FOREST FOCUS

$30 MILLION FOREST PRODUCTS COMPLEX—FOREST RECREATION

Merchantable thinnings (above) in Milward plantation, Nannup, commenced several years ago. The pines being thinned are 14-year-old radiata.

Logging in 30-year-old radiata plantation at Grimwade (below).

FOREST FOCUS

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PRODUCTION RECREATION CONSERVATION PROTECTION

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Front Cover

The last glow of the setting sun on a winter afternoon lends a touch of warmth to these nine-year-old radiata pines, two miles east of Nannup. Radiata (Pinus radiata), *or Monterey pine, from California, is one of two major species planted in W.A. softwood forests. The other species is pinaster* (P. pinaster), *or maritime pine, from Portugal.*

Back Cover

Gleneagle picnic grounds, see Forest Recreation story.

Focus on $30 Million Integrated Forest Products Complex

A range of new, decentralised industries eventually worth $25 to $30 million annually and bringing greater employment opportunities, more productive use of some rural land, and a reduced imports bill for forest products will result from expansion and co-ordination of forest resources in the south-west of Western Australia.

Continuation of the Forests Department's long-range softwood reforestation programme will provide the required basis for a fully integrated forest products complex.

Integrated use of softwoods and hardwoods will result in more efficient and more economic use of the State's hardwood forest resources.

By the year 2000, the estimated consumption of forest products in Western Australia will exceed the equivalent of 100 million cubic feet of log timber a year—*more than double the present State log intake.*

Australia's imports of forest products (including all forms of wood manufacture such as plywood, chip board, wood fibre and paper products) are now the highest in value of any single import item, even exceeding petroleum products.

Softwood plantations, with a productive potential from 10 to 30 times that of jarrah forest, offer a means of supplementing timber supplies quickly. The alternative is to import requirements at prices which will continue to rise in a world where rapidly increasing population makes increasing demands on its forest resources.

To provide the additional annual requirement of 55 million cubic feet, a continued, energetic planting programme is essential.

The great demand by Japan for pine logs and timber from U.S.A. and New Zealand indicates the possibility of producing much more pine than Western Australia needs if plantings are further increased, with a view to an eventual export trade in softwood. (Even softwood sawdust is now being imported by Japan from British Columbia for pulp manufacture. One vessel, the M.S. *Shima*, has been specially built for the cargo, and carries 27,500 tons of sawdust.)

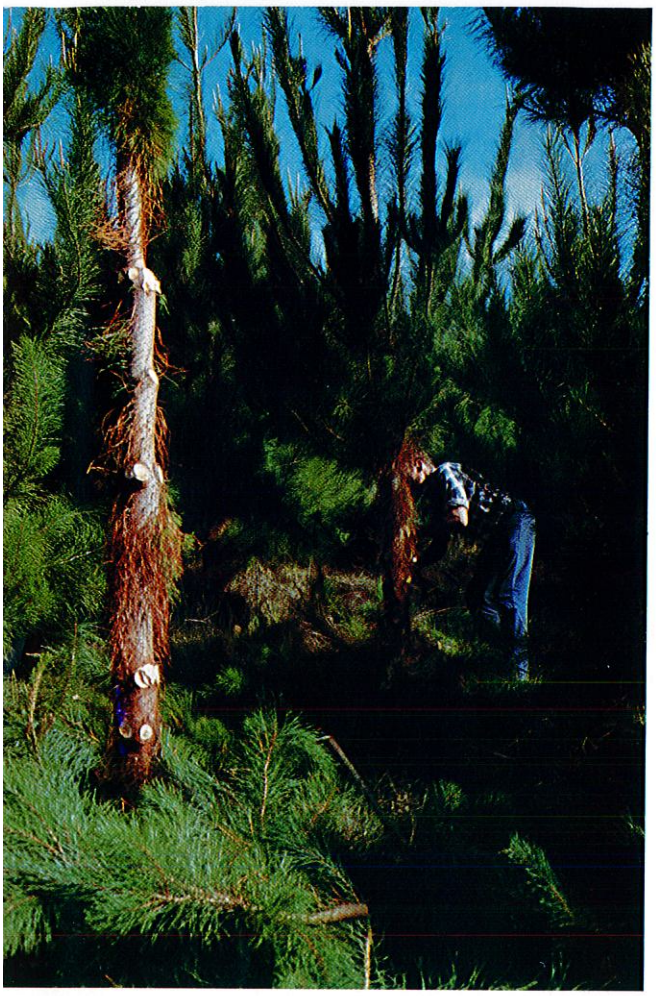
Species, soils, location

Radiata pine (*Pinus radiata*), with three times the growth rate of pinaster pine (*P. pinaster*), and highly valued both for timber and pulpwood, is the favoured species. However, it is extremely demanding as to site, and has only been grown successfully in Western Australia on soils of good texture and relatively high nutrient value within the over 30 in. rainfall zone of the South-West.

Soils naturally suitable for growing radiata pine occur almost entirely in the valleys of the various water courses, which have cut down into igneous parent rocks along the Darling Range from Mundaring southwards.

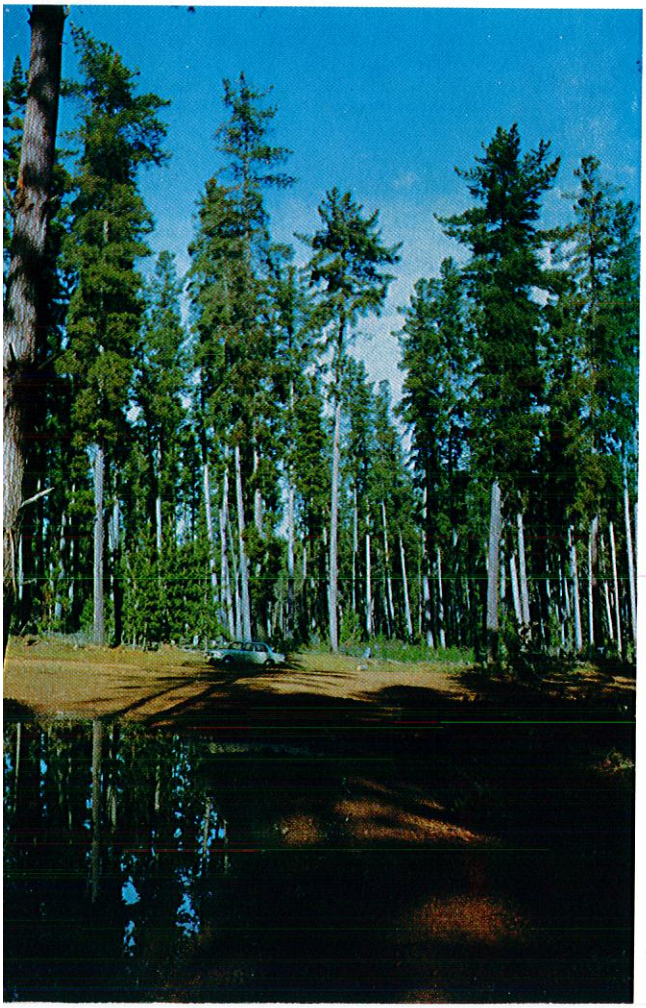
Where these soils occur in State forest they have either been planted with radiata, will be planted—or will be inundated in water reservoirs. Well known examples of existing plantations on such sites are at Mundaring Weir, Murray River, Stirling Dam, Bussell Brook and Grimwade.

