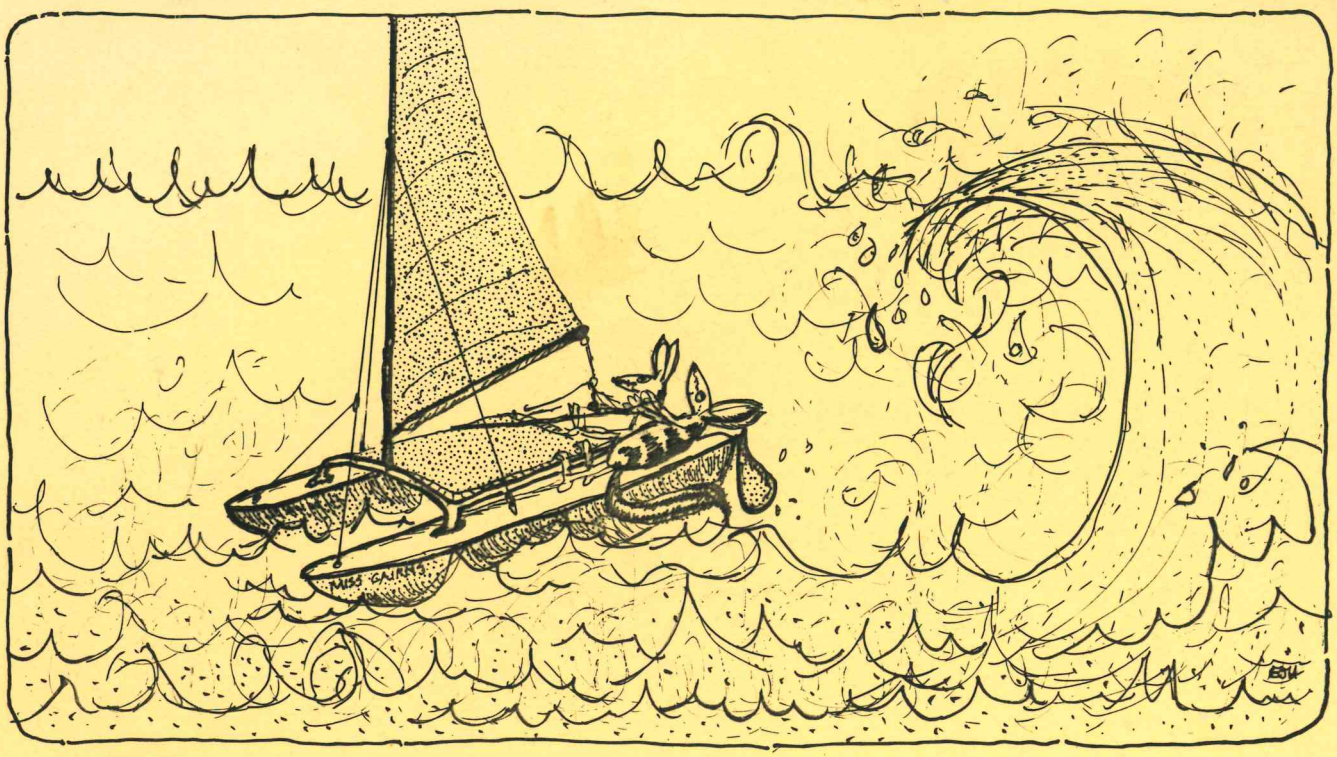
winter 83



RECREATION NOTES

FORESTS DEPARTMENT WESTERN AUSTRALIA EXTENSION BRANCH

WINTER 1983

RECNOTES : WINTER '83

During May, the inaugural Recreation Training School was held in Pemberton. An officer from each Division, including Kununurra and Kalgoorlie, as well as a private consultant, and representatives from the National Parks Authority and Department for Youth, Sport & Recreation, attended. Phil Durell from Walpole division reports on the success of the school.

Also in this issue:

We apologise for the late publication of this winter edition; but then, spending a million or so dollars does tend to keep one busy.....

Eds.

RECREATION TRAINING SCHOOL

Philip Durell

It was early in the morning just as the sun was rising, I heard the clank of tins of Mission Brown in the valley below. As recreation officers from each division made their way to Pemberton. This was the beginning of a new era in forest recreation planning.

The school opened with an address by Chief of Division Hewett. He outlined the motives of the course and the approach now adopted by the Department on recreation and tourism.

During the course lectures, tins of mission brown together with post and rail fences were gradually yielded for the recreation guidelines manual and 1:1000 scale site planning maps.

Soon enough attitudes were changed to begin thinking about varied recreational usage rather than the same old style of 'picnic table and barbecue' sites. This came about by lectures from people involved with the Forests Department, Department for Youth, Sport & Recreation, National Parks and a private park landscape designer.

The school accumulated all this knowledge for an actual planning exercise at Greens Island. The varied and 'different' ideas that came forward from the syndicate exercises indicated that the recreation officers now had opened their minds to a new dimension in forest recreation site planning.

SUE'S BRIDGE : SUCCESSFUL PLANNING & IMPLEMENTATION

F/R Ron Miragliotta
Margaret River

Due to its tranquility and aesthetic attraction, Sue's Bridge has, for many years, been a favourite recreation and camping site for vast numbers of locals and tourists.

Because of the strong public demand and consequent degradation of the river environment at Sue's Bridge, Busselton Division and Extension Branch have recently produced a recreation site development plan. When fully implemented, the plan will help to meet the recreational requirements of the public and the environmental management objectives of the Department. To date, the works programme has not been completed owing to a shortage of funds. However, most of the major developments have been implemented.

The site has been divided into two levels. The lower level, or river terrace, has no vehicle access. This area is designed to cater for picnickers and tourists without the disruption and damage caused by vehicles. Tables, barbecues and bins have been installed. Parking and car camping facilities are contained on the upper level. The parking bays are conveniently located along the main access road and are connected to the picnic site by short walk trails. The camping bays are individually placed along a one-way ring road, and each contains a fireplace, table and bin. The area is surrounded by moderately dense jarrah/marri forest, providing a peaceful and private recreation area.

In the near future, we intend to provide toilet facilities, complete construction of the camping bays (tables, fireplaces, sullage pits, and effect title, directional and information signs. The work will be done when funds become available.

When the development has been completed, Sue's Bridge recreation area will provide high quality facilities for many campers and picnickers whilst still maintaining its tranquility and aesthetic attraction.

LAKE KUNUNURRA CLASSIC or DAM - T - DAM

Chris Done
Kununurra

March, 1981, saw the inaugural dinghy race from below the Ord Dam at Lake Argyle to the Ski Beach on Lake Kununurra near the Diversion Dam. The race was over 54km of the Ord River and the first two-thirds of the distance covered was through magnificent gorge country with long riverpools separated by very shallow rocky or muddy sections up to 80 metres in length. Floating weed, almost thick enough to walk on, provided an extra hazard but careful reconnaissance in the weeks before the race had shown that there was a right way/wrong way to tackle each of these obstacles.

