

Timber harvesting of Crown land in the south-west of Western Australia: an historical review with maps

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SUMMARY

The forests in the south-west of Western Australia have been harvested and their timber utilized since the beginning of European settlement in 1829. The earliest methods of timber production were pit-sawing, which was common until about 1900, and hewing, which was significant until about 1945. Hauling of logs and sawn timber was done exclusively by horse or bullock team until the introduction of timber tramways in the 1870s. Since about 1970, all log hauling has been by log truck. The first sawmill in the State operated in Perth in 1833, but the first of the large sawmills was established at Quindalup in 1858.

Reliable timber harvesting records in the form of maps are held by the Department of Conservation and Land Management (CALM) for the period since 1920. Incomplete or less detailed records are available for the period 1829 to 1920. The author considers that some additional areas not shown as harvested in the CALM records were harvested before 1920. Other areas are recorded as harvested before 1920 but date unknown. Likely dates (decades) of cutting are postulated for these areas.

Maps are presented showing likely dates of first, second, third, and fourth logging (harvesting) on Crown lands in the south-west of Western Australia. Based on these maps, about half of the jarrah and wandoo forest on Crown land in the northern and central forest areas (CALM's Swan and Central Forest Regions) has been logged twice and some areas five times to 31 December 1989. By contrast, there was little logging in the southern forest area (CALM's Southern Forest Region) until about 1900 and most of the karri forest has only been logged once.

INTRODUCTION

Reliable timber harvesting records for Crown lands in Western Australia (WA) are available in the form of maps

held by the Department of Conservation and Land Management (CALM) for the period since 1920; i.e. since the Forests Department was created. Much less reliable records are available for the period before 1920. This paper has been written to synthesize a considerable volume of scattered information on timber harvesting in south-west Western Australia into a unified account intended to be useful for forest biologists, forest managers and others.

BACKGROUND

In this paper, jarrah and karri forest is defined as described in Department of CALM (1992), to include associated species such as marri.

Logging

Logging (harvesting) is the felling of trees, preparation of logs (the utilizable part of a tree stem), extracting (snigging) logs from the site of felling at the tree stump to a landing or loading point, loading and carting the logs to the sawmill or other timber processing plant.

Felling Methods

Felling and snigging methods have been described by Hewett (1979). In the early days of European settlement, trees were felled using an axe or an axe and cross-cut saw.

The development of portable engines paved the way for mobile power saws in the mid-1940s. The first of these was mounted on two (occasionally one) wheels and fitted with either circular or cross-cut saw blades.

In the late 1940s the first chain-saws became available in WA. The first models were two-person saws about 2 m long and were very heavy. These saws were in use for about seven years until the first one-person chain-saws arrived in Australia in about 1955. These were still very heavy by modern standards but had better chain than the earlier chain-saws. Since then chain-saws have been greatly improved by reducing their weight, noise and vibration levels.

Hewing and Pit-sawing

The earliest methods of timber production in Western Australian hardwood forests were hewing and pit-sawing.

Hewing was a three-part process of felling, splitting and squaring large pieces of timber for railway sleepers, bridge and jetty decking and large beams. The work occurred beside the stump at the site of felling and only the finished product was carried or dragged to a loading site. Sleeper hewing involved enormous waste (Mills 1989). Between about 1900 and 1935 most sleepers produced in the State were hewn. Teams of hewers operated in many areas, notably Sawyers Valley (east of Midland), Mungalup (Lucknow, near Collie), Noggerup and Mullalyup (both near Kirup), Hester (near Bridgetown) and Palgarup (near Manjimup). By 1945 sleeper hewing had been virtually replaced by sawmilling.

Much the same process occurred with pit-sawing, except that a log was rolled with bars and levers onto a sawpit and sawn by cross-cut saw (Underwood 1977). Pit-sawing was the most common method of log sawing between 1829 and the 1880s. By 1900 it had given way to sawmilling.

Snigging

In WA's south-west forests, teams of horses or bullocks were used for snigging (dragging logs) until the 1920s. The logs were often supported by a whim or logging arch consisting of a pair of large wheels joined by a cranked axle allowing the machine to straddle logs. Chains were used to lift the front of the log off the ground for easier snigging.

The first advance from animal power for snigging occurred in the 1920s, with the introduction of steam powered hauling machines for winching logs to landings on the timber tramway. (Timber tramways were light, often temporary 'railways', usually with wooden rails, whereas train railways are always steel.) These hauling machines comprised a steel cable on a drum a metre or so in diameter and were extremely heavy so remained stationary at the landing while a small team of horses or bullocks extended the cable to the logs which were then winched on to the landing.

During the late 1930s, crawler tractors were first used for snigging small logs. As heavier and more powerful tractors were developed during and after the Second World War, they gradually displaced all other snigging methods. Since the 1960s rubber tyred articulated tractors have replaced crawler tractors except under the most difficult conditions (e.g. for very large logs or working on a steep terrain).

For photographs of snigging operations, see Forests Department (1969) and Hewett (1979).

Log and Timber Hauling

Hauling (transporting) of logs and sawn timber was carried out exclusively by horse or bullock teams until the introduction of timber tramways in the 1870s. The first

steam powered locomotives used for timber hauling were the 'Ballarat' used by WA Timber Company on the Lockeville concession near Busselton from 1871 and the 'Governor Weld' used on the Jarrahdale Concession from 1872 (Southcombe 1986). Some of the smaller sawmills used horses rather than locomotives on their tramways. The first locomotives ran on wooden rails, but the wear was so great that it was not long before they were replaced with steel rails.

Provision of a reliable and economic transport system was essential for development of the timber industry. Timber company railways were among the first railways in the State. Government railways did not operate until 1879 near Geraldton and 1881 near Perth. The Government eastern railway reached Chidlow in 1884 and York by 1886. The railway network was extended into the south-west as follows: to Bunbury in 1893, Busselton in 1895 and to Collie and Bridgetown in 1898. Lines were extended to Nannup in 1909, Dwellingup in 1910, Manjimup in 1911, and Pemberton in 1913. With the advent of the Government railway system the timber company railways were only needed to transport logs to the sawmills and sawn timber from these mills to the nearest Government rail siding.

Normally the first timber tramway to be built in an area was the one to convey the sawn timber from the mill to the nearest shipping point. Then lines were constructed leading to the bush to enable logs to be hauled to the mill. Initially all the formations for the line were constructed by hand and many men were employed laying, and then pulling up line after the timber had been cut in the area.

Bush locomotives remained in general usage in the jarrah forest until around 1950 when the huge cost of pulling up and re-laying lines made their operations uneconomic and motor transport started to take their place. Some locomotives continued to be used by timber companies, especially in the karri forest, until about 1965. Since then, all log hauling has been by log truck.

Early Logging and Forest Administration

Nunn (1957) reviewed the history of timber production in WA. Reports of the valuable hardwood forests existing in WA influenced the decision of the British Government to establish a settlement at the Swan River in 1829. Timber was one of the State's first exports. Sawn timber was exported as early as 1831. This timber was pit-sawn, as no sawmill existed at that time.

The first sawmill in the State was operating in Perth, at the foot of Mt Eliza in Kings Park, by 1833. Mr J Monger was associated with this mill and also the first steam sawmill in the State, which began operations at Guildford near Midland in 1844. The latter mill was operated by Monger and Cowan. Also in 1844 J & G Handcock established a mill at Belmont near Perth. Pit-sawyers were active on the coastal plain near Perth and in the hills just east of Perth from about this time. By the 1860s pit-sawing was also taking place near Walpole, Augusta, Busselton and Bunbury.

In 1858 the first of the larger, longer lasting sawmills in the State was operating at Quindalup, west of Busselton: the earlier sawmills were typically very small, producing less than 500 m³ of sawn timber per year. H. Yelverton operated the Quindalup mill on a concession granted to him by the Government. In the early 1870s further concessions were granted at Lockeville, Jarrahdale (near Serpentine Dam) and Canning (near Canning Reservoir). Concessionaires were granted sole rights for a number of years, at a nominal rent per annum, to remove, sell or export timber from their concessions.

In 1875 special timber licences were introduced. From 1889 until 1898 special timber licences were issued under Clause 96 of the Lands Act Regulations. Between 1899 and 1904 timber leases were issued under Section 113 of the same Act. In the Land Act amendment of 1904, sawmilling permits were issued for the first time, under Section 11.

