and biodegradable. It has a very low energy requirement for its production, unlike its main competitors (concrete, steel and aluminium) and its production and processing involve very little atmospheric pollution.

In Western Australia there are two basic reasons why we are planting pine trees - to provide a type of timber for local uses that our natural timbers are unsuited to, and to provide a sufficient resource of timber products to enable the State to be more or less self-sufficient.

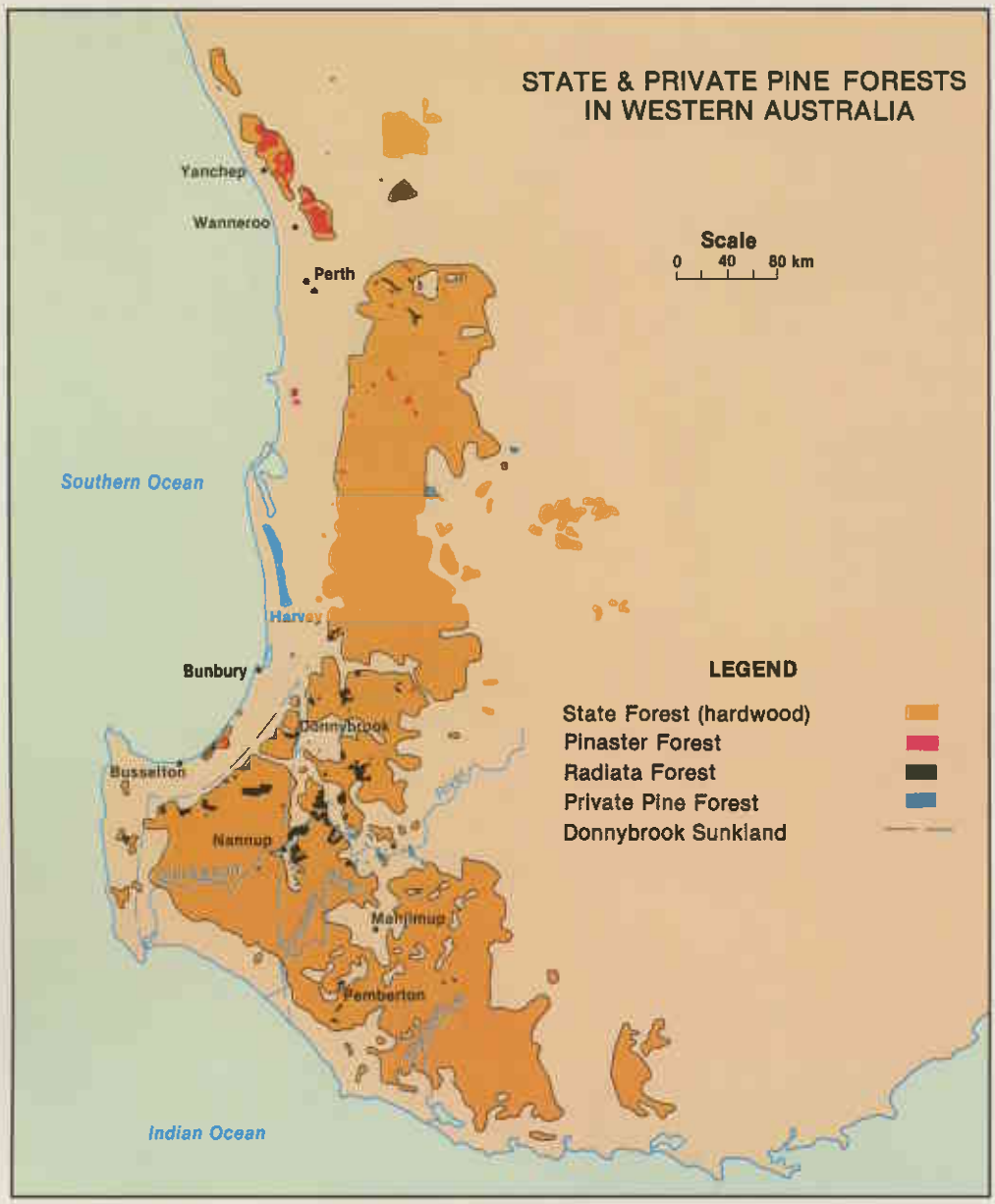
All the types of trees that occur naturally in Western Australia in sufficient quantity to be of use for timber are eucalypts. That is, their timber is of the type known as hardwood. In other parts of the world the main timber resource is normally conifers, or softwoods.