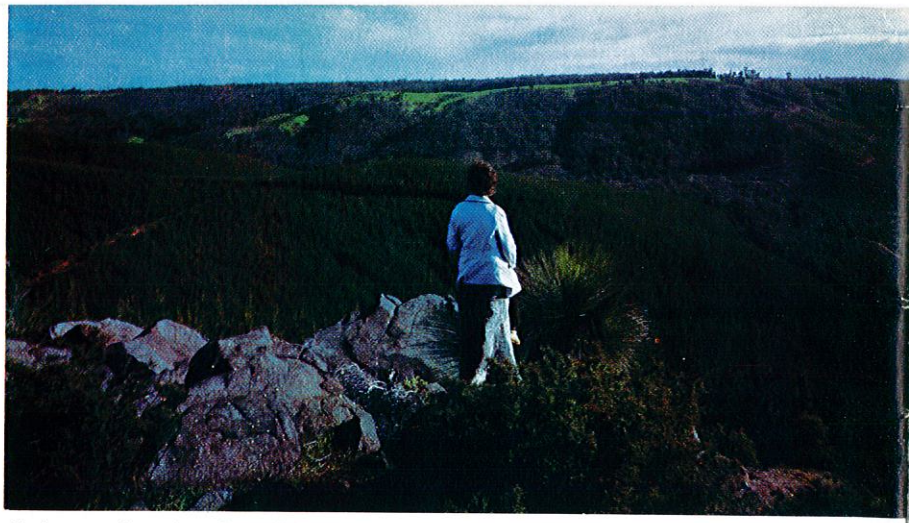
These are relatively small, scattered areas. Although small plantations of about 5,000 to 10,000 acres are economically sound, a much more viable and profitable industry with all utilisation channels completely



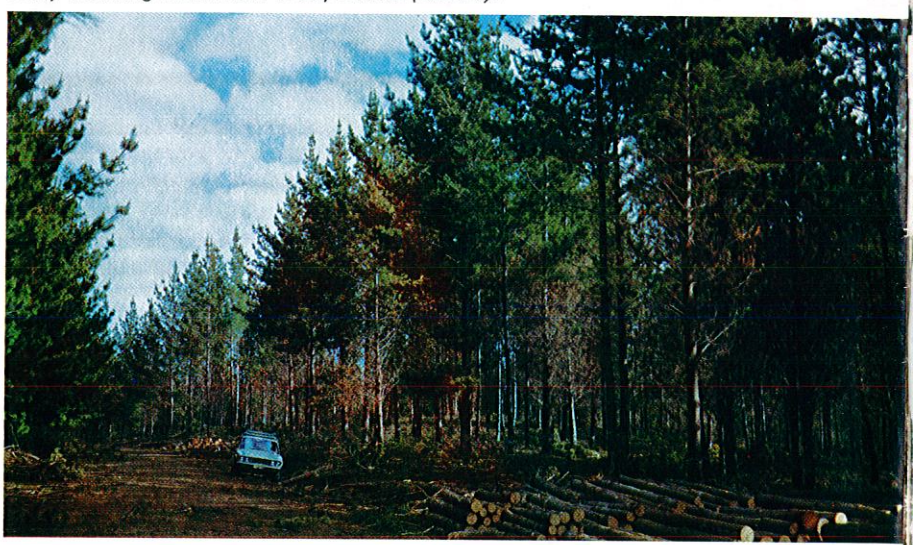
Contractors pruning four-year-old radiata pines in Nannup Hills plantation (above).

Good quality 38-year-old radiata pine, Grimwade (below).

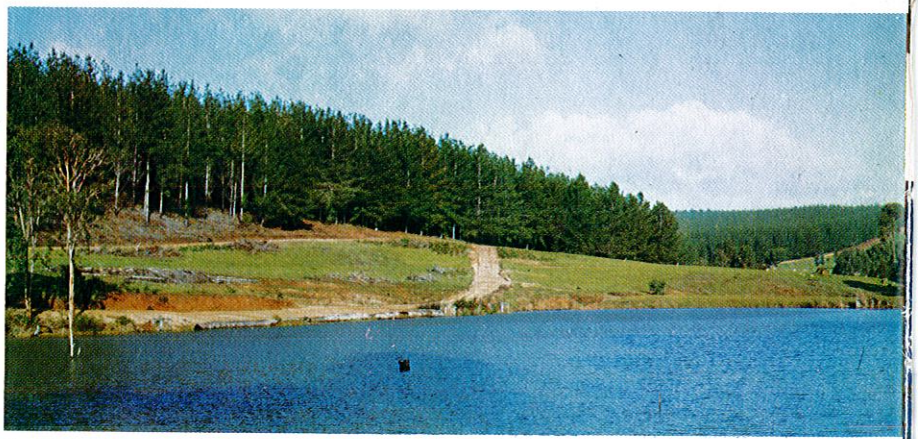




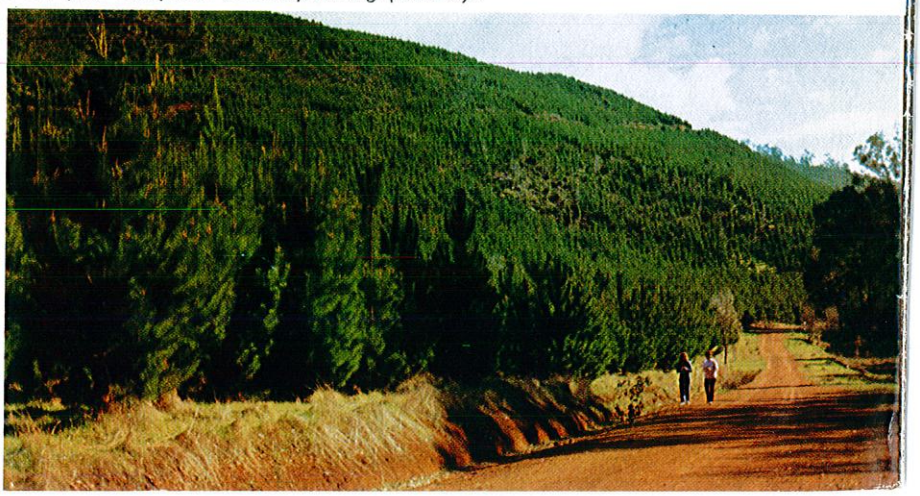
Early morning view from Wally's Nob (above).



Freshly thinned radiata pines (above) and earlier thinned pines (below), Milward Plantation, Nannup.



Four-year-old pines before pruning (below).



integrated, can be founded when areas of 50,000 acres or more can be established over a comparatively compact area.

The valley of the Blackwood River and its tributaries north and east of Nannup offers the possibility of such a desirable area. It already forms an integral and important part of the whole planting programme with 13,800 acres of pine established and a further 18,200 acres held and programmed for future plantings.

A desirable plantation target for the valley is considered to be 75,000 acres. To achieve this the acquisition of a further 43,000 acres of plantable country in this area during the next 20 years is essential.

Over the past two years increasing numbers of properties have been offered to the Department by private owners anxious to leave the valley and acquire land elsewhere.