Until 1896, timber harvesting on Crown lands was administered by the Lands Department. In 1896 a new Department, the Department of Woods and Forests, was created with a trained forester, J Ednie-Brown, as Conservator acting under the Minister for Lands. Ednie-Brown died in 1899. From then until 1916, the Department was headed by its Chief Clerk, Mr C Richardson. During these years there was no trained forester in the Department, which functioned as little more than a revenue collecting organization (Mills 1989).

In 1916 a trained forester, C.E. Lane-Poole, was appointed Conservator of Forests. Lane-Poole was a graduate of a French forestry school and was primarily responsible for drafting the Forests Act, 1918. This Act was passed by Parliament in December 1918 and the Forests Department of Western Australia came into being in January 1919. From that time, sawmilling and other timber permits were issued under the Forests Act and Regulations, until the Forests Department was absorbed into the Department of Conservation and Land Management in 1985.

Silvicultural History

Jarrah

Stoneman, Bradshaw and Christensen (1989) have described the typical silvicultural practices followed in the jarrah forest.

Prior to the 1920s there was effectively no forestry control over logging operations within timber concessions, licences, leases or permit areas. Sawmillers selected the trees they wished to cut, leaving behind the poorer trees. This meant that some areas of high quality forest were heavily cut and others had a very light selective cut. Sleeper hewers also operated over large areas of forest, selecting only the best trees. In high quality forest, the gaps created by logging generally quickly filled with saplings which developed from ground coppice, but there was no systematic attempt at reforestation, or at fire protection of new regrowth stands.

Between the early 1920s and 1940 a group selection system was employed. Areas for felling were treemarked by Forests Department foresters to create gaps for regeneration, leaving groups of immature trees intact. After logging the areas designated for gaps the remaining unwanted trees were ringbarked and small malformed trees cut off (to the extent that funds permitted this). During the Depression (in 1929 and early to mid-1930s) extensive areas of jarrah regrowth stands were thinned and unwanted overstorey trees were ringbarked (Forests Department 1969).

From the 1940s to mid-1960s a lighter selection cut was applied. Unwanted jarrah and marri trees were retained for possible future markets. There was no ringbarking of unwanted trees or cutting off of small malformed trees. The system was primarily a single tree selection system.

From the mid-1960s until 1985 the cutting intensity increased, particularly after 1970 when a more intense cut in a smaller area was introduced to reduce the area harvested each year. An individual tree selection system was employed with little or no attempt at producing gaps. In addition, all saleable produce was removed (salvaged) from areas infected by *Phytophthora cinnamomi*. Some areas were non-commercially thinned (excess trees poisoned) during this period.

In 1985, a group selection system was reintroduced, with renewed emphasis on thinning.

Karri

Bradshaw and Lush (1981) have described the development of forest policy and practice in the karri forest in the southern part of south-west WA. The earliest logging in the karri forest was carried out under a clear-felling system (all marketable trees harvested). Most of the areas logged were converted to agriculture, although harvested forests at Karridale (north of Augusta) and Denmark exhibited prolific regeneration following clear-felling. In 1925 the first karri forest was dedicated as State forest, an area of 2900 ha at Big Brook, near Pemberton. A working plan was prepared for this area and the silvicultural system employed was the clear-felling method. As most of the trees had been removed by the local sawmill, regeneration preparation was carried out and areas burnt in the next few years, to be regenerated by seed-fall from the remaining unwanted trees. Once seed-fall had taken place these trees were then ringbarked.

The clear-felling system of harvesting and regeneration was maintained in karri State forest until about 1938 when, for a variety of reasons, it gave way to the selection system. The clear-felled areas, apparently devastated and finished with, were under continuous pressure for release for agriculture: selection cut stands did not attract as much pressure for alienation to agriculture. Clear-felling and regeneration burning involved some wastage of small and defective trees, and substantial areas of old growth karri forest were deteriorating owing to fire damage and old age. A lighter selection cut enabled faster salvage of this

wasting resource and expedited the provision of access to remote areas of forest to facilitate fire protection. All of these factors contributed to the change from clear-felling to selection cutting in the 1940s.

By the mid-1960s, a number of problems with selection cutting and regeneration of the karri forest had become obvious. There were difficulties of burning for regeneration in small gaps in the forest: a hot fire is needed to produce good seed bed conditions, but this often damaged the remaining trees. Retained trees often declined in health. Also, growth of regenerated forest was depressed by nearby mature trees. Another problem was the difficulty of carrying out subsequent harvesting and regeneration burning among groups of regenerated trees without destroying them. For these reasons the selection system was discontinued in favour of clear-felling in 1967.

The next major change in karri forest management practice occurred in 1975 with the establishment of the woodchip industry. To ensure optimal regeneration after harvesting, it is desirable to remove all trees from an area, including those unsuitable for sawmilling, so that there will be no competition for the new regrowth. Provision of a market for woodchips to utilize those trees unsuitable for sawmilling greatly reduced the need for ringbarking, poisoning or bulldozing unwanted trees to make way for new regeneration.

METHODS

CALM timber harvesting records were consulted to establish Crown land areas recorded as cutover (harvested) before 1920 and since 1920 (by decades), and the number of times they had been cutover, as at 31 December 1989. Some areas shown in the CALM cutting records as not cutover as at 1920, were inside sawmilling tenements, and adjoined mills or timber tramways/railways and so were almost certainly cutover before 1920 despite the evidence in the records. Other areas are recorded as cutover before 1920 but year unknown. From historical data it is possible to postulate the decade of the initial cutting for these areas. This can be done by using records of early sawmill operations and dates of operation, and records of timber licences, leases, permits, timber tramways and railways.

Maps held by CALM Information Management Branch and CALM Library and the Battye Library in Perth were searched for the locations and years of operation of sawmills and the associated roads, timber tramways and railways. Old files for timber tenements, held by the Battye Library, were also perused for similar information.

Useful historical information, such as the location of early sawmills, timber tenements and tramways was found in early reports on the forests of WA by Fraser (1882) and Ednie-Brown (1896, 1899). Further information on the dates of operation of early sawmills (opened before 1930) was obtained from the *Annual Reports* of the Woods and Forests Department and Forests Department from 1896/97 to 1929/30.

Local histories for towns and shires in and near the forest areas show how important the timber industry was in the early development of the south-west of the State and many provided data useful in establishing early logging history. These include Eliot (1983) covering Mundaring Shire; Slee (1979) Kalamunda area; Popham (1980) Armadale area; Coy (1984) Serpentine-Jarrahdale Shire; Fall (1979) Jarrahdale area; Richards (1978) Murray Shire; Snell (1980) Waroona Shire; Staples (1979) Harvey Shire; Frost (1976) Donnybrook area; Frost (1979) Balingup area; Gaines (1970) Bridgetown area; Gilbert (n.d.) Nannup area; Fall (1974) Augusta area and Berry (1987) Manjimup district.

A number of publications covering the history of the timber industry as a whole or the operations of one timber company also provided useful data, notably Thomas (1937-38), Robertson (1956), Gilchrist (1962), Calder (1980), Mack (1985), Abbott and Loneragan (1986), Southcombe (1986), Mills (1986, 1989) and Moore (1987). Some WA Heritage trail booklets provide valuable historical data, notably 'Cala Munnda', 'Geegelup', 'Kattamorda' and 'Mason and Bird'.

Records of timber exports and estimated total timber production in the early years, from Rotheram (1985), were used to derive estimates of volumes and areas logged in those years at each sawmilling centre. These data provided further evidence that some areas were harvested before 1920, before accurate records were kept. This highlighted the need to update CALM's records for pre-1920, using other available information.

DISCUSSION

Early sawmills were concentrated in the forest north of Manjimup (Appendix 1). These resulted in an extensive network of tramways and railways through the forest (Appendix 2). Activities of these mills resulted in much of the northern forest (now in CALM's Swan and Central Forest Regions - see Appendices 3a-3d) being harvested several times, especially those close to the Darling Scarp (Appendices 3a-3d). These maps are based on the best available records at the time this study was done. In addition, two areas near Jarrahdale are considered to have been harvested for sawlogs five times. It is possible that more comprehensive records of early logging may emerge in the future and revisions can be made. For example, further searches of old files in the Battye Library and access to timber company records may locate additional data.

