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**Progress Report 1955-1960**

by the

**Forests Department**

of

**Western Australia**

prepared for the

**British Commonwealth Forestry**

**Conference**

**1962**

**FORESTS DEPARTMENT, PERTH**

1961

FORESTS DEPARTMENT OF WESTERN AUSTRALIA

BULLETIN No. 69

# Progress Report 1955-1960

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Prepared under the direction of

A. C. HARRIS,

Conservator of Forests

PERTH, 1961

## PROGRESS REPORT 1955-60

### CHAPTER I—A description of the part played by forestry and the forest industry in the economic structure of the country in the five years 1956-60.

In Western Australia, the timber industry ranks next in importance only to wool and wheat. Its value to the State may be illustrated in several ways. Although the other States of Australia have passed through the period where the supply of local timber was thought to be inexhaustible, Western Australia is still in the position of being able to export one-third of its total production, while still maintaining its State Forests on a sustained yield basis. Adequate supplies for all this State's timber requirements, including railway sleepers, piles, poles, mine guides, and all forms of scantling, boards and sheathing, are readily available. The forests are the basis of our valuable, expanding honey industry; they protect our watersheds from erosion and salinity, and our unique fauna and flora from extinction by the ubiquitous bulldozer. They have not developed their full potential, and only await the coming of paper-pulp, hardboard and other industry to show their true value.

#### A. LAND CLASSIFICATION

Date of Inventory 30th June, 1960

Table 1—LAND CATEGORIES

	Area in 1,000 acres
<b>1. FORESTRY LAND</b> .....	<b>226,076</b>
(a) Accessible forests .....	130,808
(of which 4,389 units are permanent forests)	
(b) Inaccessible forests .....	95,268
<b>2. NON-FORESTED LAND</b> .....	<b>392,826</b>
(a) Agricultural land .....	257,750
(b) Brush land .....	NIL
(c) Other non-forested land .....	135,076
<b>3. TOTAL LAND AREA</b> .....	<b>618,902</b>
<b>4. WATER AREA (rivers and lakes)</b> .....	<b>6,378*</b>
<b>5. TOTAL AREA</b> .....	<b>625,280</b>
<b>6. (a) Total population—30th June, 1960</b> .....	<b>730,581</b>
(b) Population per square mile .....	<b>0.73</b>

\* Lakes only—rivers unknown.

Date of Inventory 30th June, 1960

Table 2—ACCESSIBLE FORESTS

	Area in 1,000 acres
<b>I. LANDS</b>	
1. ACCESSIBLE PRODUCTIVE FORESTS ....	4,389
For timber production or for extraction of other products:	
(a) In use .....	4,389
(b) Not in use .....	Nil
of which.....units are expected to be in use within the next 10 years)	
2. ACCESSIBLE UNPRODUCTIVE FORESTS ....	126,419
3. TOTAL ACCESSIBLE FORESTS .....	130,808
<b>II. OWNERSHIP</b>	
1. PUBLICLY OWNED FORESTS .....	122,473
of which:	
(a) State forests .....	4,389
(b) Other publicly owned forests .....	118,084
2. PRIVATELY OWNED FORESTS .....	8,335
of which:	
(a) Owned by industrial enterprises operating wood-using plants .....	200
(b) Owned by other industrial enterprises, co-operative societies, etc. ....	N.A.
(c) Farm forests .....	N.A.
(d) Other privately owned forests .....	N.A.
3. OWNERSHIP NOT YET DETERMINED .....	Nil
4. TOTAL ACCESSIBLE FORESTS .....	130,808

N.A. Not available.

**B. FOREST TYPE AND MANAGEMENT**

Date of Inventory 30th June, 1960

**Table 3—FORESTS IN USE**

	Area in 1,000 acres
<b>I. COMPOSITION</b>	
1. Coniferous (softwood) ....	29
2. Non-coniferous (broadleaved, hardwood) ....	4,360
of which:	
Area covered by tropical rain forests: Nil %	
3. Mixed woods ....	—
of which:	
(a) Coniferous: %	
(b) Non-coniferous: %	
4. Open areas ....	—
5. Bamboo stands ....	—
6. Total forests in use ....	4,389
<b>II. SILVICULTURAL SYSTEM</b>	
1. High forests ....	4,389
2. Coppice with standards ....	—
3. Coppices ....	—
4. Open areas ....	—
5. Total forests in use ....	4,389
<b>III. WORKING PLANS</b>	
1. Forests managed with working plans ....	4,389
2. All other forests in use ....	—
3. Total forests in use ....	4,389
	Percentage of total area cut annually
<b>IV. CUTTING PRACTICES</b>	
1. Good cutting ....	100
2. Fair cutting ....	—
3. Poor or destructive cutting ....	—
4. Total cutting in forests in use ....	100