The field of about 22 dinghys in two classes (up to 10 h.p. and 10-25 h.p.) was started in pairs at five minute intervals and the last to leave was the 3.1 metre borrowed aluminium punt of Scott and Done powered by my new 16 h.p. Tohatsu. We were matched against a 3.7 metre aluminium dinghy with a 25 h.p. motor but got away from them at the start and didn't see them again till they finished hours later.

"See you in four or five hours", said the starter.

"Like hell", we thought, "we'll be down thre in two with any luck!"

It wasn't long before we began passing the smaller boats and using our hard earned local knowledge we were able to get through the worst of the weed beds with perhaps a little less effort than some other competitors. Imagine the looks on the faces of one crew who had battled through a 50-metre section of weed to within 10 metres of its end only to see us follow their track and skim past them into the open waters beyond. When we got to shallow water we got out, picked up the boat and ran collapsing into the boat in the next pool. We didn't have time to look at the scenery and slowed down only briefly when passing a bloke with his three girl, topless crew. (a likely story! Ed.)

Eventually we made it to open water and at nearly 50 km/h we were able to pass the few boats remaining in front and pull into the Ski Beach about 2 hrs and 5 mins after leaving the "top dam". The startled officials had to run down to meet us and it seemed ages until the next boat arrived. It had been exhausting but it was a great feeling to have clocked the fastest time and won the race outright as well as being first in the class.

March, 1982, brought the second running of the event and again we did well, passing many boats in the arduous upper reaches. We lost about 5 minutes when a shear pin broke and jammed but once mobile again, rejoined the race with extra keenness so that by the time we got to Spillway Creek only five boats were in front of us. One by one we pegged them back until there was only one in front, a super lightweight, super fit father and son crew with a 6 h.p. motor and the same punt which we had used in the previous year. We couldn't catch them and they pulled in twenty minutes in front of us taking out the line honours and the handicap event, leaving us with the fastest time (2 hrs 7 mins) and first in our class.

March of 1983 found me with a new crew (David Rose having taken Ian Scott's place) and a new punt (I had to buy my own since I'd run out of "friends" to borrow from). There were some other changes too, the most significant being that the P.W.D. had, on the morning of the event, opened the three valves at the base of the Ord Dam, raising the water level in the river by over a metre and thus eliminating the "get out and carry" sections as well as opening up the weed beds a fair bit.

There was some new, highly profressional competition too, Darwin boats with souped up motors and $300 racing, weed cutting props. These crews would be especially hard to beat since the water was so high.

Off we went and just around the first bend, not happy with our performance, I started to fiddle with the throttle control to get a bit more speed. Another boats' wake upset things and we were once again the first to finish - this time only 500 metres from the start, upside down with a swamped motor and all the tools lost!

Ah well, next year .....

Epilogue: The Darwin boats cleaned up the locals and set new records for fastest times in both classes.

SIX LITTLE HORSES.

The Dam-T-Dam was on again,
Come blistering sun or driving rain,
And the boats lined up on the beach below
The Argyle Dam, all set to go.

Now a Gruesome Two of previous fame
Were set to win it all again,
With sixteen horses clamped on aft,
They smiled with confidence at their craft.

A speed machine, of that no doubt,
And they were sure no craft about
Could match their speed on open water;
Win this race, well hell! they 'orta!

But upon the beach there now appeared
The single craft that they most feared.
Six tiny horses seemed pretty weak
But Storey sat in the driver's seat.

'Little Poppy' was this craft's name
And racing was it's favourite game.
But Storey was of lighter frame
Than the Gruesome Two, of previous fame.

"We'll wait for you till you come in",
Cried giant Scott with evil grin.
But the starter's voice rang loud and clear
And Little Poppy leaped into gear.

The smile upon Scott's face now faded,
And looks with Done were quickly traded.
"Damn it, Scott, he's on the plane!
Well, come on man, pray for rain!"

"I hope he sinks, or hits a rock,
Goes up a creek, or drops a prop".
"Well move it Done, it's our turn now,
We've got to catch that little cow!"

But John and Rob were fully versed
And the mighty Ord could do her worst.
O'er rapids, rocks, and mud and weed
"Little Poppy" held her lead.

The day saw others come unstuck
As dinghies bogged in oozey muck
And aluminium left on jagged rocks,
from dented hulls and busted props.

A sickening crunch saw a shear pin go,
And a prop change then, proved too slow.
Five minutes lost, for the prop had stuck,
And "Big Red" cursed their rotten luck.

But now downstream on flatter reaches,
"Poppy" flew past muddy beaches.
The little six was open wide
Hell! could this little boat ride!

Now a rueful eye Rob kept behind,
For he knew that Scott must soon unwind
Those sixteen horses, for his time
To beat them to that finish line.

By spillway Done was seeing red
With Storey still well up ahead.
"Well, Scott, if we don't see them soon,
I'll make you swim, you big baboon!"

But then the pump house came in view
And Rob and John felt thrills anew.
They knew they had won, for Done and Scott,
Behind them still, they could not see.

Now on the beach the happy pair
With cheering crowd and can of beer,
Welcome Chris and Ian as they beach their boat,
Once, the fastest thing afloat.

With friendliness once more restored,
They swap tales of coming down the Ord;
And over drinks and much good cheer,
Vow to meet again next year!

John Storey

THE MURRAY VALLEY

Wayne Schmidt

Readers may recall the article by Tony Raven in the Autumn, 1982 issue of Recnotes concerning some of the problems arising from increasing recreational use of the Murray Valley. The impact of recreational activities, such as 'wild' camping, which are occurring in other areas of State forest have similarly been reported in previous issues (Brian Moss, Winter '82; Ian Old, Spring '82; Jack Bradshaw, Autumn '83).

We are now witnessing what in some areas could perhaps be described as an explosion in the growth of forest recreation activity. This growth has unfortunately been accompanied by numerous management problems and has resulted in the degradation of many of the Department's recreation areas and facilities. At the same time, there has been increasing conflict among various recreation groups who visit State forest for widely varying and oftentimes highly incompatible purposes. These problems are not new nor are they insurmountable given adequate planning and management inputs.

In the case of the Murray Valley, Dwellingup staff have recently undertaken the first steps in providing for the planned long term development of recreation areas and facilities. The initial task, that of assessing the recreational opportunities and needs which exist throughout the Division and subsequently preparing a working plan which specifies the type, location, scale and timing of future developments, has been completed. This plan, which covers the 5-year period from 1983-88, has been prepared by Tony Raven according to a format specified in the Northern Region's Recreation Framework Plan. Other divisions have commenced the development of their own recreation working plans and several are now nearing completion.

Apart from being the first such divisional document of its type, the Dwellingup Recreation Working Plan is also notable in terms of the scope and scale of development envisaged. Implementation of the plan will, over the next 5 years, entail the expenditure of approximately $750 000 on development projects designed to accommodate such uses as tent camping, picnicking, bushwalking, canoeing, nature study and some 15-20 other activities. The plan also breaks new ground in terms of the level of staffing proposed to plan and oversee recreation development and maintenance work in the division.