Because of the brackish nature of the water coming from the farmlands drained by the headwaters of the Blackwood River, it is most unlikely to be dammed for water supply and so "drowning" of the plantable area is highly improbable.

Since an acre of radiata pine produces as much wood as three acres of pinaster, the importance of acquiring the maximum area of soils suitable for this species cannot be over-emphasised.

A total of 63,000 acres of additional radiata land is necessary throughout the South-West to increase the radiata pine ratio—which means that a further 20,000 acres will be sought elsewhere in addition to the 43,000 acres mentioned above.

Areas of plantation required

A modified target of 310,000 acres of plantation (basically 120,000 radiata, 190,000 pinaster) by the year 2000 has now been set as the State's minimum requirement. This could

Preparing contour road in steep country (above).

Photograph (below) shows steep nature of country planted to pines so far. The gentler slopes were also planted. The pipe, left, runs from a water supply tank.

Young pines before lifting from the nursery (below).

Sorting and bundling pine seedlings at a Nannup nursery (above).

Pine-planted slopes (two-year-old in foreground), Nannup Hills plantation (above).
Trimming branches off freshly felled pine, Milward thinning operations (below).

be achieved with an 8,000-acre planting programme:

	Acres
Areas planted to 1970 ..	71,500
8,000 acres a year between 1971 and 2000 ..	240,000
	311,000

As much as possible of this programme is to be planted to radiata.

Financial limitations restrict the Department planting for the present to 6,000 acres a year.

The shortfall may be made up in part by private enterprise, but it is difficult to foresee this being maintained at a consistently high or regular rate. It must be remembered also that pine planting, more than most enterprises, depends for success on a firm and regular planting and tending schedule and an efficient protection service.

While this is normal practice with "industrial plantings" like those of A. P. M. forests in the Eastern States, it is doubtful if it can be guaranteed with "investment planting" projects.

The present level of Forests Department planting (6,000 acres a year) is made possible by the use of money from General Loan Fund, The Softwood Forestry Agreement Loans and Forests Department Reforestation Fund. Without additional finance, it will not be possible to either raise the planting rate, or undertake additional large purchases of land.

The current annual establishment and maintenance costs of Forests Department softwood plantations now exceeds $1 million. The total annual production volume in various log categories now approaches three million cubic feet (i.e. about 8 per cent of the hardwood log intake), giving a net revenue of just over $250,000 (most of this is derived from the very small areas of older plantations established before 1941).

Employment

Employment levels will rise steadily with increases in area planted, with

tending and maintenance of planted areas, and more rapidly with utilisation of produce commencing 11 years after planting.

The following broad indications of employment are given for a hypothetical 2,500 acres a year planting programme, giving 75,000 acres in 30 years.

Planting will provide full employment for 25 men. Five to 10 years later with pruning, maintenance and fire control, this will rise to 65 men. Once utilisation commences with the thinning operation at 11 years of age, an additional 65 men will be required full time in the forest. As the project comes to maturity and clear felling commences, a further 150 will be involved in logging and hauling operations.

This means some 280 men will eventually be employed in the forest itself. Many times this number will be needed in the processing and manufacturing industries based on the forest.

If radiata pine is planted at 2,500 acres a year in the Blackwood Valley, giving a mean annual increment of 300 cubic feet per acre, increasing quantities of merchantable timber will become available. After 11 years from the start of the project, thinnings will yield some 3,750,000 cubic feet a year. Thirty years after the start, when clear felling commences, a yield of approximately 20 million cubic feet of timber will be produced annually. Clear-felled areas will be replanted, and the cycle continued.

The output value of processed products could well be in the order of $25 million to $30 million annually.

From a recent study in South Australia in a paper presented to the 39th A.N.Z.A.A.S. Conference, it was stated that "*The present level of employment in reforestation in the lower S.E. of South Australia is about one man (or family) per* 30 *acres of plantation. By the time the forests are reaching their full productivity level later this century, this will be about one man employed per* 25 *acres of plantation compared with one man per* 500 *acres or so under agriculture.*"

On these figures, 75,000 acres of plantation would eventually provide employment for 3,000 men.

Contractor's employees working at log dump, Milward thinning operations (above).

Selective logging in the Grimwade pine forest (above). Logs are snigged to a central point for cutting to length and loading on to log trucks.

Likely industrial development

The following industries are likely to develop in utilising plantation-grown pine as a raw material:

Particle board industry. This is likely to be one of the first in the field, and in Perth has proved its ability to utilise pine from $2\frac{1}{2}$ in. to 5 in. diameter. It is believed the smallest economic unit would require about 850,000 cubic feet of pine logs a year, and could treble its intake on a three-shift basis as available timber increased.

This industry is likely to promote decentralisation by its establishment in the lower South-West, where it could draw supplies of low cost raw material from several plantation areas, and so obtain sufficient intake to warrant the costly sophisticated plant.

An alternative could be a local industry utilising both small round logs and quantities of sawmill waste when sawmills are established at a later stage.

Wood pulp industry. The most likely site for a wood pulp industry is in the karri region, in the Manjimup-Pemberton locality, where three basic requirements already exist:

1. Adequate raw material from native hardwood forests and sawmill residue plus the required long fibred softwoods to lift quality and strength of papermaking pulps.

2. Adequate supplies of water of acceptable quality.
3. Suitable facilities for satisfactory disposal of effluent after treatment.

A fourth requirement is an adequate supply of long fibred softwood to yield pulps with satisfactory strength characteristics.

When the time is appropriate for the establishment of a wood pulp industry, softwood supplies could be drawn from the Blackwood Valley until subsidiary supplies are available from consequent plantings in the karri region.

Wood preservation industry. Recently established on a small scale in Western Australia, this industry has treated some 200,000 pine posts a year in addition to hardwood poles for the P.M.G. and S.E.C. The pine fence posts, because of their durability and attractions of uniform size and appearance, were being sought in increasing quantities prior to the recent agricultural recession, and were being delivered up to 600 miles from the production site.

An expanding future is forecast for this industry, which certainly will also cater for the treatment of sawn pine for use wherever durability is required.

Softwood sawmilling industry. The availability of some eight million cubic feet of pine logs a year would provide saw logs equivalent to the combined intake of six of the State's largest hardwood mills, with a sawn pine output of some 50 million super feet a year. Sawmill residue (other than sawdust) would be readily disposable as chips for particle board.

Veneer and plywood industry. In Western Australia this industry is dependent on imported logs for about two-thirds of its raw material. An estimated three million cubic feet of pine peeler logs a year could replace all but specialty imports, supply the needs of the future population and support a plywood plant larger than any in Australia.

Plywood logs are premium logs of high quality and eagerly sought by sawmillers and plywood manufacturers.

Western Australia has a very high per capita consumption of plywood.

Transport industries. Transport will be required to move some 500,000 tons of produce a year from forest to processing plants, and then processed goods from plants to markets.

In addition there is the transport of consumer goods for the increased population of towns concerned.

Engineering services. Service industries of some magnitude would be required for the maintenance of transport, plant and heavy equipment such as tractors, loaders, trucks, mill equipment and other items for industries associated with the plantations.