It should be noted that the cutting records depicted in Appendices 3a-3d refer only to areas harvested for sawlogs. Many areas harvested for sawlogs had previously been worked by hewers cutting railway sleepers, or settlers cutting fencing timbers. Near Collie coal fields and adjoining areas some areas have also been harvested for mining timber on one or more occasions since 1898. Similarly, mining timber has been removed

from the Greenbushes area. Some areas (mainly regrowth areas) have been harvested once or twice for poles and/or piles, in addition to the sawlog harvesting. Other areas were harvested for firewood, including a large area around Helena Reservoir which was ringbarked and then cut for firewood for the pumping stations.

In recent years, cutting for different products has been fully integrated, with sawlogs and other forest products taken in one operation. Previously, most minor forest produce such as domestic firewood and fence posts, was removed as an independent operation.

Sawmilling began on present day State forest (jarrah forest) in the Kalamunda area (near Kelmscott) in the 1860s, and in the 1870s near Serpentine Dam and near Bunbury and Busselton. Sawmilling began in the karri forest at Karridale (near Augusta) in the 1880s, Denmark in the 1890s and near Manjimup and Pemberton in the period 1912-1914. At least 260 sawmills operated throughout the south-west forests before 1930 (Appendices 4-13). Their dates of operation have been established as near as possible from the incomplete records now available. The data provided are the sawmill owner or owners (and dates ownership changed), date the mill commenced and ended operations (if known) and location. Some mills, particularly large, long-life mills, had more than one owner. Some mills had a name which, if known, is listed. In general, very small sawmills, e.g. under 500 m³ per year of sawn timber output, have not been listed. The dates listed are the best guess, based on the available data. Some mills closed for periods. The classification of some mills (big, medium, small) changed over time.

Logging intensity varies from a thinning or light cut removing only a small proportion of the marketable trees, to a heavy cut removing a large proportion of the marketable trees. In a clear-cut, all the marketable trees are removed. The number of trees (or proportion of original number) remaining after logging is greatly affected by what products are marketable at the time and by the silvicultural system being practised. Many small trees are not marketable. If only sawlog is sold, then trees too small to contain a sawlog will be retained plus large trees not suitable for sawlogs (e.g. deformed trees) and any other trees retained as crop trees (seed trees) or for other purposes. In addition, within the harvested area there are usually pockets of trees not harvested because they occur along watercourses, or areas too steep to log. Since the late 1980s, habitat trees for fauna, often containing merchantable timber, have been retained at rates of 3-5 trees per hectare in the jarrah forest. Tree-less areas (wetlands, rocks, open areas) are obviously not harvested but have sometimes in the past been affected by logging activity such as snig tracks and haul roads.

The nominal cutting cycle for jarrah forest has typically been 30 to 50 years between cuts, in the higher rainfall areas and where a selection cutting system has been used. That is, in the first harvest (cut) in the selection cutting system only those trees of high commercial value are harvested, leaving less developed trees to develop to

maturity so that they will then be harvested in a subsequent cutting cycle in 30-50 years. In less productive forest, such as occurs in the eastern low rainfall sector, the cutting cycle has been longer and many areas have been harvested only once or twice since 1829. In recent years many areas have been harvested earlier than initially planned because of the need to salvage timber on areas to be cleared for public utilities, mining or pine plantations, or to salvage windblown or diseased trees.

Rotation lengths for karri forest are described in Department of CALM (1994). Most multiple use karri forest is intended to be managed on a rotation length of at least 100 years.

A recent paper by Abbott and Christensen (1994) shows that, based on a synopsis of indicators, the jarrah and karri forests are in ecologically good condition after up to 120 years of timber harvesting.

In CALM's latest management plan covering the south-west forests (Department of CALM 1994), some 384 000 ha of jarrah forest and 53 000 ha of karri forest is in existing or proposed conservation reserves, including 135 000 ha of unlogged jarrah forest and 40 000 ha of unlogged karri forest. Additional areas are set aside to be managed as riparian and faunal travel route zones. These areas combined represent some 33 per cent of the jarrah forest and some 46 per cent of the karri forest on Crown land managed primarily for nature conservation where logging operations cannot occur.

CONCLUSIONS

Logging of forests on Crown land in areas now defined as CALM's Swan and Central Forest Regions (see Appendices 3a-3d) commenced in many areas in the 1870s or 1880s, and many easily accessible areas have been harvested for sawlogs three or more times since then. About half of the jarrah forest on Crown land in CALM's Swan and Central Forest Regions has been harvested twice. Access to the forests of the Southern Forest Region was much more difficult and logging did not commence until after 1900, apart from some pit-sawing near Walpole in the 1860s and logging by Millars in the Denmark area in the late 1890s. Of the karri forest that has been logged, most has only been logged once.