Implementation of the Dwellingup plan commenced in July and has been aided by the employment of 5 people under the Commonwealth's Special Employment Relief Project Assistance (SERPA) Scheme. It was recently announced that an application to employ an additional 9 persons on recreation work in the Division this financial year under the same scheme has been approved.

In conclusion, the success of Dwellingup's planning efforts in recreation remains to be assessed. Whatever the outcome, the Division has, with relatively little input from Regional or Specialist staff, initiated positive steps to overcome the problems resulting from growing recreational pressures and the previous lack of planned development.

LANDSCAPE SEMINAR REPORT

Eugene Herbert

The Forests Department held an in-house Landscape Seminar on 11 May, 1983. The objectives of this seminar were to:

(a) Reveal the development and implementation procedures involved with a Forest Landscape Management Programme;

(b) Discuss the latest developments in Forest Landscape Assessment - an integral factor of the overall programme;

(c) Demonstrate the practical worth of the programme to everyday forest management - the Forest Commission of Victoria's Visual Management System.

Guest speakers included Mr Dennis Williamson, Landscape Planner, from the Forest Commission, Victoria. Dennis has been involved with the Commission's Forest Landscape Management Programme (an adaptation of the U.S. Forest Service's system) and explained its development and implementation in Victoria. He also successfully demonstrated the practical worth of the programme to the management of Victorian forests.

Professors Rachel and Stephen Kaplan, Environmental Psychologists from the University of Michigan, spoke about Landscape Assessment techniques and their input to the Forest Landscape Management System. Their methodology involves public participation to determine preference studies which highlighted the preference differences that often exist between experts (foresters etc) and the public.

Landscape architects Wayne Schmidt and Eugene Herbert spoke at the seminar and outlined the Department's Landscape Management Programme. The development of this programme will be dependent on adapting the F.M.I.S. computer mapping programme to do the mapping of ranked Visual Quality Zones (importance zones) throughout State forest.

In conclusion, feedback received after the seminar indicated that it had been successful in explaining the practical worth of a Landscape Management Programme and in demonstrating the obvious need for its implementation in W.A. forests.

RECREATION MANUALS

Peter Henderson

As you all know, the Department's Recreation Operations Manual and Sign Manual were distributed for comment during the recent training school. Since the school, numerous constructive comments have been received and a final copy of the Operations Manual is now in preparation. The Sign Manual is still under review, however no major alterations are anticipated.

Both manuals will be printed on loose-leaf waterproof paper and have been designed for use by overseers and field staff

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Bouquets to Phil, Merv and the gang at Walpole for their recreation development at the Valley of the Giants and in particular for the new 3-sided whiz bang information shelter.

Ed.

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Courtesy D.F.O. Walter Codswollop

IS THE FORESTS DEPARTMENT OF WESTERN AUSTRALIA READY FOR THE COMPUTER AGE?

or

ARE THE CHIPS UP, DOWN OR SIDEWAYS?

The Insidious Bug

This can best be judged by utilising the following documentationalised approach to the technological methodology of electronic computational devices. In any multi-tasking software environment with printer supported disk-file formatting, there is bound to be some I/O error on the SPH/354. This is due to the partially populated 64K bubble memory with extended serial port addressing written in CBASIC2. Of course, networking potential can be enhanced by 183.4 mips if the 2.4 megabyte disk controller with real-time enhancements on board is interfaced with programmable function keys. Further, 16-bit operation is best evaluated by managerial hands-on experience with a fourth-generation language, and the user interface-server can be connected to the central computational component. The DBMS can perform subfield and multifield searches on any UNIX orientated operating system, and the user-friendly protocol for timesharing is superlative. The future growth path is probably through optional double density disks for 84-column screen formatting, with enhanced bootstrapping and power-down procedures for CP/M and MSDOS compatibles.

P.S. Reprints of this article can be obtained from the source file by initiation of back-up procedures on a digitally operated informational image-producing device with hard-copy cellulose-based output documentation.

P.P.S. Don't forget to swit ... - er - to initialise power-up procedures before attempting to process the documentational image-producing procedure protocols.

P.P.P.S. For further reading see "The King's New Suit of Clothes" by Hans Christian Andersen.

P.P.P.P.S. There is absolutely no truth in the rumour that when this was shown to a member of the Computer Policy Committee, he nodded gravely and recommended the formation of a project team and the employment of a consultant.

JARGON OR NOT TO JARGON

PAGING

Below are two descriptions of the paging process, an arrangement used to increase the effective memory capacity of a computer. The description on the left uses traditional computer terminology; the description on the right is parallel, item by item, but replaces the jargon with concrete and familiar terms.

The Paging System - Rules	The Crafting Game - Rules
1. Any computer job can have up to 16 777 216 bytes of memory at once.	1. You can have up to sixteen million things. So can everybody else.
2. Memory is divided into pages of 4096 bytes each.	2. Things are kept in crates that hold 4 096 things each. Things in the same crate are called cratemates.
3. Pages are stored either in the real memory or on a paging device. The real memory is almost too small to hold all the pages.	3. Crates are stored either in the workshop or a warehouse. The workshop is almost always too small to hold all the crates.
4. There is only one real memory (eight million bytes of storage) and four principal paging devices (IBM 2305 fixed-head file storage units). All the jobs share them.	4. There is only one workshop and four warehouses. Everybody shares them.
5. Each byte has an address.	5. Each thing has its own thing number.
6. What you do to bytes is to reference (i.e. store data in or fetch data from) them. Jobs take turns referencing.	6. What you do with a thing is to zark it. Everybody takes turns zarking.
7. Jobs can reference only their own bytes, not anybody else's.	7. You can zark only your things, not anybody else's.
8. Bytes can be referenced only when they're in real memory.	8. Things can be zarked only when they're in the workshop.
9. Only the operating system (i.e. MTS, the supervisor, and paging-device program) knows whether a byte is in real memory or on the paging device.	9. Only the Thing King knows whether a thing is in the workshop or in one of the warehouses.
10. The longer a byte (or a page) goes without being referenced, the less recently used it is said to become.	10. The longer a thing goes without being zarked, the grubbier it is said to become.
11. The way a job gets bytes is to request them from the system. Memory is allocated in groups of eight bytes (doublewords) to make the system's recordkeeping process easier.	11. The way you get your things is to ask the Thing King. The Thing King gives out things only in bunches of eight. This is to keep the royal overhead down.

Excerpt from University of Michigan Computer Center Newsletter.
October 24, 1979, vol. 9 no. 16, p. 203.