Concomitant district benefits. The employment of about 3,000 people in the establishment, tending, protection, harvesting and processing of forest products would imply some 2,500 families with the necessary facilities such as shops, housing, domestic services, schools, power, water supplies and so on. This would involve considerable expansion of the towns concerned, with a great increase in housing and the essential services normally associated with a population of 6,000 to 8,000 people.

A local market for farm produce and a source of employment for the families of farmers established in the district would also be provided.

It is a common misconception that plantation establishment merely involves clearing, planting pine seedlings and waiting for their growth to maturity.

The truth is that the steps for successful plantations are many, varied and costly, and the period between land acquisition and actual planting may be from three to five years.

A stand of 38-year-old radiata at Grimwade. These trees are managed as a seed orchard.

Summary of Main Plantation Development Operations For Blackwood Valley

This information refers to lands purchased on the open market by the Forests Department mainly in the Nannup and Kirup Forest Divisions, where all Blackwood Valley plantings have been undertaken to date.

Planning. Although all areas are soil surveyed before purchase, more detailed surveys are usually required to define accurately the areas suitable for radiata pine. Considerable planning involving field study and reconnaissance is then necessary for the design and layout of compartments, roads, firebreaks; for the extraction and utilisation of any useful native timber, and to define limits of clearing.

Clearing. This varies widely in amount necessary from the complete clearing of timbered country to the removal of patches of shade trees on pasture. Between these extremes are regrowth stands of suckers, saplings or poles, ringbarked and part cleared ground, and areas overrun with bracken and coppice. Bulldozers are used for the heavier work, while hand tools and the chain saw may handle the few scattered trees or the occasional areas too steep for bulldozer work.

Fire is an essential tool, and two burns may be involved. Felled debris may be required to lie for two summers to provide a good clearing burn which must be carefully planned and executed.

Roading. Essential in the first place for general access, and fire control during the life of the plantation. Because of the steep and sometimes rocky nature of this locality, roading has been the most costly single item in the works of preparation. However, at a later stage it is essential for extraction of forest produce.

Scrub, weed, coppice control. There is much less on the pastured lands than on the areas newly cleared of eucalypt forest. On part cleared land that was ringbarked and allowed to regrow eucalypt coppice, costly work may be necessary to eliminate or check the eucalypts, which could provide severe competition to pine growth. Bracken areas may also retard pine growth initially, but a practicable control method at reasonable cost is unknown.

Cultivation. Ploughing prior to planting is very beneficial in reducing weed growth and giving the pines a good start with soil tilth improved, and correct planting made easier. However, because of erosion risks, this practice has been discontinued on steep slopes.

Nursery work. Two nurseries at Nannup, totalling 15 acres, produce seedlings for the Blackwood area and some other centres. In 1969/70 they produced 2,120,000 seedlings (1,400,000 *pinus radiata*, 660,000 *p. pinaster* and 60,000 other species) of which 1,345,000 were planted in the Blackwood Valley. Some 350 lb. of seed from Portugal, New Zealand and South Australia were required for this crop.

Planting Steep slopes of the valley make planting more difficult and costly than in the more level coastal plantations. Planting machines which are so effective on coastal sands have to be replaced by hand planters operating on a piece-work basis. Unsuitable weather conditions limit planting to some six to eight weeks in mid-winter.

Protection from vermin. Rabbit infestation was severe on many less-developed, purchased properties, and damage was high in patches during early years of planting, Vigorous control measures have been taken in conjunction with the Agricultural Protection Board, but small populations still exist. Pines are susceptible to rabbit damage during their first year in the field, but thereafter are almost free from attack. However, as plantations carry grass for a few years until canopy is formed, poisoning continues annually as part of the normal district control programme.

Road maintenance. An annual requirement with attention to grading, drainage and patch gravelling to retain roads in good condition for rapid fire control access.

Protection from fire. Probably the most important activity (after planting) during the first 20 years of tree growth.

Firebreak maintenance is an annual requirement. Firebreaks constitute about 5 per cent of the gross plantation area in the valley. The important external breaks are located as far as possible on the non-radiata soils fringing the plantation. They are normally one chain wide and trafficable to some form of vehicle, and constitute one of the most costly "maintenance" items.

Fire detection that is rapid, positive and efficient is a first essential, and is achieved from the jarrah forest lookout towers plus two located to cover the Blackwood Valley.

Immediate communication is achieved by both field telephone lines and radio from towers to offices and mobile units.

Fire prevention is aided by prescribed protective burning of wide buffer areas of eucalypt forest where it adjoins the plantation. In older stands, burning under the pine canopy may be undertaken in the winter months under rigidly prescribed conditions as a fuel reduction measure.

Training of all staff in fire control methods is regularly carried our and the *detention* of some staff on weekend duty is required throughout the summer except when a cool change with rain permits brief relaxation from the constant vigilance.

Fire suppression has not yet been required within Blackwood Valley plantations. However, men and equipment have been moved to suppress outbreaks in adjoining areas before they develop into a serious threat.

Control of eucalypt coppice is necessary in patches. Some follow-up work may be required to prevent coppice from retarding pine growth.

Silvicultural treatment. Pine plantations require a considerable amount of tending in early years to ensure the production of high quality timber as economically and as quickly as possible. Production of large, straight logs with a high proportion of clear wood is the aim. To achieve this, the stands are thinned early and pruned to a height of 20 ft. as soon as possible.

It is estimated that 50 per cent of the production from these plantations will be in large size, high value saw and peeler logs. The balance of production will be of lower grade (due to small size and presence of knots) suitable for chipping or pulping.

The ages at which the various silvicultural treatments are carried out vary somewhat according to the growth rates achieved.

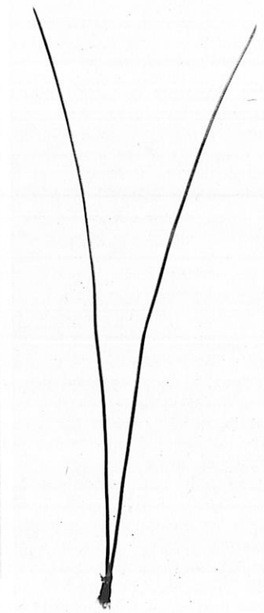
Generally, the first pruning (to 7 ft.) initial selection of the better final crop trees and first unproductive thinning is done at five years of age. It is necessary to plant some 700 trees to the acre in order to select 80 to 100 superior trees for the final crop. Severe competition and stagnation result if all are allowed to remain. Better quality seed from the Forest Department tree breeding programme will, within a few years, permit much wider initial spacing and eliminate the need for early cleaning.

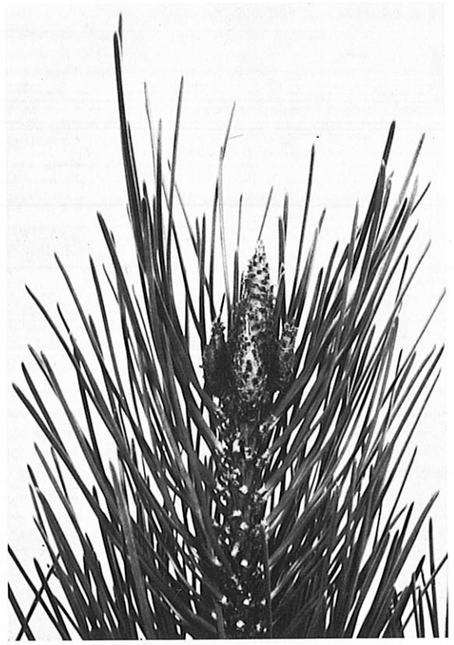
At about eight years the trees are again pruned (to 15 ft.) and the final crop trees selected. This pruning is timed according to tree diameter to produce high-value knot-free timber.