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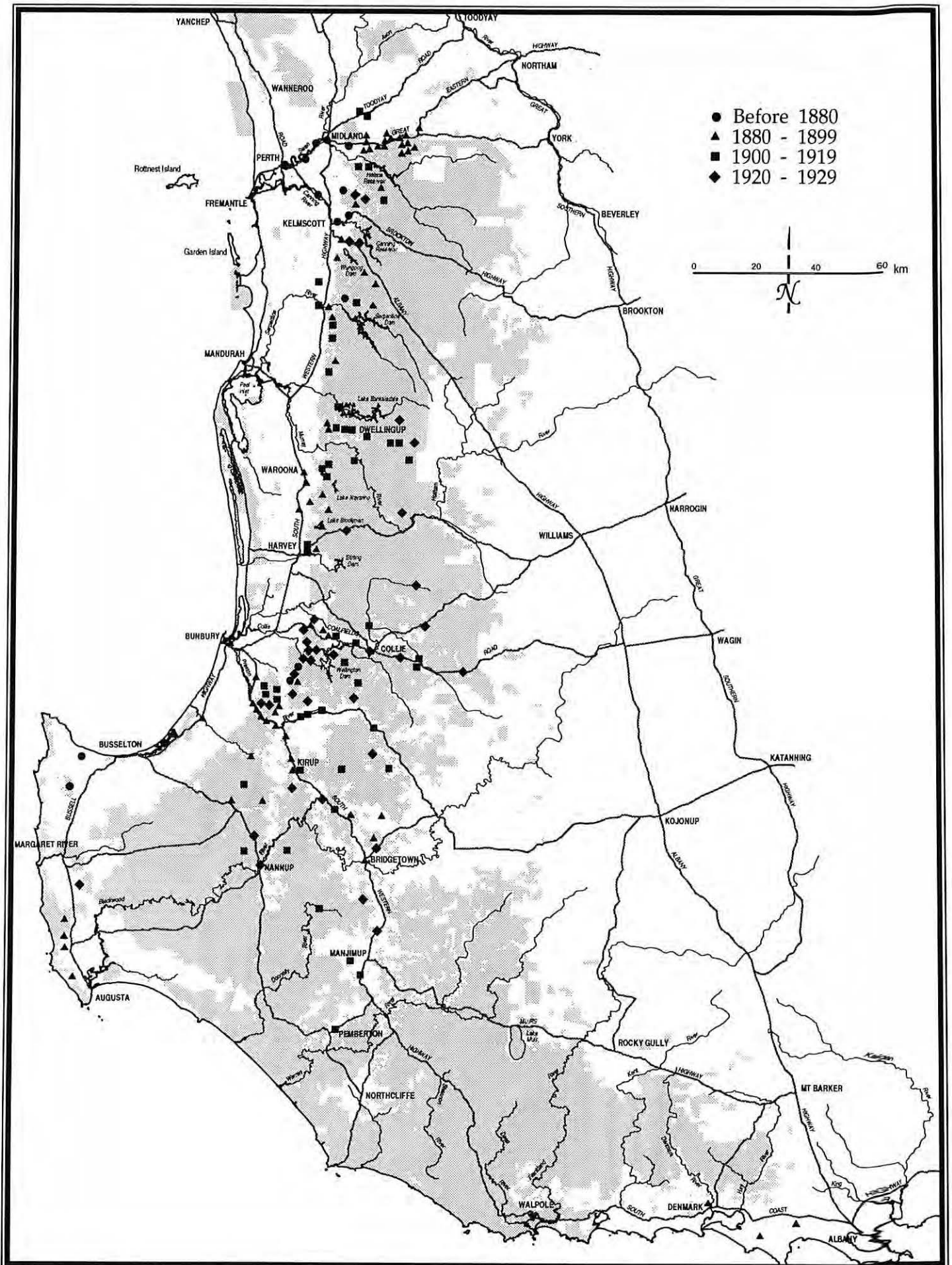
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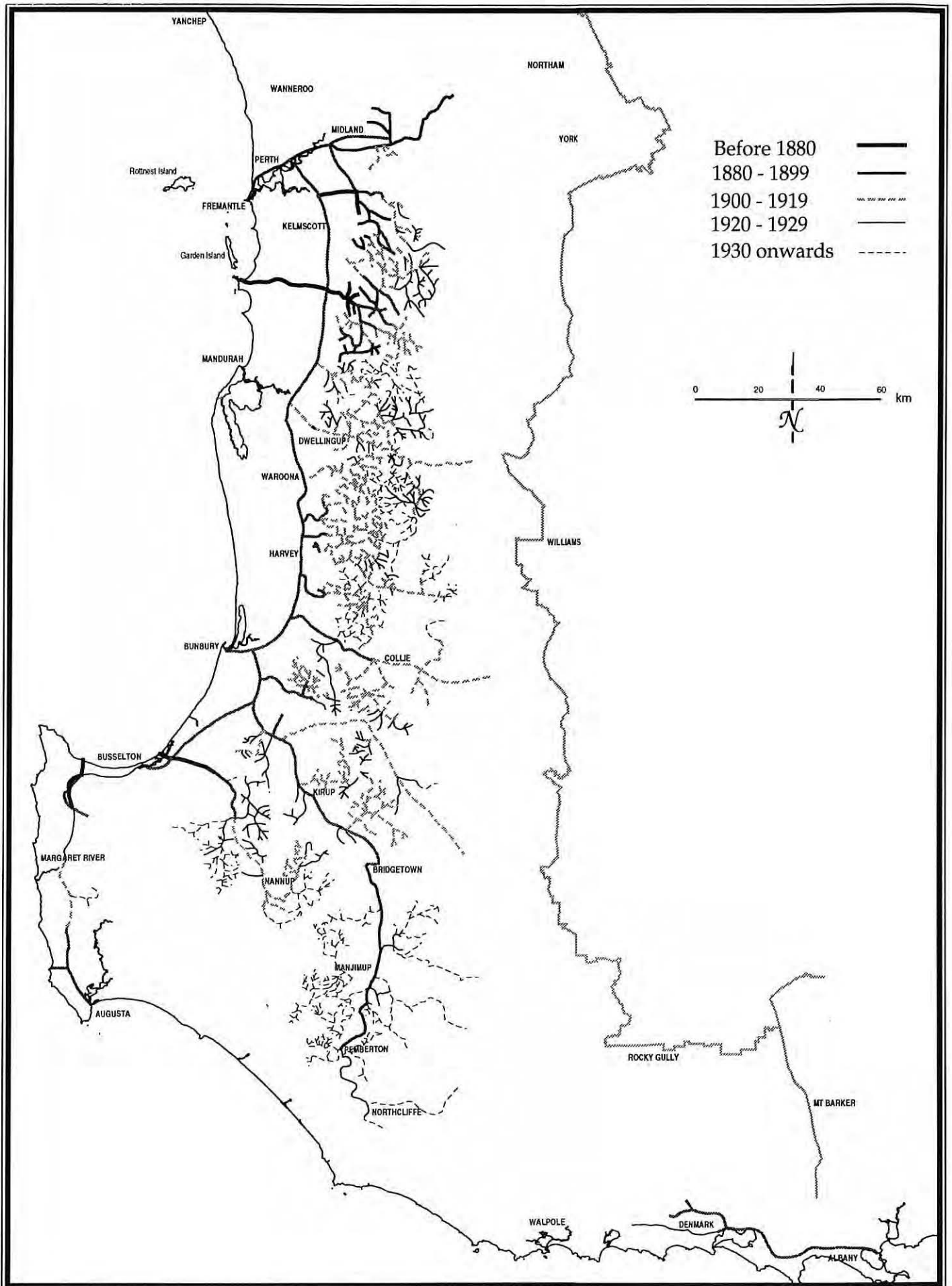
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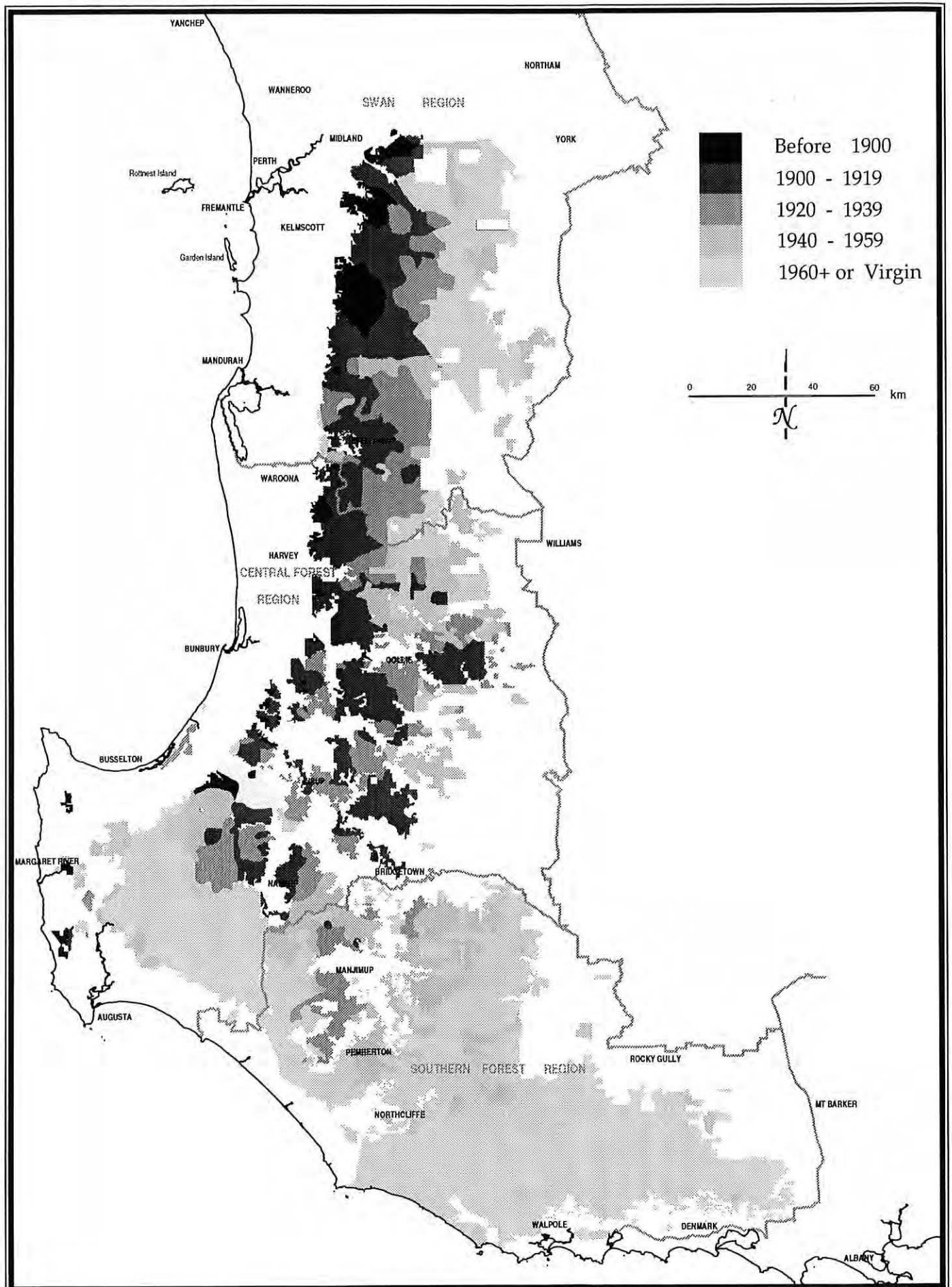
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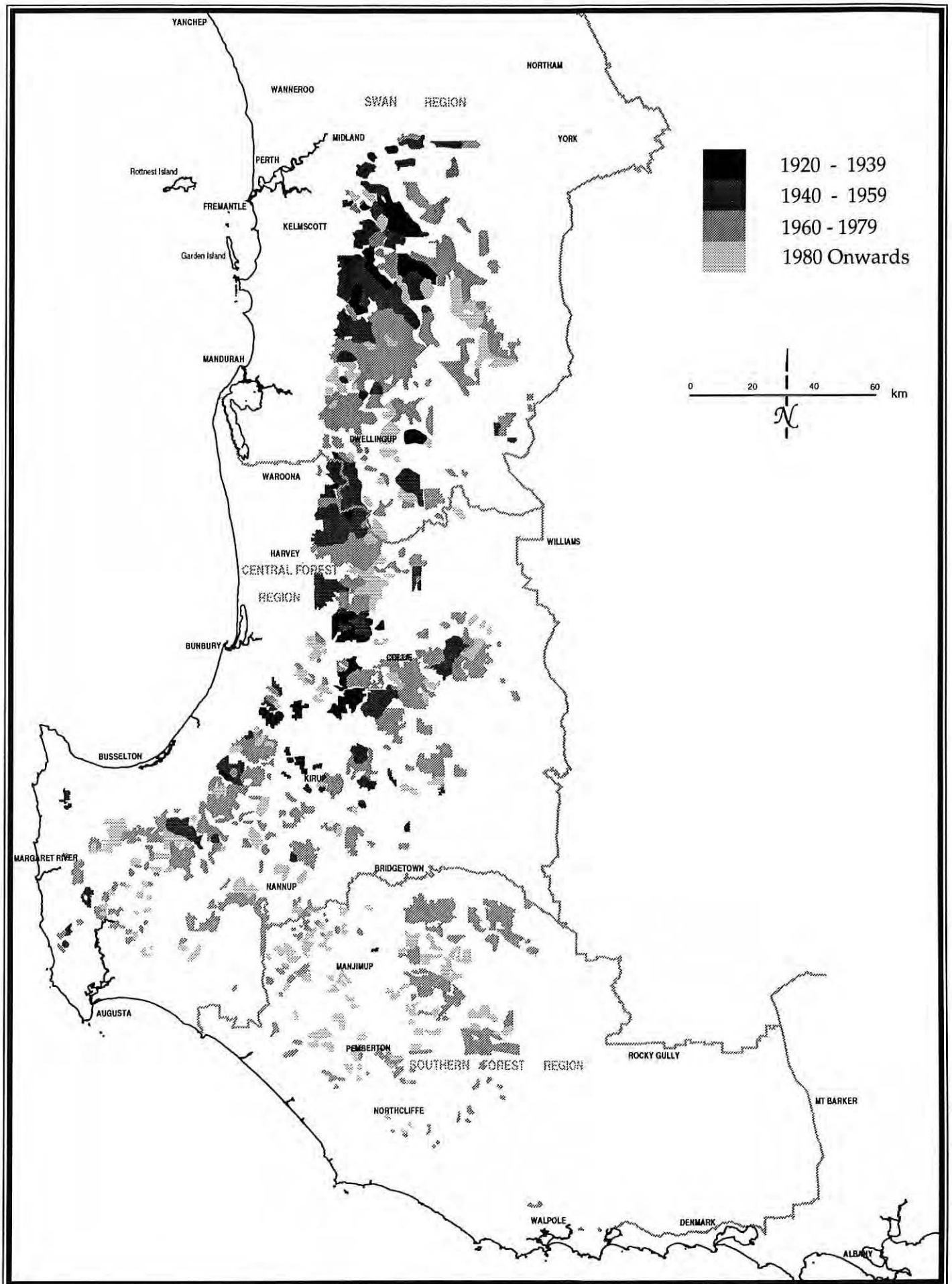
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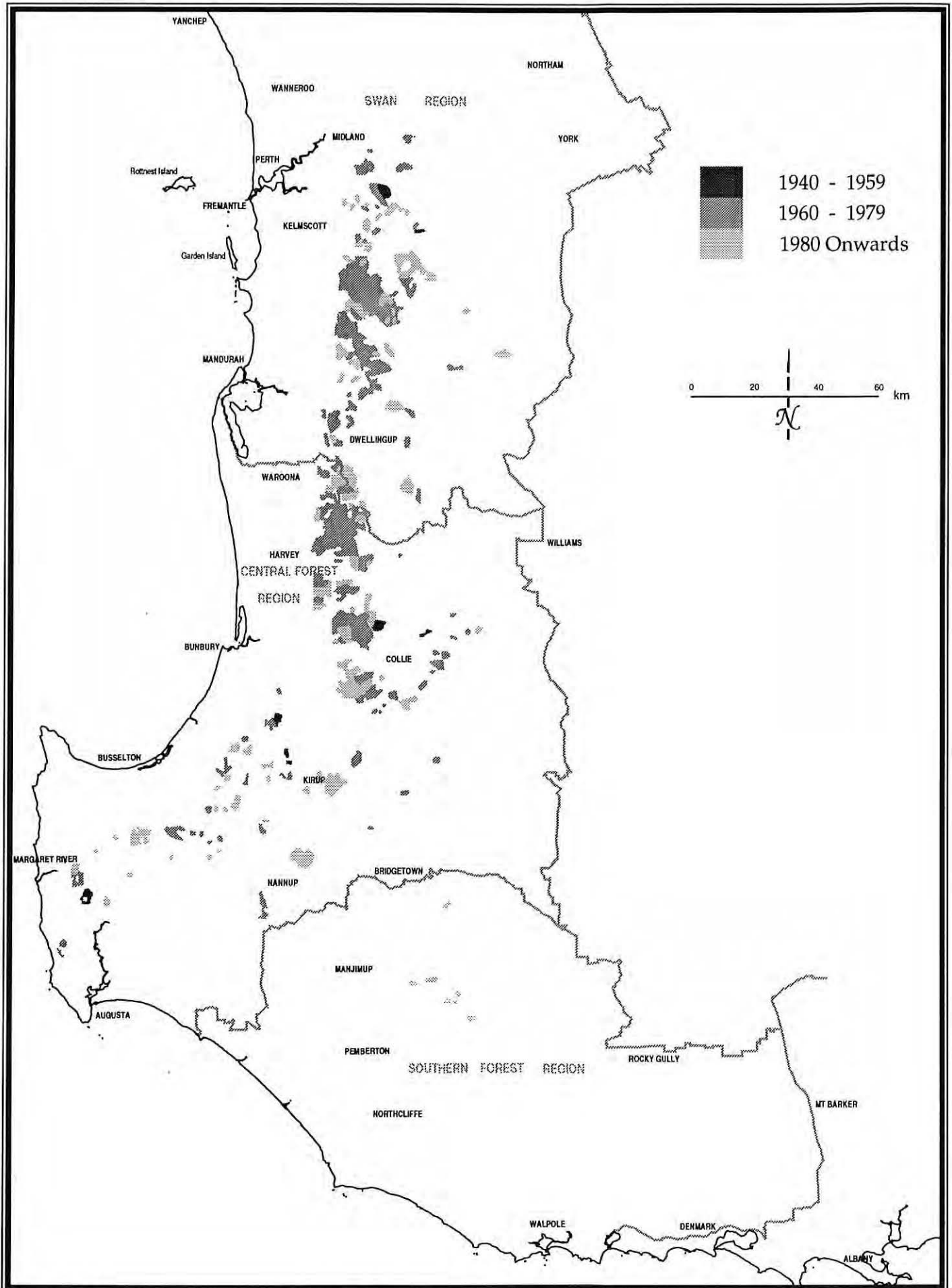