PEMBERTON SELF-GUIDING TOUR

Rae Burrows

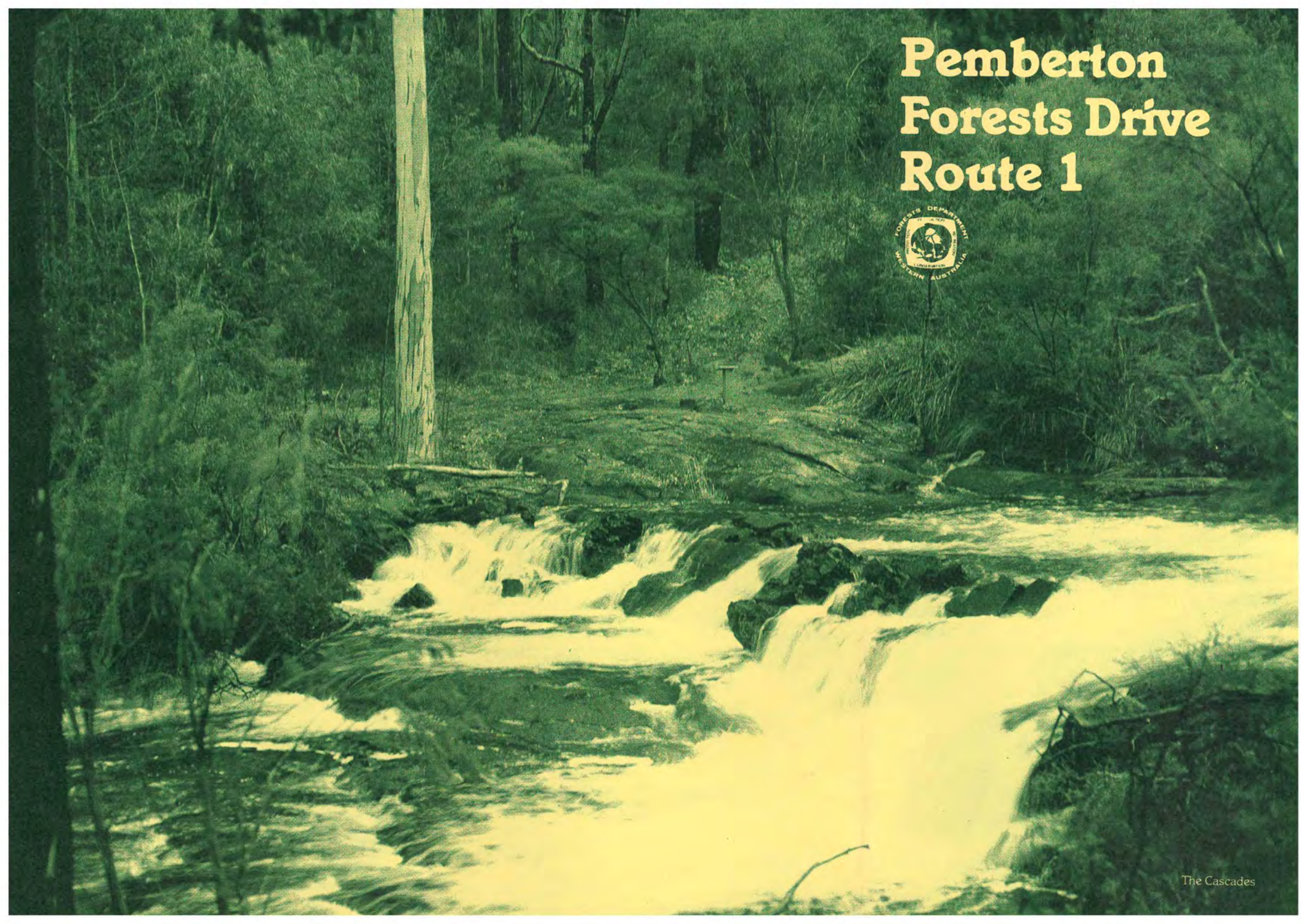
After nearly two years of being 'in the pipeline' the new Pemberton Forests Drive Tour Guide is finally available.

The tour is a revamped version of the original written by Roger Underwood some years ago. It has both historical and forestry interest guiding the vehicle-borne tourist to such areas as the Brockman Sawpits, '100 year' Forest, Big Brook Arboretum and areas of karri regeneration of varying ages. Popular beauty spots like the Cascades, Warren National Park and the Rainbow Trail are also included in the route.

The 5-6 hour tour has proved exceptionally popular with tourists in the past and now with the brochure's new look and handy size, the use of the tourist route should increase even more.

* Copy of brochure is included in back of RecNotes.

Pemberton Forests Drive Route 1



The Cascades

Pemberton Forests Scenic Tour

This self guiding tour provides an introduction to the beautiful karri, marri and jarrah forests in the Pemberton area.

The tour layout and suggested stopping places are marked on the accompanying route map. These stopping places and roads are clearly signposted on the ground.

Stopping Place Signs look like this: –

Tour Directional Signs look like this: –

Remember that there is an extensive network of roads in the forest. Many roads may not be signposted nor be suitable for conventional vehicles, especially in wet weather. For this reason it is suggested that you keep to the directional route.

Depending on how long you stop at each point, the tour should take about five or six hours. It is designed so that you return to Pemberton at the half way mark. This could be a good place to break the trip for refreshments. An alternative lunch stop is at Big Brook Aboretum (stop 13) where there are picnic and barbecue facilities. There are also picnic areas at many of the other stops.

Enjoy your day but please be careful with fire.

STOPPING PLACE 1. Pemberton Sawmill

The Pemberton Sawmill can be seen behind the Tourist Bureau.

This mill is the second largest in the State and produces about 140m³ of sawn karri timber each day – enough to build about ten average size brick veneer houses. The first Pemberton mill was built on this site in 1913 by the State Government. Its purpose was to cut railway sleepers for the Trans-Australia line and to remove trees which were seen at the time to be a hindrance to land settlement. The mill has been in continuous production since then, but has changed hands and been rebuilt over the years. Most of the timber produced now is used in the building trade but there is also a demand for large size beams not readily available elsewhere in the world.

These days the mill draws its logs from a Sawmilling License Area allocated to it by the Forests Department in surrounding State forest. The License Area is carefully managed to provide long term life to the milling industry and the community through regulation of the cutting of the forests and regeneration of cut over areas.

STOPPING PLACE 2. The Cascades

Drive along the main road to Northcliffe for about 5 kms. Turn left at Glauders Road and follow the signs to the "Cascades."

This is one of the most beautiful and popular recreation areas near Pemberton. The name "Cascades" is derived from the series of waterfalls which occur on the Lefroy Brook here.

The Cascades was developed as a recreation area by the Forests Department in the early 1970's. However, it was well known many years before then. Early settlers, cattlemen and mapmakers used it as a "trig point" (a tie-in point for survey lines) and as a crossing of the Lefroy Brook. In the 1930s, the railway line which traverses the area was built. This line was built to link the Group Settlement farming area at Northcliffe with the town of Pemberton and points further north. For nearly thirty years after its construction, the Pemberton-Northcliffe railway line was easily the most expensive built in W.A., as it traversed such heavy forest and broken topography. For the first 10 km out of Pemberton the line at no point lies upon the natural land surface – it crosses either a bridge, or cutting or a fill.