At 10 years, final pruning to 20 ft. is carried out on the 80 final crop trees, the selection of which is very important. A year later the plantation is thinned to leave only these 80 or so trees, and this thinning gives some 1,500 cubic feet of timber an acre, which will go some way towards defraying costs to date.

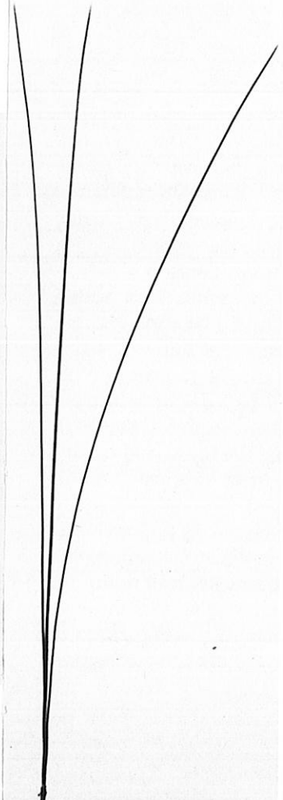
At 30 years the final crop is harvested, producing an estimated 7,500 cubic feet of timber an acre.

CONE, NEEDLE AND BUD OF MAIN PINE SPECIES GROWN IN WESTERN AUSTRALIA

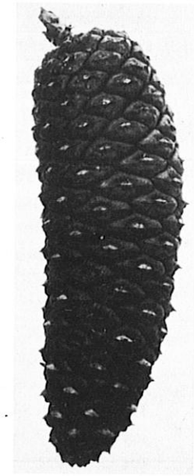


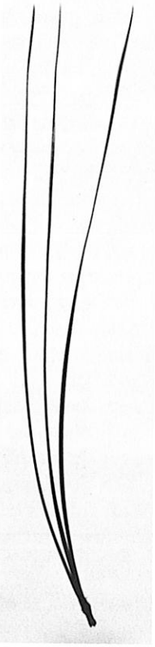


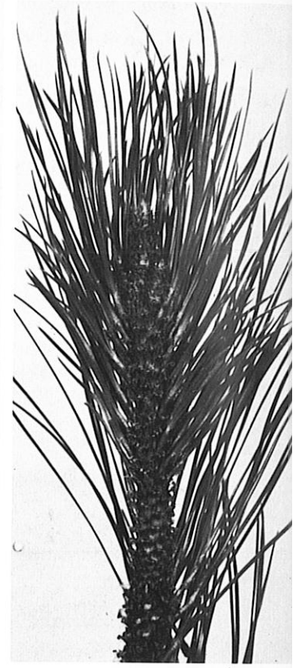
Pinaster Pine (*Pinus pinaster*)



Canary Island Pine
(*Pinus canariensis*)

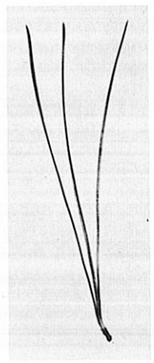






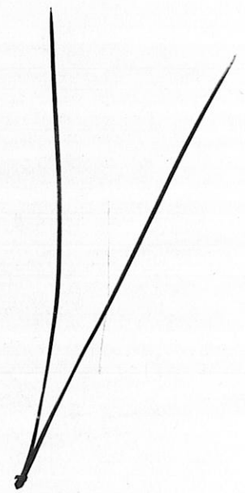
Slash Pine (*Pinus elliottii*)

Radiata Pine (*Pinus radiata*)



Aleppo Pine (*Pinus halipensi*

Stone Pine (*Pinus pinea*)



Forest Recreation

by Divisional Forest Officer
Don Spriggins

The appreciation of forests and silvan solitude for recreation is a product of civilization. Man generally does not recognise the value of these areas until he is separated from them—until he is civilized and lives in a dynamic and complex society.

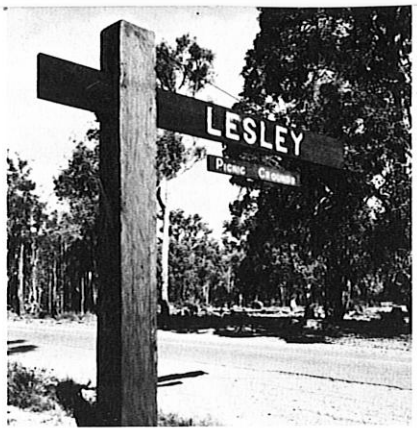
Primitive man, living deep in the forest and fearing its mysteries, had little regard for an environment which constantly endangered his life. Later, he was aware of the solitude and beauty of forests and the freedom of natural bushland, but this awareness was blunted by their overwhelming abundance. He feared the solitude in which a simple error of judgement could—and still can—mean the difference between life and death.

Now, confined by a highly complex civilization, people are developing a deeper appreciation of forests and landscapes seldom disturbed by man.

Multiple Use of Forests

Basically there are four broadly different uses made of State Forests in Western Australia. The productive use of forests for timber and wood-based products, and the role they play in protecting catchments and yielding water for domestic, industrial and irrigation purposes are well known. Their role in conservation of flora and fauna is accepted. Perhaps not so widely appreciated is the extent to which forest lands are used for outdoor recreation.

Recreational use of forest areas takes on many forms. Passive recreation activities include picnicing, walking, nature observation, driving for pleasure and general sightseeing. More active forms of recreation include hiking, rock climbing, horse riding and canoeing. Water-skiing, swimming, sailing and fishing in forest surroundings become a very pleasant experience where the water supply authorities allow public access



Signs like this are planned for all Forests Department picnic areas.