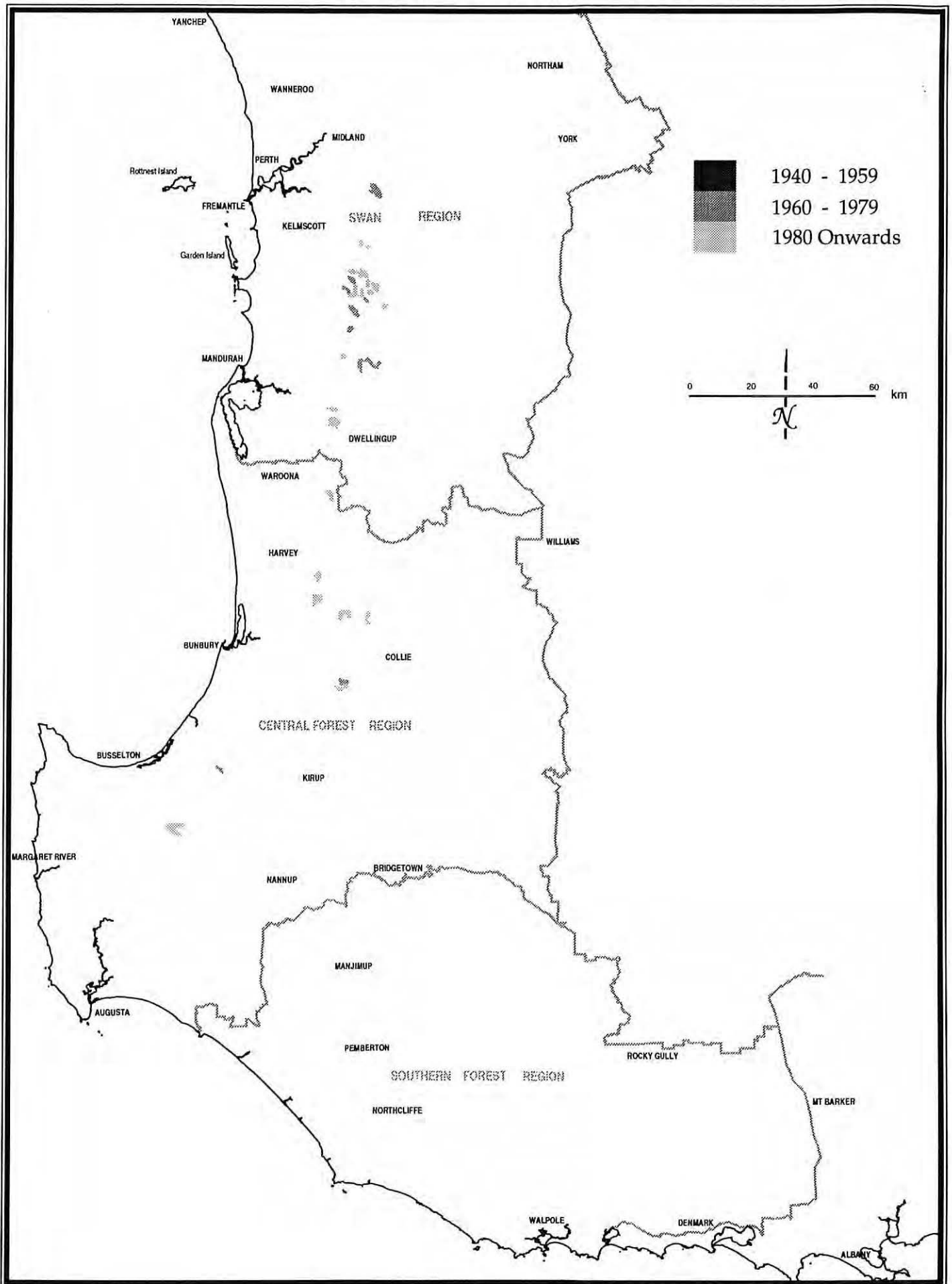
Appendix 2. Railways and tramways first used.