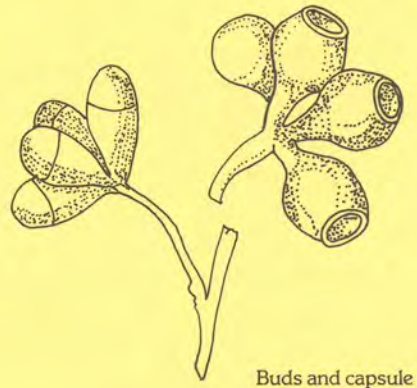
The Cascades is now part of a 900 ha State forest recreation area, managed to preserve its natural character and charm. Its full beauty can be seen by walking the 1 km long loop trail. Various natural features along this walk trail are highlighted and explained in small interpretative signs.

STOPPING PLACE 3. Brockman State Forest

Leave the Cascades by the same route as you entered. Turn left when you reach the bitumen Pemberton-Northcliffe road. You are now entering part of the Brockman State Forest.

At this point you can examine and compare the two major tree species in the Pemberton area: karri and marri. Specimens of each type of tree are labelled at this stopping place.

Karri *(Eucalyptus diversicolor)* is the large tree with pale, smooth bark. The colour of karri bark changes periodically as old bark is shed each year, usually in late summer or early autumn. Karri is the main timber tree of the district.

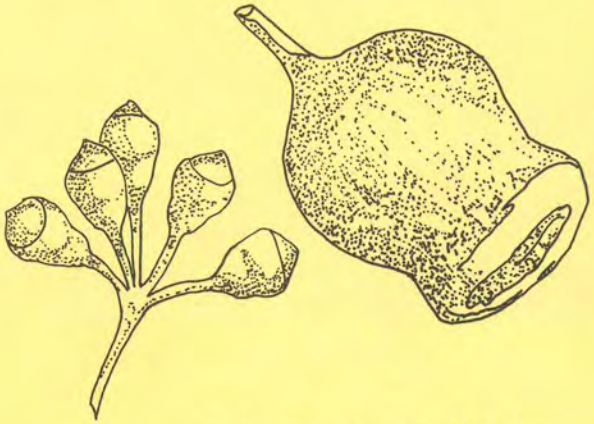


Buds and capsule of karri
(Eucalyptus diversicolor)

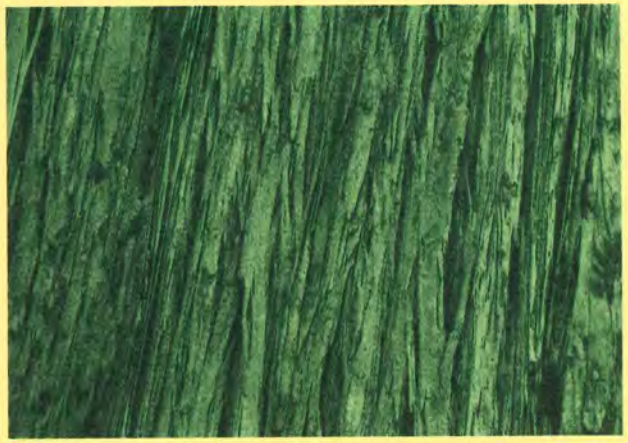
Marri (*E. calophylla*) is also a large tree, usually with a rough, blackened or dark grey bark. Marri is sometimes known as "red gum" because of the red kino or "gum" which is exuded from the wood and bark. The marri fruit is very distinctive being a large bell-shaped woody structure, known locally as a "honkey nut."

Marri timber is tough and strong, but the prevalence of gum veins and loose rings in the log has inhibited its use as a sawn timber. The main use of marri timber is for paper pulp.

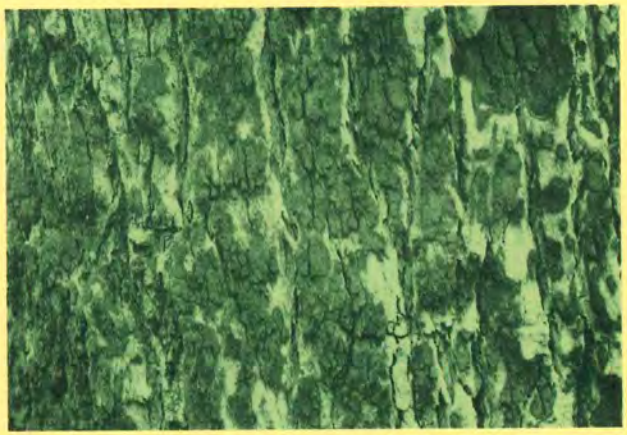
Both marri and karri blossum produce magnificent honey.



Buds and capsules of Marri (*Eucalyptus calophylla*) above, and jarrah (*E. marginata*) below.



Bark types:
Jarrah



Marri

Karri

STOPPING PLACE 4.
The Warren River and Brockman Homestead

Leave Brockman State Forest and continue along the main road towards Northcliffe, the Warren River Crossing is the next stopping point.

The Warren River is one of the best known rivers of Western Australia. It rises a few kilometres west of Kojonup in farmland, enters State forest north-east of Manjimup and eventually reaches the Southern Ocean some 30 kms south-west of Pemberton. Including its main tributary, the Tone River, the total river length is over 200km. The Warren flows permanently and has the largest summer flow of any river in the lower South-West. The upper reaches of the river, where catchment areas have been cleared of their forest for farming, have become salty in recent years, but the lower tributaries which draw their water from the forested catchments (Lefroy Brook, Treen Brook, Big Brook, Big Hill Brook and Dombakup Brook) contain pure water suitable for any purpose. The maintenance of pure water catchments is one of the most vital roles of State forests in Western Australia.

The Brockman farm and homestead on the banks of the Warren River at this point is of historical interest, Edward Brockman settled here in the early 1860s, the first settler in the Pemberton district. The house he built from locally made mud-brick and pit-sawn timber (cut by convict labour from nearby forests) still stands today and can be seen through the trees to the left of the road. Note the original post and rail fences and stockyards still standing and over 120 years old.

The house is not open for inspection, but futher information on the Brockmans and this settlement is available from the Pemberton Tourist Bureau and Pioneer Museum.

STOPPING PLACE 5.
Brockman National Park

After crossing the Warren River, continue along the main road towards Northcliffe.

The route now enters a magnificent stand of virgin karri forest. This small reserve is Brockman National Park and is one of several forest reserves in the district which are managed by the National Parks Authority.

Over 4,000 ha of these virgin forest reserves have been set aside in the Pemberton area alone. In

addition, there are numerous areas of virgin State forest which have also been reserved from timber harvest because of their special beauty or interest. About one third of the karri forest has been set aside to be retained as near as possible to its natural state.

The "Bibbulmun Track" crosses through the Brockman National Park at this point. The Bibbulmun Track is a long distance walk trail which extends through almost the entire length of Western Australia's forest belt – from Kalamunda just east of Perth, to Northcliffe. This special walking trail was developed specifically for the hardy bushwalker who seeks the solitude and challenge of the forest. A network of shorter walk trails have also been constructed in the Pemberton forests. Information about these can be obtained from the Forests Department office or Tourist Bureau.