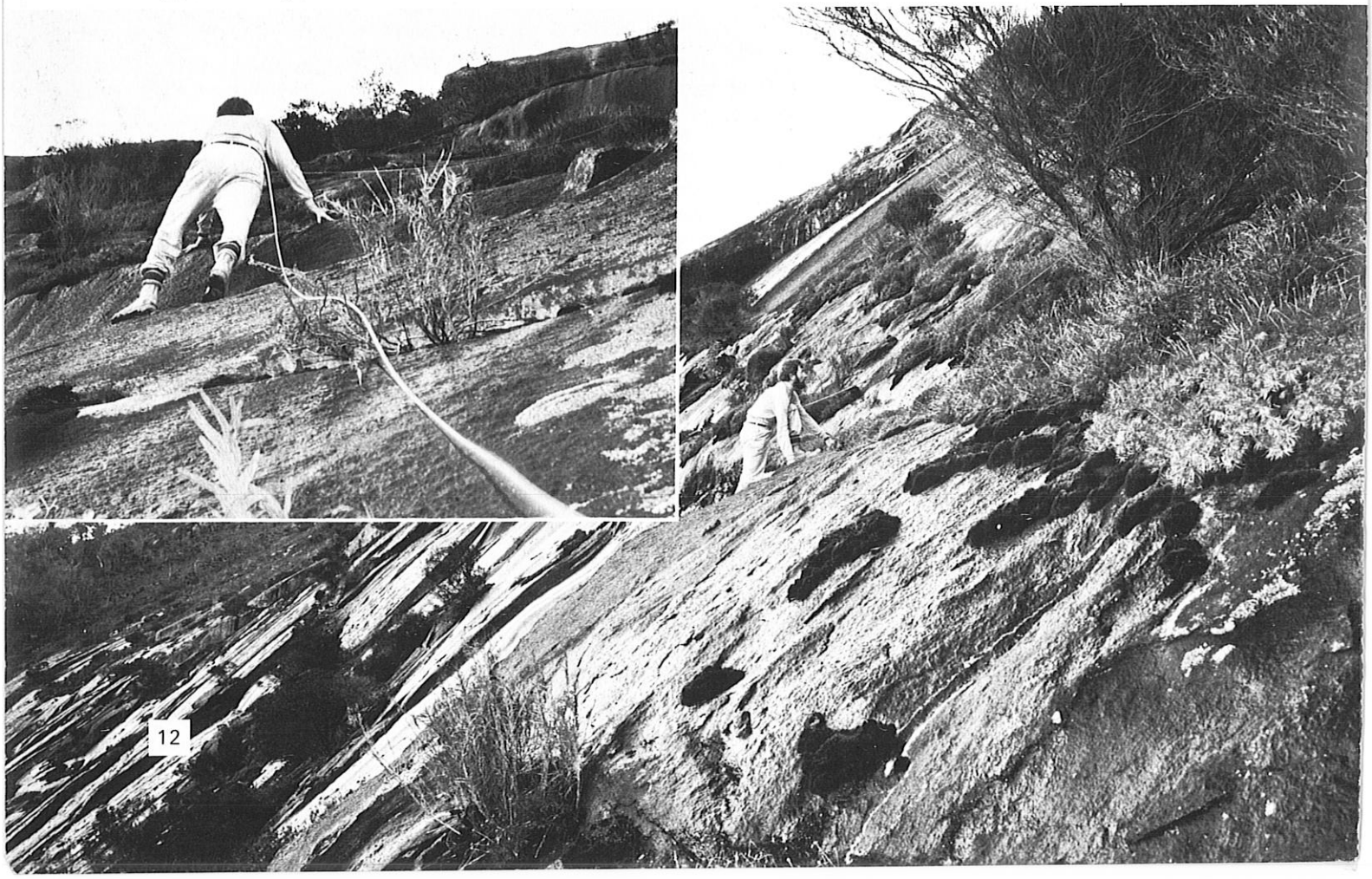
to reservoirs. This access is usually permitted where the water is used for irrigation purposes only.

Much of the forest area within two hours' drive of Perth is within domestic water catchments, which prohibits overnight camping. Whether or not a picnic spot is in these catchment areas, visitors are urged to avoid littering the forest and encouraged to use litter bins and facilities where provided.

For those favouring a mechanical component in their recreation, car trials and motor cycle trail riding are very popular.

The findings of a comprehensive U.S.A. study on outdoor recreation

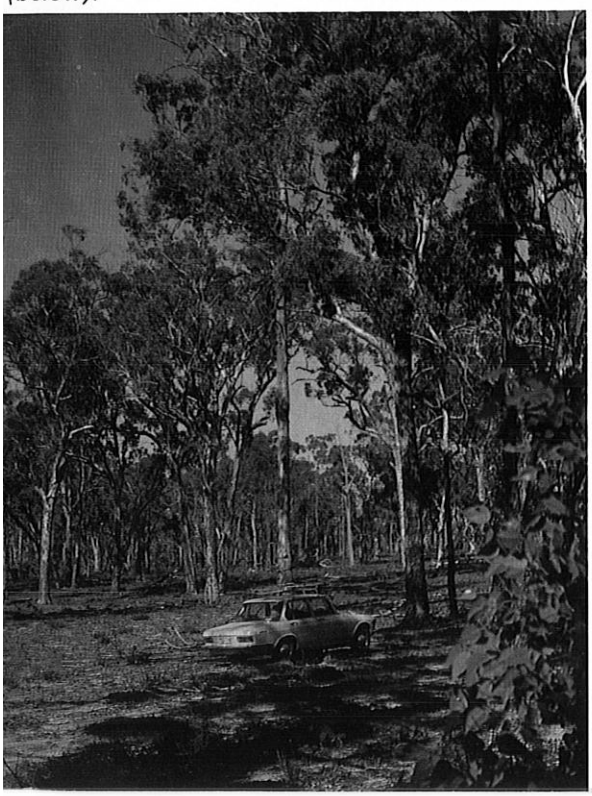
Rock climbing on the east face of Mt. Cook.

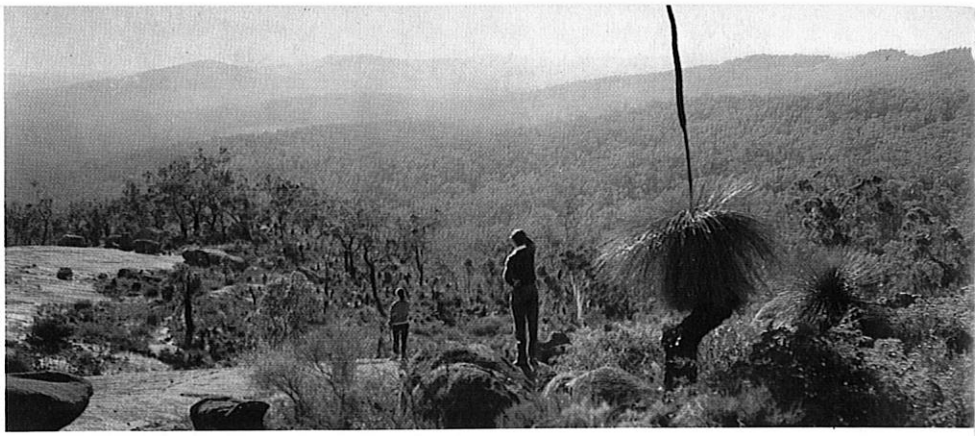


Walking along nature trail, Sullivan Rock (above).

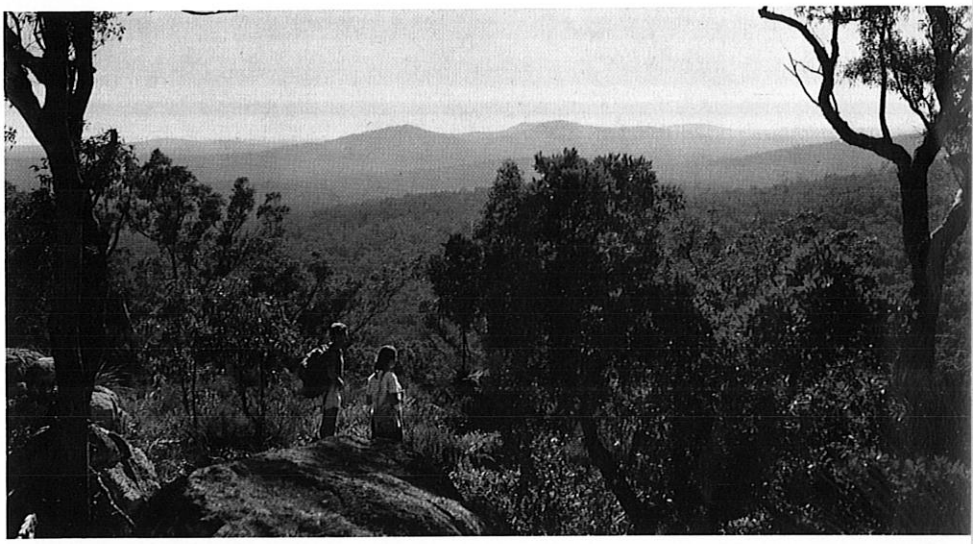
Boulder Rock overlooking jarrah forest to the south (above).