There are many timber uses for which hardwoods are either not suited at all, or are wastefully employed. For example, it is wasteful to use high quality furniture grade jarrah timber for making fruit cases, yet this did happen for many years. It is a long-held principle of good forest management that a commercial timber should be directed to the highest quality use for which it is suited.

Timber Production

Since about 1900 the timber industry has been a major economic force in the south-west of the State. In the early days the forest resource must have seemed limitless and the industry was seen as one of the most important ways of developing the south-west.

Since then, about half the area of good quality forest has been lost to agriculture and today only about two million hectares have been set aside as State forest. Only 10 per cent of this area is covered by fast growing trees like karri or pine. Most State forest carries jarrah which is very slow growing. This combination of small area and slow growth over the majority of the forest means that our timber resource is inadequate for our needs in the future.



It is sometimes argued that we should not be too concerned at this and that we can always import the timber we need from somewhere else. However, foresters maintain that we should aim to be more or less self-sufficient in timber products as it is expensive to transport timber to Western Australia and future overseas supplies are uncertain. Also we can grow the timber here more cheaply than it can be imported under most normal circumstances, and growing and processing timber in Western Australia is a valuable way of maintaining much needed jobs in rural areas.

It should also be remembered that it is not possible to create a forest overnight. To meet a forseen gap in timber availability 30 years hence it is necessary to plant today.

If after several years of planting, new evidence comes to hand to suggest that the projected demand will be less than forecast, it is easy to adjust the rate of planting or cease planting altogether. Unfortunately it is impossible to remedy the opposite situation of "too little and too late".

Forest Management

Our forests are managed for a variety of uses, as there are many other demands on them besides the production of wood. They provide the water catchment area for dams serving the metropolitan and south-west areas and they ensure that the water is clear and of low salinity. The forests are also used for recreation, for the preservation of representative samples of our unique flora and fauna and the protection of the visual qualities of the landscape. Some parts of the forest are used for mining operations for the production of bauxite, coal, tin and ilmenite. A considerable area of forest has also been cleared for powerlines, roads and dams.

All these things mean that although we have some two million hectares of State forest, only about half of that area can be used primarily for wood production. In order that we can set aside some forest to preserve scenic vistas and examples of natural and undisturbed vegetation, we must manage the remaining forest intensively to maximize its wood production and meet consumer demand.

One of the methods used to grow sawlogs faster is to plant pines, which we are able to grow 20 or 30 times faster than jarrah forest. Pines can produce logs suitable for sawmilling in 30 years, whereas jarrah takes 150-300 years to mature.

Another method of growing sawlogs faster is to convert part of our native jarrah and karri forest to what the forester calls a managed forest. In a properly managed forest the yield of timber can be maintained forever. This is called sustained yield. Unfortunately, it will take us many, many years to achieve that goal in our native forests, and in order to achieve it, we must drastically reduce the sawlog cut in these forests over the next 30-60 years.

In order to remain more or less self-sufficient in sawn timber products, it is intended to offset this decline in hardwood supplies with Western Australian grown pine.

Figure 6 shows the estimated output of hardwood and softwood (pine) in Western Australia over the next 70 years, equivalent to the lifetime span of a child born today.

It can be seen that the hardwood output falls off rapidly over the next 30 years, then levels off for a time, and then later begins to rise again as our regenerated hardwood forests mature. To maintain the total estimated requirement for sawn timber, the pine output rises rapidly over the next 30 years and this illustrates the need for our pine planting programme.

Pine Forests in Western Australia

Two species of pine are planted in Western Australia. They are monterey pine or radiata pine (*Pinus radiata*), which comes from a small area along the coast of California, and maritime pine or pinaster pine (*Pinus pinaster*), which comes originally from the Mediterranean area. Most pinaster pine in Western Australia uses stock that came originally from the forest of Leiria in Portugal.