STOPPING PLACE 6.
Pine Plantation, Allis Road

As you leave the Brockman National Park reserve note the rapid change in appearance and nature of the forests on either side of the road. Within the space of only 1 km, the forest changes from stately karri and marri to low stunted jarrah and banksia bush. This change in "forest type" is caused by a distinct change in the underlying soils. The tallest and most rapidly growing forests always grow on the best soil types. Thus, karri usually occurs on well-drained red-brown loamy soils, but where the soil is white sand, or rocky "ironstone" gravel, the forest will usually be jarrah. Trees such as jarrah and banksia can grow quite readily on very impoverished or stony soils.

The small pine plantation in this area is quite interesting. It is an experimental plot designed to test the suitability of a number of different species of pine to grow on this poor, sandy site. The predominant species are maritime pine *(Pinus pinaster)* from Portugal, and slash and lobfolly pines *(Pinus elliotii* and *Pinus taeda)* from the south-east of the U.S.A. The pines were planted in 1968 and 1969.

Foresters undertake experimental pine plantings because W.A. has no natural softwood (pine) forests and unless we grow our own, softwood timbers must be imported. The experimental plots are used to help select the pine species which will grow best on a particular soil type and produces a useful timber. From the evidence of trial plantings such as these, both successful and unsuccessful,large plantations of *Pinus radiata* and *Pinus pinaster* have been established in various centres in the South-West. The timber of these fast growing softwoods is being used to supplement stocks of slower growing native hardwood trees, thereby helping to relieve demands on the hardwood resources.

It is of historical interest that this small plantation is established on the site of a former farm, known as "Connolly's." Mr. Connolly and his sons attempted to settle in this area just before World War I, attracted by the high rainfall and relatively easy clearing. The venture failed, however, mainly due to the infertility of the soil and swampiness of the ground. The remnants of the old camp, with its hewn timber and round posts still stand beyond the older pines around the big bend in the bitumen road towards Northcliffe.

STOPPING PLACE 7.
Brockman Sawpit

Continue towards Northcliffe for about 400 m until you reach Rowe Road on the left. Turn here and follow the signs to the Brockman Sawpit.

Information pamphlets about the sawpit are available from the dispenser at the site, or from the Pemberton Tourist Bureau or Forests Department.

Notice the many beautiful young jarrah *Eucalyptus marginata* trees amongst the marri in this area. Several trees are labelled. The jarrah has grey, stringy bark often blackened by past fires near the bottom of the tree. The fruit is small and round – about the size and shape of a large pea.

Jarrah grows in magnificent forests throughout the south-west of the State. The original forest has been depleted by clearing for farms, roads and mining. Some areas have also been affected by a root rotting disease called "jarrah dieback" *(Phytophthora cinnamomi)*. The root-rot fungus is thought to have been introducted into W.A. on the roots of fruit trees brought into the state early in the century. Hygiene and quarantine controls have been implemented to help minimise further spread of the disease.

Jarrah timber is one of the finest and most versatile hardwood timbers in the world. Its uses range from fine furniture and cabinet making to railway sleepers and fence posts. It was once used as paving blocks and laid extensively in the streets of cities such as London.

STOPPING PLACE 8.
Karri Regeneration

Leave Brockman Sawpit and return to the pine plantation. Turn left off the highway at Allis Road and follow this road over the logging road to Callcup Road. Turn right.

WARNING. These are narrow, winding forest tracks. Drive slowly, beware of on-coming traffic and follow the signs. All roads are clearly signposted.

At Stopping Place No. 8 an area of karri regeneration is situated on the left hand side of Callcup Road. This is an area where mature karri trees have been harvested for sawmilling at Pemberton and a new crop of young karri established to replace them. Cutting took place on this site in 1971 and the new crop was established the following year.

In forest regeneration areas such as this one, the young seedlings grow quickly after germination thrusting up to the open sunlight above. Natural selection occurs and the weaker saplings are soon suppressed and killed by the more dominant ones. The Forests Department utilises this otherwise wasted resource of the weaker saplings. The trees are removed in a thinning operation. Further on in the tour you will see the results of some of the early experimental thinning operations.

STOPPING PLACE 9.
Clearfelled Area

Continue along Callcup Road until you reach a recently regenerated area and Stopping Place No. 9.

This area is typical of karri forests which have been clearfelled for timber then regenerated using the "Seed Tree System." In this system, forestry officers walk over each area of forest before logging operations begin and select and mark three to five "seed trees" on each hectare. The seed trees are retained to serve as the parents of the new forest and are chosen for the excellence of their form and the large amount of seed available in their branches. The rest of the trees in the area are cut down and taken to the mills. Trees which are not suitable for sawmilling because of size or quality are used for producing paper pulp.

When the seed ripens in the crowns of the seed trees (karri trees produce ripe seed only every four to eight years), a hot but controlled fire is run through the scrub and logging debris below. This fire produces a fertile ash bed free of scrub competition and also causes the seed capsules to open and drop their contents two to three days after the burn. The seed trees are then removed. If these trees were retained, their huge crowns and root system would suppress and kill the new seedlings. The seeds germinate with the onset of the next rains and the life of the new karri forest begins.

Some parts of the logged area or "coupe" as it is known, do not revegetate very quickly. These are the tracks used by the logging trucks and the areas where the logs were stacked prior to loading onto the trucks. In these areas the soil is compacted by the logging vehicles and must be ripped (similar to ploughing) before successful germination and growth can occur. They may also be hand planted with young karri trees raised in the Forests Department nursery at West Manjimup.

STOPPING PLACE 10.
Warren National Park

Follow Callcup Road back to the main highway. Turn left back towards Pemberton and continue for 4 kms until you reach Old Vasse Road. Turn left and follow the signs to the Warren National Park.

This magnificent forest is part of the Pemberton National Park system. It comprises over 1,000 ha of virgin karri and karri-marri stands together with a superb section of the Warren River.

There are numerous sites for picnicking and barbecuing available in this National Park. It is recommended that you explore the Maidenbush and Heartbreak Trails as these provide some superb views and forest experiences.

STOPPING PLACE 11.
Treen Brook State Forest

Continue along Old Vasse Road to the sealed Vasse Highway. Turn right and head back towards Pemberton.

This fine regrowth forest was regenerated following logging operations in the 1930s. You may be interested to compare this beautiful young forest with the sapling regeneration on Callcup Road (Stopping Places 8 and 9). Treen Brook Forest looked just like these areas at the corresponding stage of its life. Careful management and protection ensures the development of attractive and productive regrowth forests like this one.

Karri forests are subject to regular periodic "prescribed burning" once they pass the sapling stage at age 12-15 years. "Prescribed burning" refers to the deliberate, controlled burning of the forest under carefully selected weather conditions. The purpose of prescribed burning is to reduce the accumulations of fuel (bark, leaves and twigs) which gather on the forest floor. This burning reduces the fire hazard, ensuring that if a fire starts in the forest on hot, dry windy days in summer (as often happens, either as a result of lightning, or man's carelessness), it will find little fuel to burn in and therefore cause only a minimum of damage to the forest and neighbouring farms and communities.

Research has shown that plants and animals of the forest are not destroyed by periodic prescribed burning, as might be imagined by looking at a freshly burned area. Most species, in fact, need periodic fire to rejuvenate their habitat. Western Australian forest plants and animals appear to have evolved in an environment in which fire has always been a natural factor.