Wandoo woodland east of Christmas Tree Well (below).



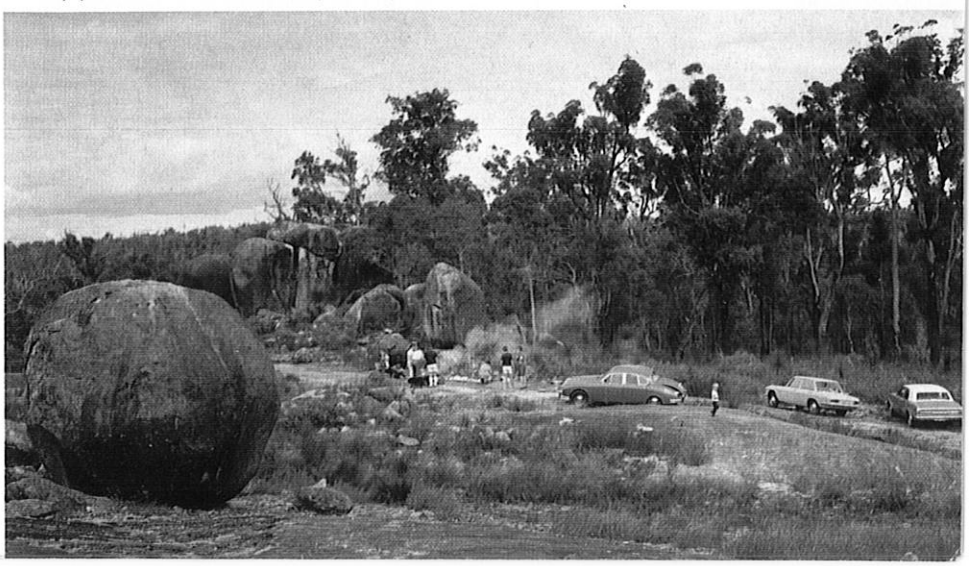


Hiking, Mt. Cook area (above and below). Mts. Vincent, Cuthbert and Randall on horizon.



Turnoff to Gleneagle picnic grounds, Albany Highway (below).

Family picnic, Boulder Rock (below).



The map (right) shows approximate boundaries of State Forest, and the location of developed picnic spots within easy reach of Perth.

—which in many cases is directly applicable to Australian conditions —showed that 90 per cent of all outdoor recreation took place during one-day visits to areas which were within approximately two hours' driving time from the main centres of population. This means that although there may be more attractive areas for recreation outside these limits, it is the areas close to main population centres which are likely to receive the most visitors and hence the greatest amount of recreational use.

The remainder of this article looks briefly at some recreational activities in forest areas close to W.A.'s main population centre—Perth.

Darling Range recreation

Generally, the easiest forms of recreation are the most popular. One of the easiest, and one which appeals to people of all ages, is picnicing. As a result of surveys conducted by the Forests Department in 1969 and 1970, it is estimated that on each Sunday during autumn and spring approximately 2,000 people go picnicing in forest areas within 35 miles of Perth.

Some prefer an undeveloped spot within the forest, while many prefer a site where limited facilities such as barbecues, rustic tables and perhaps a walking trail are provided. Sites where some of these facilities are already (or soon will be) provided include: Gleneagle and Sullivan Rock (33-mile and 41-mile pegs, Albany Highway), and Lesley and Christmas Tree Well (27-mile and 45-mile pegs, Brookton Highway). At all of these places there is an opportunity to participate in other activities such as nature walks and animal or bird observation. Where walking trails have been constructed, stopping points along the trail are chosen where wildflowers and shrubs are labelled for the information of the visitor.

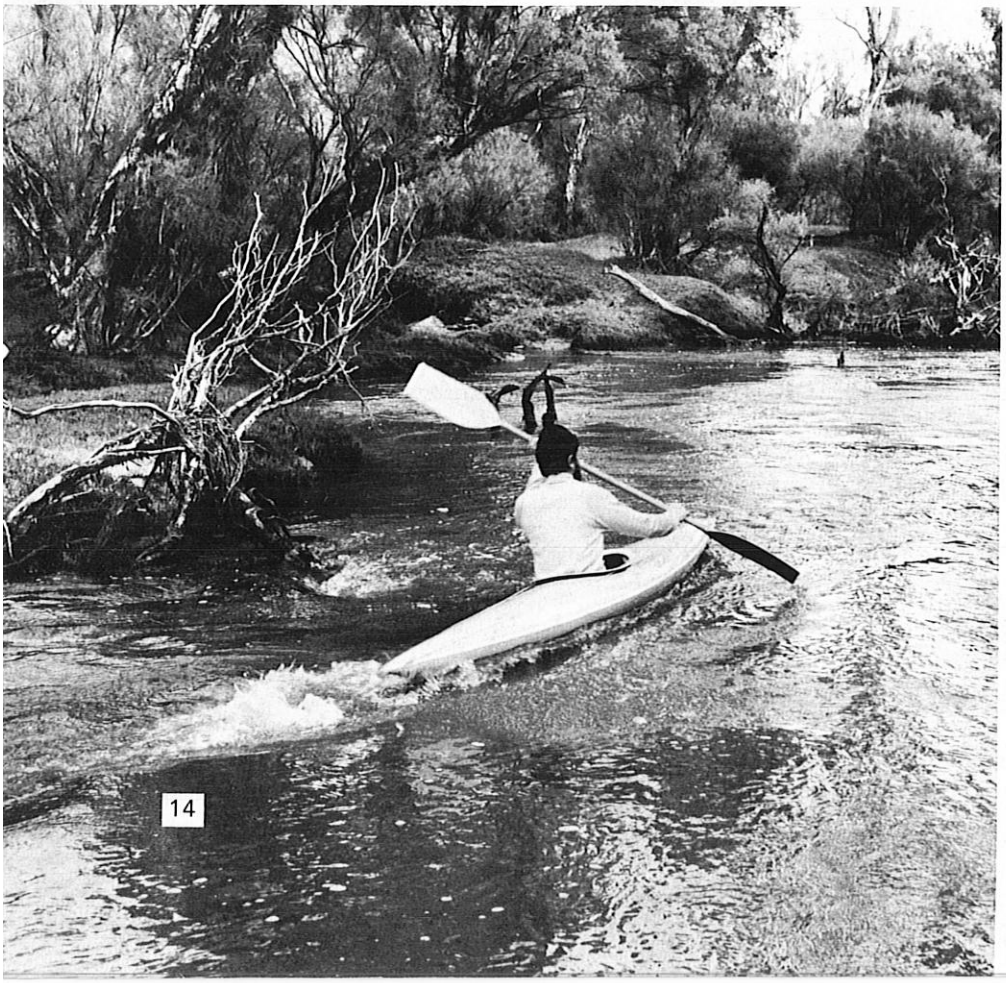
Numerous bitumen and hard surfaced gravel roads run through State Forest, providing opportunities to select a scenic route.