Appendix 3b. Areas cutover - date of second logging.





Appendix 3d. Areas cutover - date of fourth logging.

APPENDIX 4

Early sawmills in Perth District.

SAWMILL OWNER(S)	OPENED	CLOSED	LOCATION
Small mills (<3500 m³/year output)			
Monger	1833	?	Mt Eliza, Perth
Monger & Cowan	1844	?	Guildford
Hancock	1844	?	Belmont
Graves	1881	?	Murray Street, Perth
Honey & Co.	1883	?	Fremantle
Railway Dept	1916	1929+	Midland
Dennis	1925	1930	Wanneroo

APPENDIX 5

Early sawmills in Mundaring District.

SAWMILL OWNER(S)	OPENED	CLOSED	LOCATION
Big mills (>7000 m³/year output)			
Rockingham Jarrah Co. (Wanliss 1870); Rockingham Jarrah Timber Co. (1874); Neil McNeil (1889); Rockingham Railways and Jarrahdale Forests (1892); Jarrahdale Jarrah Forests and Railways (1897); Millars (1902); Bunnings (1983) 'Jarrahdale Mill'	1870	Still open	Jarrahdale
Medium sized mills (3500 m³ - 7000 m³/year output)			
B Mason	1884	1870	Masons Landing, Canning River
Mason, Bird & Co.	1870	1882	Masons Mill, Carmel
White, later Wright & Co. (Keane) 'White's Mill'	1882	1888	Mt Helena
R Honey & Co (1889); Forsyth & Hummerston (1893) 'Lion Mill'	1889	1898	Mt Helena
Canning Jarrah Timber Co. (1890); Millars (1902)	1890	1916	Canning Mills, Karragullen
" " 'No. 1 Sleeper mill'	1893	?	Karragullen area
" " 'Yankee Mill'	1893	?	Karragullen area
" " 'No. 3 Mill'	1893	?	Karragullen area
" " 'Death Adder Creek Mill' (No. 4)	1890	1901	Death Adder Creek
Millars (first) 'Bartons Mill'	1903	1908	Carilla
" 'Bartons Mill No. 2'	1908	1925	Bartons Mill
" 'Bartons Mill No. 3'	1925	1939	N of Bartons Mill
Rockingham Jarrah Co. (Wanliss 1885); Neil McNeil (1889); Rockingham Railways and Jarrahdale Forests (1892); Jarrahdale Jarrah Forests and Railways (1897); Millars (1902)	1885	1900	Wungong Brook
" " " 'Jarrahdale No. 2'			
" " " 'Jarrahdale No. 3'	1890	1901	39 Brook
" " " 'Jarrahdale No. 4'	1895	1901	Serpentine River
" " " 'Jarrahdale No. 5'	1895	1899	Chandlers
" " " 'Jarrahdale No. 5'	1899	1910	Big Brook
" " " 'Jarrahdale No. 6'	1899	1913	Big Brook
" " " 'Board Mill'	1903	1915 ?	Balmoral Road
" " " 'Mundijong Board Mill'	1918	1928	Mundijong
Perth Jarrah Sawmills (Bunnings) 'Lion Mill'	1905	1926	Mt Helena
Small mills (<3500 m³/year output)			
Buckingham	1866	1899	Stocker Road, Kelmscott
Buckingham 'Poplar Mill'	1872	1899	Brookton Highway, Roleystone
A. Smith & Co.	1877	1897	Nyaania Creek, Smiths Mill
Lacey "Enterprise Sawmill"	1881	1883	Zamia, Mahogany Creek

Appendix 5 (continued)