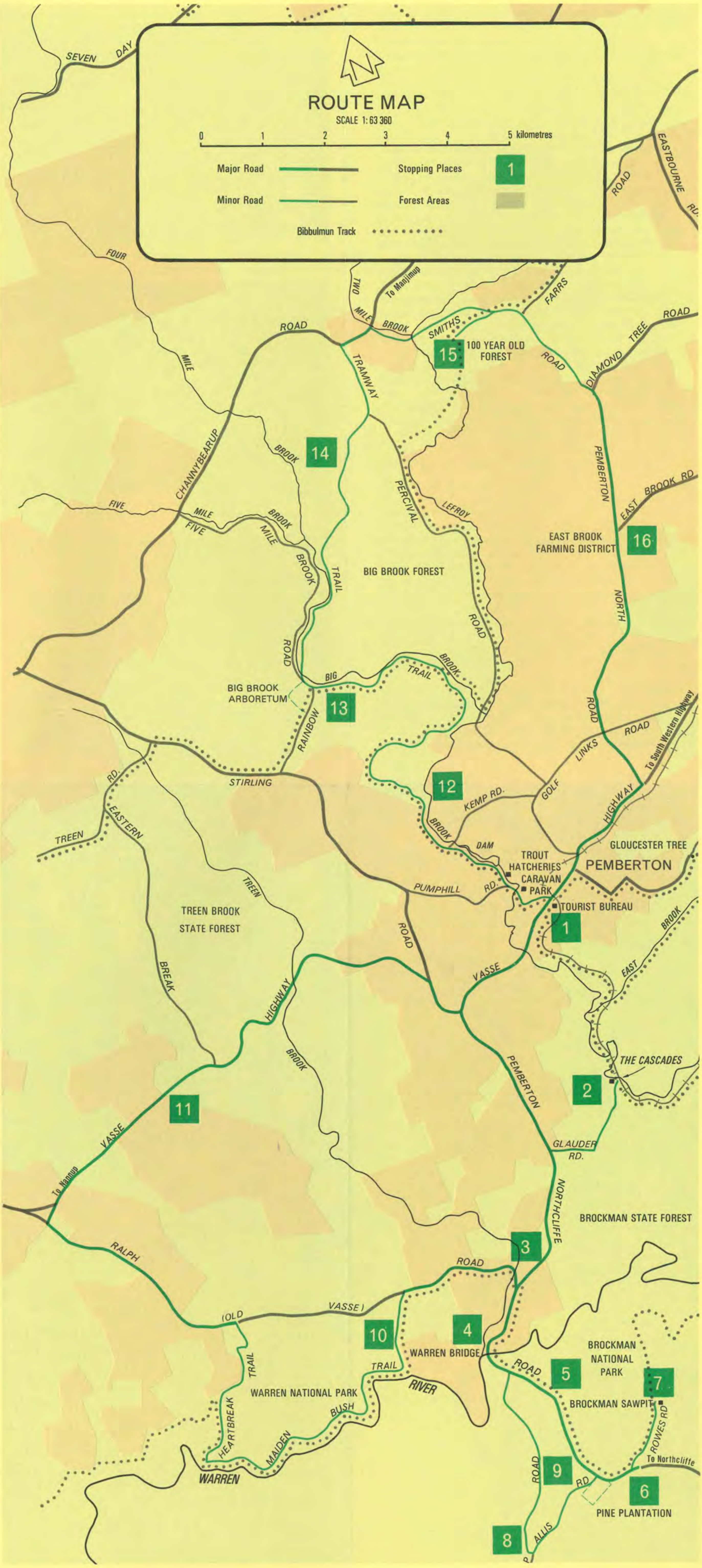
STOPPING PLACE 12.
Big Brook Forest and the Rainbow Trail

Return to Pemberton along the Vasse Highway. Turn left at the road leading out of town to the Caravan Park and Trout Hatcheries. Follow the signs to the Rainbow Trail.

The Rainbow Trail is a scenic forest drive which follows the route of an old logging tramway used in the 1920s for hauling logs from Big Brook Forest to Pemberton Mill. Lefroy Brook and Big Brook run beside the trail providing pleasing views of pools and rapids.

Following logging, Big Brook Forest was regenerated by the seed tree regeneration system previously described (see Stopping Place 9). The germination year for the new regrowth stand was 1930. Compare this forest with the saplings which started life in 1972 and 1982 along Callcup Road, and with the young regrowth stands which started in 1940 in Treen Brook State Forest.

Big Brook Forest is an excellent example of a "working" multiple use forest, providing fresh water, recreation, plant and wildlife habitat and timber for community needs.


ROUTE MAP
SCALE 1: 63 360
0 1 2 3 4 5 kilometres
Major Road
Minor Road
Stopping Places
Forest Areas
Bibbulmun Track
SEVEN DAY
FOUR MILE BROOK
TWO MILE BROOK
To Manjimup
FARRS
SMITHS ROAD
100 YEAR OLD FOREST
EASTBOURNE RD.
ROAD
DIAMOND TREE ROAD
TRAMWAY
CHANNYBEARUP ROAD
PERCIVAL ROAD
LEFROY
PEMBERTON NORTH ROAD
EAST BROOK RD
EAST BROOK FARMING DISTRICT
FIVE MILE BROOK
BIG BROOK FOREST
TRAIL
BIG BROOK TRAIL
BIG BROOK ARBORETUM
RAINBOW
STIRLING
LINKS ROAD
GOLF
To South Western Highway
HIGHWAY
KEMP RD.
BROOK
DAM
TROUT HATCHERIES
CARAVAN PARK
GLOUCESTER TREE
PEMBERTON
TOURIST BUREAU
PUMPHILL RD.
TREEN
RD.
EASTERN BREAK
TREEN
TREEN BROOK STATE FOREST
VASSE HIGHWAY
EAST BROOK
THE CASCADES
PEMBERTON
GLAUDER RD.
NORTHCLIFFE ROAD
BROCKMAN STATE FOREST
To Nannup
RALPH
(OLD VASSE)
WARREN BRIDGE
TRAIL
RIVER
WARREN NATIONAL PARK
HEARTBREAK TRAIL
BUSH
MAIDEN
WARREN
BROCKMAN NATIONAL PARK
BROCKMAN SAWPIT
ROWES RD
To Northcliffe
ROAD
RD
ALLIS
PINE PLANTATION
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STOPPING PLACE 13.
Big Brook Arboretum

Follow the Rainbow Trail to its junction with Tramway Trail. Detour left through Big Brook Arboretum – which is clearly signposted.

The Big Brook Arboretum is an experimental plantation (see notes for Stop 6) established in the early 1930s to test the potential in W.A. of a number of introduced tree species. Species name boards, a signposted walk trail and picnic/barbecue facilities have been provided for your convenience.