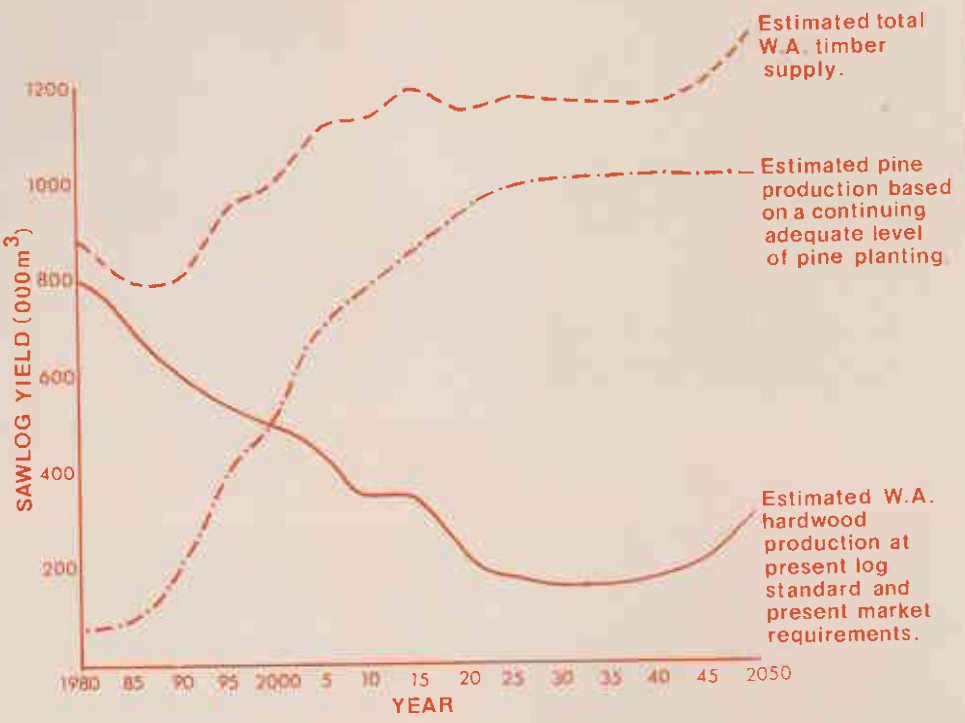
Radiata pine grows much faster than pinaster and is preferred for that reason, but the pinaster will tolerate much poorer and drier soils, so we use both species here on the soils that are most suitable for them. It is also desirable to have more than one species of pine in case a disease or insect problem were to arise with either species at some time in the future. This is called spreading the biological risk.

There are a large number of small areas of pine forest in the south-west, often where the original forest has been killed by dieback disease. These small areas are uneconomic to manage and are being replaced gradually by eucalypts that are resistant to the disease.

Efficient forest management for wood production requires that the pines be planted in large contiguous areas. Most pine plantings in Western Australia now take place on the coastal plain

FIGURE 6

Estimated sawlog supplies in Western Australia 1980 – 2050



Note: hardwood production rises again as regenerated forest grows to millable size.

Watering points for fire fighting are maintained throughout the forests.

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▲ Farmland in the Blackwood Valley has been bought by the Forests Department to be planted with pines. The soils in this area are excellent for growing *Pinus radiata*

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▲ These eight-year-old radiata pine have been high pruned to improve timber quality.

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◄ A skyline cable logging system is employed to thin pines in the steep country of the Blackwood Valley.

north of Perth around Yanchep and Wanneroo, or south of Busselton on the low plateau known as the Sunkland.

Other areas have been planted in the past on the coastal plain near Harvey, around the Stirling Dam and Wellington Dam and along the Blackwood River and Balingup Brook. By far the longest of these areas is that through the Blackwood Valley where most plantings have taken place on former farmland purchased by the Forests Department. There are also some privately owned forests in that region.

The Sunkland

Because there is insufficient farmland readily available and because funds for land purchase are limited, the pine forest establishment programme is now concentrated in the Sunkland. This project involves the conversion of some 60 000 ha of the 283 000 ha of native forest in the Sunkland to pines, over a period of about 30 years. The project has been examined and approved by the Environmental Protection Authority. In this region there are large areas of soil suitable for pines, provided that fertilizer is applied. The native forest is generally of low quality and some of it is affected by dieback disease. Conversion of parts of this original jarrah forest to pines has no significant adverse affect on stream salinity. The area is also favourably located for efficient and economic future processing of the timber.