Some of the more popular are the roads to Mt. Dale, Mt. Gungin and Mt. Solus. These are among the highest points in the Darling Range and give an excellent view of the surrounding hills and forests.

From Eagle Hill, east of Gleneagle, southwards to Mt. Cooke, a 12-mile chain of granite peaks and outcrops provide excellent opportunities for hiking. The highest peak in the chain is Mt. Cooke—1,910 ft.—which can be climbed fairly easily from its northern end. On the eastern face of Mt. Cooke, some rather sheer granite faces provide aspects which appeal to rock climbing enthusiasts.

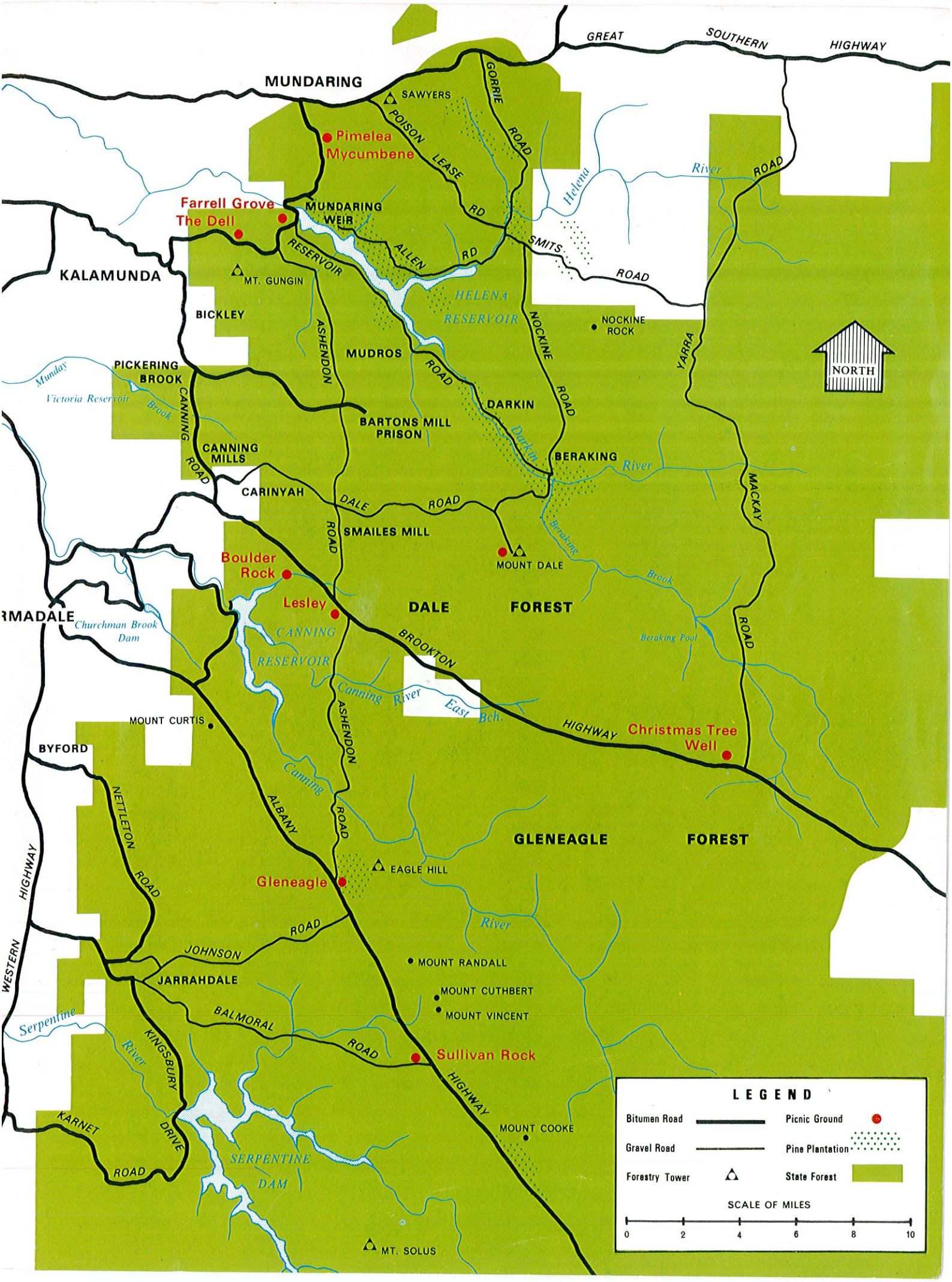
Water-based forest recreation activities are restricted to streams and reservoirs where water is not intended for human consumption. As the majority of streams and reservoirs close to Perth are earmarked for drinking water supplies, the nearest reservoirs open to recreation are the Waroona and Logue Brook dams—both of which lie within State Forest east of Waroona.

These two reservoirs and the Murray River, near Dwellingup—which, in season, is very popular with canoeists—all receive a large amount of recreational use. All are within two hours' driving from Perth.



Kayaking in forest streams is a pleasant experience (left).

Information sign at Lesley picnic grounds (below). Similar signs are also installed at some other locations.


GREAT SOUTHERN HIGHWAY
MUNDARING
SAWYERS
GORRIE ROAD
POISON LEASE RD
Pimelea
Mycumbene
Helena River ROAD
Farrell Grove
The Dell
MUNDARING WEIR
ALLEN RD
SMITS ROAD
RESERVOIR
KALAMUNDA
MT. GUNGIN
HELENA RESERVOIR
NOCKINE ROCK
BICKLEY
ASHENDON
NOCKINE ROAD
YARRA
NORTH
MUDROS
ROAD
PICKERING BROOK
Munday Victoria Reservoir Brook
CANNING ROAD
DARKIN
BARTONS MILL PRISON
Darkin
BERAKING
River
CANNING MILLS
CARINYAH
DALE ROAD
MACKAY
SMAILES MILL
ROAD
MOUNT DALE
Boulder Rock
Beraking
Brook
Lesley
DALE FOREST
RMADALE
Churchman Brook Dam
CANNING RESERVOIR
BROOKTON
ROAD
Canning River East Bch.
HIGHWAY
Christmas Tree Well
MOUNT CURTIS
BYFORD
Canning
ASHENDON ROAD
ALBANY
NETTLETON ROAD
GLENEAGLE FOREST
EAGLE HILL
HIGHWAY
Gleneagle
River
ROAD
JOHNSON
MOUNT RANDALL
WESTERN
JARRAHDALE
MOUNT CUTHBERT
MOUNT VINCENT
Serpentine
BALMORAL
ROAD
Sullivan Rock
River
KINGSBURY
HIGHWAY
KARNET
DRIVE
MOUNT COOKE
ROAD
SERPENTINE DAM
MT. SOLUS
LEGEND
Bitumen Road
Gravel Road
Forestry Tower
Picnic Ground
Pine Plantation
State Forest
SCALE OF MILES
0 2 4 6 8 10

Barbecue at Gleneagle picnic grounds.