The arboretum is growing on the site of a former forest settlement. There were once houses, bush camps and a workmen's boarding house, together with stables, and horse and bullock paddocks in this area. The bush workers who lived here were engaged in the logging operations which occurred in nearby forests during the 1920s. Also of note is that the Duke of Gloucester, then Governor-General of Australia, camped at this spot in 1947 after inspecting foresters at work on a new fire lookout tree near Pemberton. The tower later became known as the Gloucester Tree.

All that remains today to recall the presence of those original inhabitants at Big Brook is a climbing rose bush, the old pine trees and the remnants of a buffalo grass lawn, no doubt lovingly planted by one of the women-folk living in the camp.

STOPPING PLACE 14.
Tramway Trail

Continue through the arboretum to House Brook Road. Turn right, then left over the bridge onto Tramway Trail. This track winds through the heart of Big Brook Forest out to Channybearup Road.

Along the Tramway Trail are many fine stands of karri which were established after clearfelling operations of the 1920s. These beautiful young forests are already well over 60 m tall and growing strongly. Some thinning operations have been carried out near route marker 14. These were some of the first thinning experiments to be undertaken in the karri forest.

Thinning removes the smaller trees which would otherwise die through natural competition. By doing this the growth of the remaining trees is promoted. The small diameter thinnings are used for tile battens for roofing, for plywood, and for paper manufacture. Several thinning operations may take place during the life of the forest.

The Big Brook Karri Forest is a classical demonstration of the "multiple use" concept in forest management which is practised by the W.A. Forests Department. Here one can see the production of pure water (through the protection of forests on the catchments of the Big and Lefroy Brooks), the production of timber (cycles of cutting and regeneration spread over many years), the provision of recreation (through the establishment of scenic drives, picnic areas, interpretative signs and brochures, walking and horse trails) and the promotion of environmental conservation (through the maintenance and protection of native forests and the native plants and animals which inhabit them).

STOPPING PLACE 15.
The "100-Year" Forest

At the end of the Tramway Trail, turn right on to the Channybearup Road. Follow this for approximately 1 km and then turn right on to Ross Smith Road and follow the signs to the "100 Year" Forest.

This is a most interesting area both from an historical and forestry context.

Although it may seem hard to imagine, this area on top of the hill was once a small farm. It was selected and cleared by Mr. De'Courcey Lefroy, a member of one of the great Western Australian pioneering families. Lefroy came to the area sometime in the mid-1860s, cleared the mighty virgin karri forest and planted a wheat crop. He built a house nearby and a small water powered flour mill down on the Lefroy Brook (named after him) off Channybearup Road. Only remnants of the stone foundations of the mill exist today, but an excellent photograph of the mill survives and is displayed in the Pemberton Museum. A few crumbling bricks and stones mark the site of Lefroy's cottage.

Lefroy, like other early settlers had incorrectly assumed that the red loamy soil on which the huge karri trees grew was very fertile. In fact, it requires trace elements and superphosphate to make it grow any crop other than karri trees. Lefroy's wheat crop failed and in the early 1870s he abandoned his farm and left the district. Following a fire in 1875, the surrounding karri forest seeded and a new "wheatfield," this time of tiny karri seedlings, germinated.

The site was then forgotten until it was rediscovered by forestry officers on survey work in 1916. By this time the karri regrowth was thirty-one years old; its value was obvious, and the area was subsequently dedicated as State Forest.

Only one hundred years after Mr. Lefroy's clearing and cultivation, an impressive forest of karri again grows on this site. A hundred years is a short period in forestry terms, so this area is a prime demonstration of the productivity and natural regenerative powers of the karri forest. While it is impossible not to mourn the cutting of the virgin forest, all can take heart from the sight of this regrowth and be sure that similarly regenerated forests will be equally beautiful and useful.

STOPPING PLACE 16.
The Eastbrook Farming District

Retrace your path back from the "100 Year" Forest to Ross Smith Road and turn right towards Pemberton. On reaching the bitumen North Pemberton Road, turn right again. This road leads back to the Pemberton townsite and the end of your forest tour.

As you drive through the farmlands along the North Pemberton Road it is interesting to reflect that less than eighty years ago this area was covered by prime karri forests. When the Pemberton sawmill was built in 1913, this area provided the first logs for its saws. A network of timber railways and "whim" tracks (along which bullocks would drag their loads of logs) criss-crossed the hillside as the pioneer bush workers harvested the timber from the forests. By 1920, the area was cut-out and the newly created Forests Department began to plan for regeneration measures to regrow the karri stands.

But their plans were never carried out, for in 1920 the Premier, Sir James Mitchell, started his famous Group Settlement Scheme, a grandiose plan to settle ex-soldiers and British migrants on to dairy farms which the settlers would carve out of the forest lands of the South-West.

And so "The Eastbrook," along with other vast areas of virgin karri forests near Pemberton, Manjimup and Northcliffe (which were also allocated for group settlement), were abruptly excised from the proposed forest estate: and the ringbarking, clearing and fencing began.

As many predicted, the Group Settlement Scheme ran into severe problems from the outset. To begin with, few people had really appreciated the massive problems of clearing the karri forest, for it must be remembered that there were no bulldozers in those days. Everything was done by hand. Roads were few and of poor quality and often impassable to the horse and cart in winter time. Crops failed due to inadequate knowledge of soil nutrition. The settlers themselves frequently were inexperienced farmers, and totally dismayed by the dreadful conditions under which they were forced to work and live and the seeming impossibility of ever covering their debts and making a good living. By the early 1930s when the Great Depression struck, hundreds of group settlement farms were abandoned and those who remained either found work at the Pemberton sawmill, or joined logging gangs in the bush; others merely subsisted on the farm, living on what they could grow for themselves.

Many hearts and backs were broken in the early days of group settlement in the karri forest. Only the toughest and most resilient survived.

The prosperous picture these rural areas present today is in stark contrast to the gloomy days of the 1920s and 1930s. After World War II a perceptible change came over the scene. Bulldozers and gelignite became available. More hardworking migrant families from southern Europe took up the old blocks and began to transform them with their boundless energy. On the older, established blocks a new generation of sons and daughters were now working the land. Potato farming grew in importance, carefully regulated by a marketing board, which saw to it that growers far distant from the Perth market were ensured of sales and good returns for their produce. As well, the gradual change-over from dairying to beef production revitalised the farming community.

Today the Eastbrook area is one of the most prosperous and productive farming areas in the district. Only a few remnant karri trees along the road verges and ringbarked stags in the paddocks remain to remind one of the towering forests which once blanketed the area. It is instructive for forester and tourist alike to view this scene and then reflect back on the forest areas seen earlier on this tour. The remaining forests represent one of the great resources of our State and only if they are carefully husbanded will they continue for ever to produce those things which only forests can produce: pure water, timber, bush recreation and preservation of our heritage of native plants and animals.

This is the job and challenge facing today's foresters.

Further Reading

The Forests Department has produced many publications which describe and explain different aspects of forests and forestry operations in Western Australia. Most of these are available free from Forests Department offices and tourist bureaux. Others about more specific issues are available for a small price. These include, "Conservation of the Karri Forest," "Guide to the Bibbulmun Bushwalking Track" and "Forest Fire Management in Western Australia."