### C. PROGRESS IN SURVEY OF FOREST RESOURCES

The area of exploitable forest, permanent or other, covered by topographical survey or maps has increased markedly since the end of 1955. The photogrammetric section of the Forests Department has now produced standard, 20 chains to the inch maps, covering 8,276,250 acres as compared with the figure of 5,241,500 acres at 30th June, 1955. These maps now include details of timber types classified by height, density and species. Land under development is shown as cultivated, ring-barked, or scrub, and the position of features such as dam sites and homesteads is also recorded.

A preliminary forest inventory has been carried out over 16,710,000, of which 6,429,000 acres are publicly owned forest, 8,335,000 acres are private property and the remainder, various forms of land tenure.

### D. GROWING STOCK

The marked reduction in growing stock as compared with 1955, is due entirely to the use of new headings in the Progress Report. In 1955 the figures were given for "exploitable forest" but the 1960 figures are only for "forests in use"—viz., State Forests and National Parks.

Conifers are represented by plantations only. Trees of saw timber size are classed as those of 7 ft. length or more with a minimum crown diameter of 4 inches U.B. Volumes are with bark.

Non-conifers of saw timber size have a minimum G.B.H. o.b. of 60 inches. The volumes given are underbark. The bark conversion unit is approximately 20 per cent.

Date of Inventory 30th June, 1960

Table 4—GROWING STOCK OF FORESTS IN USE

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TABLE 4—GROWING STOCK OF FORESTS IN USE

	Volume in 1,000 cubic feet (with bark)		
	A	B	C
	Trees of saw-timber size	Trees of less than saw-timber size	Total
<b>I. VOLUME</b>			
1. Conifers	33,000	17,000	50,000
2. Non-conifers	3,426,000	1,168,000	4,594,000
3. Total	3,459,000	1,185,000	4,644,000
4. Private forests	51,000	N.A.	51,000
			of forests in use
<b>II. DENSITY</b>			
1. Good density	0.70-1.00	.....	45
2. Medium density	0.40-0.69	.....	32
3. Poor density	0.10-0.39	.....	8
4. None	less than 0.10	.....	15
5. Total Forests in use	.....	.....	100

## E. ANNUAL GROWTH

Resulting from more precise information on growing stock, it has been found possible to lift the allowable cut to 55 million cubic feet per annum, as compared with 49 million cubic feet per annum in 1955, subject to markets' demand and the timber industry being able to utilise trees not acceptable in past years. The use of lower grade logs will be forced upon the industry as the local demand catches up on ability to supply.

Table 5—ANNUAL GROWTH AND ALLOWABLE CUT IN  
FORESTS IN USE

Annual average for five years.

	Volume in 1,000 cubic feet (with bark)*		
	Conifers	Non-conifers	Total
1. Gross increment .....	1,250	112,500	113,750
2. Losses .....			
of which caused by:			
(a) Fires .....	—	57,500	57,500
(b) Shifting cultivation .....	—	—	—
(c) Other .....	—	—	—
3. New growth .....	—	—	—
4. Allowable cut .....	1,250	55,000	56,250

\* Add 20 per cent. for non-conifers.

## F. ANNUAL YIELD OF WOOD

Logging losses in the form of high stumps, low crown cuts, shatter, etc., are estimated at 3 per cent. of the annual yield over the period 1955-1960.

The loss in unrecorded fellings is negligible.

**Note:** Information for Table 6 to be provided by the Forestry and Timber Bureau.

## G. FOREST PRODUCTS

### REMOVAL OF ROUNDWOOD FROM THE FOREST (OUTPUT) IMPORTS AND EXPORTS—CONSUMPTION

#### (i) Annual Removals of Roundwood

##### Saw Logs, Veneer Logs and Logs for Sleepers

The rising trend in production, noticeable in 1955 and due to the post-war housing demand, reached its peak in 1956. With the satisfaction of this demand production fell off slightly in 1957, 1958, but large overseas orders for sleepers caused a sharp rise to over 54 million cubic feet in 1959, the highest figure since 1927. With the present reduction in building activity to normal levels, production has again fallen.