Because only some of the soils are suitable for pines, the area will eventually be a mosaic of pines and jarrah. This will minimize any negative impact on native fauna in the area. In fact, some native fauna, especially the kangaroos, are undergoing a population "boom" due to the additional food provided by the clover used to improve the soil fertility in the early years of pine growth.

Uses of Pine Timber

The products we get from the pine forest are many and varied. The best large logs are used for the manufacture of pine veneer for wall panelling or for furniture. The bulk of the output from mature pine forests is sawlogs for the production of building timber of various types. For this purpose it is easier to use than the jarrah we are used to using in Western Australia. Properly prepared pine building timber is less inclined to twist, does not shrink and is much easier to cut and nail than jarrah. Already pine timber can be seen being used in many new homes under construction.

Young pine forests also yield large quantities of small, low quality logs that are removed from the forest to promote the growth of the best trees that are kept until they are mature. These small logs are used for the production of particle board in large automated modern factories such as the Wesfi plant near Bunbury, or they are treated with preservative and used for fence posts and rails. Treated pine posts and rails are often used in parks and recreation areas, as well as for farm fencing.

In the future, it is possible that some of this material may be used in a paper pulp factory.

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Particle board, made from pine thinnings, is produced at the Dardanup Particle Board factory.

H. Chinn

Clover is planted to improve soil fertility at the time of planting pines in the Sunkland.

A pine log is peeled for making veneer (bottom left).

Pine veneer drying immediately after production. The veneer is popularly used for furniture and wall panelling.

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H Bradbury

▲ In the pinaster pine forest at Gnangara near Perth, areas have been set aside for recreation purposes. Trail bike riding is one of those activities.

Other Functions of Pine Forests

Although the pine forests have one main function, which is to produce wood for us in the most efficient way, they do have other important functions and values. Some pine forests, such as those on the coastal plain north of Perth, play an important additional role in protecting the quality of some of Perth's underground water supplies.

These same forests are also used in some areas for horse or trail bike riding, or just for walking. Young pine forests are not too attractive for recreation (although they are attractive to some native animals and birds) but as the forests are thinned and grow older they become increasingly attractive to people.

Pine forests do not have the same range of active animals and birds as native forests, but they do have some species. Young pine forests are especially attractive to kangaroos. The presence of pinaster forests has enabled the white tailed black cockatoo to build its population to far greater levels than it was before. In some pine forests the native understorey shrubs are present most of the time, so that native insects and the small birds which feed on them flourish. However species of fauna which require old eucalypts, such as hole nesting birds or animals, do not generally occur in pine forests. In some areas, such as the Sunkland, the mosaic of pine and jarrah forest provides a great diversity of fauna habitat.

Another value of pine forests which is frequently not appreciated is their potential for generating employment. This potential is of course, only fully realized when the forests are mature, as is the case in South Australia, where it has been found that the forests will support one worker for every 20 hectares. This is a much higher employment ratio than for the less productive native forests or for most types of agriculture.

Exotic Trees

The pines may be welcomed in those areas such as the coastal plain where tall forests have never grown. But in some areas where native forest is being converted to pines the verdant colour of the exotic conifers contrasts with the duller greys and greens of our native trees, and may be an unwelcome sight to some people. However, they are being grown to provide a resource we need, in much the same way as we clear woodland in the wheatbelt to grow wheat. In the long term, the total amount of pine forest is unlikely to exceed 100 000 ha, which is only 5 per cent of the total area of State forest. Pine forests are performing the vital function of buying time for our hardwood forest to regrow, and for foresters to bring it to its maximum productive capacity. They also permit us to take large areas of native forest out of production for other purposes, such as recreation, preservation of flora and fauna and landscape values.

▼ Green pines contrast with the duller grey/green eucalypts of the native hardwood forests. This area in the Blackwood Valley has been planned to provide strips of native forest as corridors for fauna.

C Wnfield