Gill & Co. (Alex Forrest & Lacey 1888) 'Enterprise Sawmill'	1882	1896	Sawyers Valley
M Smith & Sons	1882	?	Sawyers Valley
Buckingham	1882	1900	East Byford
Sexton	1885	1886	Forsyth
Sexton	1886	1896	Gorrie
Dunton & Forsyth	1890	?	Chidlow
West Australian Jarrah Timber Co.	1890	1897	Chidlow
Byfield	1891	1901+	Wooroloo
Sexton (1893); Shepperdson (1894)	1893	1898	Mundaring
Firns	1893	1918	Serpentine, Karnet
Atkins & Low	1894	1896	Roleystone
McDowell, Byfield	1894	1895	Wooroloo
McDowell	1895	1898	Parkerville
Dunton & Co. (1896); Forsyth (1899)	1896	1903	Forsyth
Gill & Co. (Alex Forrest & Lacey)	1896	1897	Mahogany Creek
McDowell (1896); Gill McDowell (1897)	1896	1898	Sawyers Valley
Dunton & Co. (Adams & Conaughton)	1896	1900	Chauncy Gully
Forsyth & Dunton 'Helena Sawmill'	1896	1903	Gorrie Road
Sexton	1896	1897	Gorrie
Isbister, Wiseman & Co. 'Federation Sawmill'	1896	1900	Sawyers Valley
Tomlinson	1896	?	Sawyers Valley
Patterson	1897	?	Smiths Mill
Sexton	1897	1902	Parkerville
McCoy & Oudaille	1897	1898	SE of Chidlow
Connaughton & Crossman 'Gem Sawmill'	1897	1900	Sawyers Valley
Brown	c1897	?	Chidlow
Silberthorpe & Adair	c1897	?	Serpentine
Johnston, Blakeney & Co	c1897	?	Armadale
Armadale Timber Co.	c1897	?	Armadale
Higgs 'Armadale Sawmill'	1897	1904	Byford
Guppy	1898	?	Gooseberry Hill
WA Timber Co. (1898); Brown (1899) "Excelsior Mill"	1898	1900+	Chidlow
Hummerston	1899	1904	Mt Helena
Port & Honey	1900	1913	The Dell
Sexton	1901	?	Sawyers Valley
Forsyth 'Avonholme Mill'	1903	1906	Chidlow
Franklin & Finlay	1903	?	Keysbrook
Frawley	1904	?	Myara
Sampson (1904) 'Dalgarp Mill'; Bunnings (1906)	1904	1906	Gidgegannup
Dyke & W Smith (1905); Bunnings (1906)	1905	1910	Gidgegannup
Buckingham	1905	1907	South Kalamunda
Buckingham	1907	1909	Keysbrook
Buckingham	1909	1911	Serpentine
Patterson	1910	1913	Mundaring Weir
Groth	1918	1919	Sawyers Valley
Wilson	1918	1920	Wooroloo
Robinson	1918	1919	Keysbrook
Groth	1919	1920	Keysbrook
Bunney	1919	1921	Kelmscott
Curtis, Chisholm & Co.	1921	1929+	Bedfordale
Smailes, Weston, Leibow	1922	1929	Pickering Brook

APPENDIX 6

Early sawmills in Dwellingup District.

SAWMILL OWNER(S)	OPENED	CLOSED	LOCATION
Big mills (>7000 m³/year output)			
Whittakers	1902	1946	North Dandalup
Millars	1904	1961	Nanga
Millars	1910	1930	Marrinup
South West Timber Hewers Co-op (1910); State Sawmills No. 5 (1920)	1910	1960	Holyoake
Railway Dept No. 2	1911	1963	Banksiadale
Medium sized mills (3500-7000 m³/year output)			
McDowell, Gill McDowell Jarrah Co; Millars (1902)	1895	1903	Waroona
Bunnings	1898	1901	North Dandalup
Gill McDowell, Millars (1902) '11 Mile Mill'	1902	1904	Waroona Dam
Gill McDowell, Millars (1902) 'No. 5 Mill'	1908	1910	Near Nanga Road
Port, Honey & Co No. 1	1911	1929	Pindalup
Railway Dept No. 1 (leased to Holmes)	1912	1914	Dwellingup
State Sawmills No. 4	1913	1924	Wuraming
South West Hewers Co-op (1913); Plavin (1918); Australian Lumber Co. (1923)	1913	1928	Inglehope, Plavins
Port & Co. No. 2	1923	1929	Pindalup
State Sawmills No. 4	1924	1951	Hakea
Port & Co. No. 8	1925	1929	Duncans
Small mills (<3500 m³/year output)			
Tuckey	1885	1886	Marrinup
Hannans	1895	1900	Marrinup
Goodrich & Massey	1896	?	North Dandalup
Shearer, Weatherhead & Co.	1897	1899	North Dandalup
Parkers	1899	?	Serpentine
Frank & Finlay	1900s	?	Karnet
Teesdale-Smith & Timms	1902	?	East Pinjarra
Frawleys	1904	?	Karnet
Lyalls	1904	1905	Pinjarra
Patterson	1913	1925	Amphion
Federal Trading and Engineering	1919	1920	Pinjarra
Australian Lumber Co. No. 1 & 2	1920	1921	Hotham
Mann	1920	1921	Pinjarra
Sundercombe	1927	?	Waroona
Forsyth	1928	1929	Murray River
Waroona Sawmilling Co.	1929	?	Waroona

APPENDIX 7

Early sawmills in Mornington District.

SAWMILL OWNER(S)	OPENED	CLOSED	LOCATION
Big mills (>7000 m³/year output)			
Millars; Bunnings (1983)	1895	Still open	Yarloop
Millars	1896	1919	Hoffman old
Millars	1898	1961	Mornington
Canning Jarrah Co. (1899); Millars (1902)	1899	1920	Wellington
Millars	1920	1964	Hoffman new
Medium sized mills (3500 m³ - 7000 m³/year output)			
Millars	1895	1898	Benger
Millars	1897	1909	Waterous
Port (1893); Jarrah Timber & Wood Paving Corp. (1898) No. 1 mill	1893	1901	Gervasse
Jarrah Timber & Wood Paving Corp. No. 2 mill	1898	1902	Worsley
Jarrah Timber & Wood Paving Corp. (1898) No. 3 mill; Millars (1902)	1899	1902	Worsley
Millars No. 4 mill	1899	1904	Klondyke
lyall (1904); Bunnings (1907)	1904	1968	lyalls
South West Timber Hewers Co-op	1909	1911	Lucknow Mungalup
Buckingham (1911); State Building Supplies (1954); Hawker Siddeley (1961)	1911	1968	Muja
Lewis & Reid No. 1 (1911); Bunnings (1923)	1911	1925	Allanson
Lewis & Reid No. 2 (1913); Bunnings (1923)	1913	1925	Harris River
Wandoo Timber Co. (1913); Bunnings (1914)	1913	1930+	Muja
Millars spot mills (3)	1920	1928	Wellington
Australian Lumber Co.	1920	1927	Bowelling
Bunnings	1920	1926	Lowden
Millars (Trees Limited)	1920	1958	Treesville
State Sawmills No. 6A	1920	1923	Worsley
State Sawmills No. 6B	1923	?	Windy Ridge Road
Westralian Timber & Trading	1924	1926	Maroondale (Loc 1)
State Sawmills No. 6C	1925	1926	Potters Gorge, River Road
State Sawmills No. 6D	1926	1927	Groom Road
State Sawmills No. 6E	1927	1928	Harnett Road
State Sawmills No. 6	1928	1930	Sneaker Road
Small mills (<3500 m³/year output)			
Clifton	1845	1875+	Australind
M C Davies	1875	1884	Pile Road
M C Davies	1875	1884	Worsley
Bunbury Jarrah Timber Co.	1881	1882	Ferguson Road
Port	1894	1898	Crooked Brook
Teesdale-Smith & Timms (1894); Port (1895)	1894	1895	Boyanup
Wright	1895	1901+	Dardanup (Crooked Brook)
Hooker '17 Mile Mill'	1895	1899	Boyanup
H J Yelverton	1895	?	Bunbury
Law	1895	1896	Samson Brook
Williams (3 spot mills)	1896	1913	Harvey Weir
McCoy, (later Ferguson)	1897	1914	Logue Brook
McDevitt & Mitchell	1897	1899	Drakesbrook
Canning Jarrah Co. spot mill	1897	1899	Wellington

Appendix 7 (continued)

Hooker	1898	1899	Bunbury
Atkins & Law, later leased to Port	1898	1899+	Worsley
Drysdale	1904	1905	Pictou
Bunnings	1906	1908	Hamilton Hill
Harnetts	1910s	?	Beela
Coolup Milling Co.	1914	1920	Coolup
R Palmer	1919	1922+	Collie
Harnett	1919	1929+	Gervasse
McSweeney	1920	1921	Boyanup
Plavin	1920	1925	Bowelling
Lewis & Stirk	1920	1926	Shotts
Connell	1920	?	Mungilup
Amalgamated Collieries	1920	1929+	Collie
Port & Co.	1920s	?	Waroona
Bunnings 'Preston Valley Sawmills'	1921	1925	Yabberup
Collie Land & Timber No. 1 (McCluskeys)	1921	1925+	Shotts area
Connell No. 2	1924	1927	Collie
Jackson & Rodgers	1925	1926	Boyanup
Collie Land & Timber No. 2	1925	1927	Shotts area
Mumballup Timber Syndicate	1925	1929	Mumballup
Collie Land & Timber No. 3 (1928); Douglas Jones (1933)	1928	1960+	Harris River
Worsley Timber No. 1	1928	?	Worsley
Worsley Timber No. 2	1928	?	Worsley

APPENDIX 8

Early sawmills in Blackwood District.

SAWMILL OWNER(S)	OPENED	CLOSED	LOCATION
Big mills (>7000 m³/year output)			
Westralian Jarrah Forests Co. (1898); WA Timber Corporation (1899)	1898	1926	Greenbushes
Jarrah Wood & Sawmills Co. (1899); Millars (1902)	1899	1983	Jarrahwood
Sexton & Drysdale (1906); McLean Bros & Rigg (Vincent); Bunnings (1914) 'Preston Valley Sawmills'	1906	1925	Noggerup
WA Jarrah Sawmilling Co. (Bartram); Kauri Timber Co. (1912)	1908	1925	Barrabup
Millars 'East Kirup Mill'	1910	1928	Grimwade
Kauri Timber Co.	1914	1925	Ellis Creek
Kauri Timber Co. (1925); Douglas Jones (1961); Millars; Bunnings (1983)	1925	Still open	Nannup
Medium size mills (3500 m³ - 7000 m³/year output)			
WA Jarrah Timber Co.	1883	1888	Harrington
Lyll, McDowell (1902); Bunnings (1905)	1894	1940	Argyle
Teesdale-Smith & Timms (1894); Yelverton (1895); Imperial Jarrahwood Corp. (1897)	1894	1898	Donnybrook
Port (1893); Jarrah Timber & Wood Paving Corp. (1898) '24 Mile Mill'	1893	1899	N of Donnybrook
Port, Baxter & Prince No. 1 mill	1894	1902	Irishtown Road
Baxter & Prince	1894	1896	Argyle Block

Appendix 8 (continued)

Baxter & Prince No. 2 mill	1896	1902	Irishtown Road
Baxter & Prince (Preston Timber Co. (1899); WA Jarrah Sawmilling Co. (1906)	1899	1909	Kirup
Baxter & Prince spot mills (2)	1902	1906 ?	Donnybrook Block
Millars	1908	1910	Kirup
Adelaide Timber Co.	1908	1987	Wilga
Swan Sawmills (Fergusons)	1914	1921	Lowden
Swan Sawmills (1920); Millars (1923)	1920	1929	Claymore
Lewis & Reid	1921	1929+	Mullalyup
Sussex Timber Co. (Nicholson)	1923	1929+	Dellerton
Timber Corporation	1926	1931	Woop Woop
Small mills (<3500 m³/year output)			
Baxter	1895	1899	5 km S of Donnybrook
Koetze	1895	1896	Bridgetown
J Scott	1896	1900	Hester
Jarrah Timber & Wood Paving Corp. (Port)	1897	1900	Donnybrook
Imperial Jarrah Wood Corp. (Yelverton) (1898); Millars (1902)	1898	1903	Newlands
Adelaide Timber Co.	1899	1907	North Greenbushes
Sexton & Drysdale	1905	1906	Queenwood
Hodder & Stoughton	1901	?	S of Boyanup
Plewright & Mann	1905	1907	Balingup
Adelaide Timber Co.	1907	1908	East Greenbushes
Donnybrook Sawmills	1914	1919	Brookhampton
Mitchell & Ryan	1916	1922+	Jayes Road
Martin	1918	1922+	Queenwood
Connell	1918	1920	Hester
Griffith	1919	1922	Donnybrook
Machin	1919	?	Bridgetown
Grist, Nicholas & Co.	1920	?	Donnybrook
Smith	1920	1921	Barrabup
Bunnings 'Preston Valley Sawmills'	1920	1925	Lowden
Holdsworth	1920	1929+	Hester
Thompson	1921	1922	Argyle
Whistler Bros	1921	1927	Dinninup
Jenkins	1922	1930+	Balingup
Colsen	1926	?	Nannup

APPENDIX 9

Early sawmills in South West Capes District.

SAWMILL OWNER(S)	OPENED	CLOSED	LOCATION
Big mills (>7000 m³/year output)			
West Australian Jarrah Timber Co.	1870	1878	Lockeville
M C Davies	1899	1913	Jarrahdene
Medium sized mills (3500 m³ - 7000 m³/year output)			
M C Davies	1882	1901	Karridale
West Australian Jarrah Timber Co.	1883	1888	Goodwood
M C Davies	1886	1910	Boranup
Forests Department (tuart mill)	1920	1930	Iudlow
WA Jarrah Forests 'Pilgrims Mill' (1924); Adelaide Timber Co. (1929); Worsley Timber Co. (1984)	1924	Still open	Witchcliffe
Small mills (<3500 m³/year output)			
H J Yelverton	1858	1864	Quindalup
H J Yelverton (1864); Imperial Jarrah Wood Corp. (1897)	1864	1900	Station Gully
M C Davies	1881	1882	Coodardup
M C Davies (tuart mill)	1881	1882+	Capel
Imperial Jarrah Wood Corp. (1900); Millars (1902)	1900	1906	W of Treeton
Payne	1918	1919	Capel
Farley	1919	1922	Capel
Grist & Nicholas	1921	?	Goodwood Road
Margaret River Timber Co.	1923	1926+	Margaret River
Bonola	1925	1926	Alexandra Bridge
Scott	1926	1929+	Capel
Bussellion Sawmills	1927	1929+	Yallingup

APPENDIX 10

Early sawmills in Manjimup District.

SAWMILL OWNER(S)	OPENED	CLOSED	LOCATION
Big mills (>7000 m³/year output)			
lyall & Drysdale (1911); Wilgarrup K & J Co (Millars) (1912); Bunnings (1983)	1911	?	Jardee
State Sawmills (1912); Hawker Siddeley (1961); Bunnings (1970)	1912	Still open	Deanmill
WA Timber Corporation (1921); Millars (1931)	1921	1983	Palgarup
Medium sized mills (3500 m³ - 7000 m³/year output)			
Wheatley (1910); Bethell (1912)	1910	1917	Donnelly River
Lewis & Reid (1923); Bunnings (1925)	1923	1948	Yornup
Australian Lumber Co.	1924	1927	Alco
Small mills (<3500 m³/year output)			
Nelson Co-op Soc.	1913	?	Palgarup
Machin	1918	1922+	Glentulloch
Smith	early 1900s	1916	Winnejup

APPENDIX 11

Early sawmills in Pemberton District.

SAWMILL OWNER(S)	OPENED	CLOSED	LOCATION
Big mills (>7000 m³/year output)			
State Sawmills No. 2 & 3; Hawker Siddeley (1961); Bunnings (1970)	1914	Still open	Pemberton
Medium sized mills (3500 m³ - 7000 m³/year output)			
Nil			
Small mills (<3500 m³/year output)			
State Sawmills (spot mill)	1913	1914	Pemberton
Carrig	1924	1926+	Northcliffe

APPENDIX 12

Early sawmills in Walpole District.

SAWMILL OWNER(S)	OPENED	CLOSED	LOCATION
Medium sized mills (3500 m³ - 7000 m³/year output)			
Millars	1896	1905	Scotsdale
Small mills (<3500 m³/year output)			
Keith	1910	1922+	Hay River
Saw	1919	1922+	Bow River

APPENDIX 13

Early sawmills in Albany District.

SAWMILL OWNER(S)	OPENED	CLOSED	LOCATION
Big mills (>7000 m³/year output)			
Millars	1896	1905	Denmark
Medium sized mills (3500 m³ - 7000 m³/year output)			
Nil			
Small mills (<3500 m³/year output)			
Egerton-Warburton	1880	?	King River
Millars	1884	1888	Torbay
Millars	1889	1890	Albany
Millars	1890	1893	Torbay
Millars	1895	1896	Denmark
Douglas	1912	1922+	Denmark
Denmark Timber Co.	1916	1920	Denmark
Flay	1918	1923	Parry Inlet
Harper	1918	1922+	Albany
Hawkins	1919	1922+	Porongurup
Bennetts, Stokes	1919	1922	Gledhow
Groth & Adams	1920	1922	Marbellup
Douglas Bros	1921	?	Kalgan River
Steele	1921	1922	Albany
Forte	1921	1922	Marbellup