Supplies from private property have fallen from an average of 27 per cent. to 24 per cent. and this trend is expected to continue. This reduction has been balanced by an increased cut in State Forest.

With increasing areas of pine plantations becoming productive, the annual cut has increased by 62 per cent. in the last five years and the increase is expected to continue. Over four per cent. of this production represents veneer logs at present.

Table 7—ANNUAL REMOVALS OF ROUNDWOOD

Category	Unit	Volume (in 1,000 units)		
		12 months' period ending 30th June, 1960		
		Total	Coniferous	Non-coniferous
<b>INDUSTRIAL WOOD:</b>				
Sawlogs, veneer logs and logs for sleepers:				
From forests	cu. ft.	49,150	1,477	47,673
From trees outside the forests		—	—	—
Pulpwood:				
From forests		—	—	—
From trees outside the forests		—	—	—
Other industrial wood:				
From forests—				
Mining timber	cu. ft.	1,115	N.A.	N.A.
Piles, poles and fencing	cu. ft.	1,020	N.A.	N.A.
<b>FUELWOOD (including wood for charcoal):</b>				
From forests	cu. ft.	12,582	N.A.	N.A.
From trees outside the forest				
<b>TOTAL</b>		63,867	—	—

### (ii) Imports and Exports

Exports in 1960 were 77 per cent. greater than 1955, the increase being brought about by the satisfaction of the local post-war housing demand and resultant increased availability of sawn timber for the export trade, together with the lifting of restrictions on the export of sleepers. The total export figure of 37 per cent. of production is double that of 1955. The Eastern States of Australia received 52 per cent. of this, and overseas orders accounted for the remainder.

The value of imports shows little change, although the quantity increased somewhat.

**Note:** Information for Table 8 to be provided by the Forestry and Timber Bureau.

### (iii) Consumption

The per capita consumption has fallen from 259 super feet in 1955 to 167 in 1960. This once again is explained by the reduction in the local building trade, particularly housing.



## H. MINOR FOREST PRODUCTS:—

### OUTPUT, IMPORTS, EXPORTS AND HOME CONSUMPTION

Little change has taken place in the output, imports, exports and home consumption of minor products.

It should be noted, however, that Western Australia does not produce essential vegetable oils, but is shown as exporting them. This is brought about by material from the Eastern States of Australia being processed in this State and exported from here.

Table 9—OUTPUT, EXPORTS AND IMPORTS OF VEGETABLE PRODUCTS OF THE FOREST OTHER THAN WOOD, YEAR 1959-1960  
(Volume/Quantity in 1,000 units)

Product	Production	EXPORTS		IMPORTS	
	Quantity	Quantity	Value	Quantity	Value
Oil-seeds, oil nuts and oil kernels	Nil				
Natural rubber, balata, gutta-percha, raw, including latex ....	Nil				
Raw cork ....	Nil				
Bark for tanning .... (Tons)	0.5				
Other vegetable materials for tanning and dyeing—Wandoo tanning extract (Tons)	46.6				
Natural gums, resins and balsam (Tons)	0.02				
Shellac and other lacs ....	Nil				
Bamboo ....	Nil				
Osiers, reeds, rattans, canes and raffia ....	Nil				
Vegetable oils and waxes, except essential oils—Sandalwood oil (lb.)	7.0				
Essential vegetable oils (lb.)	2.2				

## CHAPTER II—Forest Policy, Silviculture and Management

### (i) Forest Policy

No major change in forest policy has taken place in the last five years.

The refund of a percentage of royalty to owners of land on which timber was reserved to the Crown, has been increased by 60 per cent.

### (ii) Silviculture and Management

The general Working Plan, which lays down prescriptions for the management of the State's indigenous forests is again in the process of revision.

Since 1955 approximately 500,000 acres have been added to permanently dedicated State Forest, bringing the total to 4.3 million acres. Of this area 3.6 million acres are under intensive management and 0.7 million acres are in the process of being developed.

In view of the change over from fire-break burning only, to mostly broadcast controlled burning, many roads and tracks no longer warrant maintenance. For this reason the total mileage of roads and tracks to be maintained is under review.

Departmental houses for employees now total 447, as against 389 in 1955, while 1,800 miles of telephone line are in operation, an increase of 200 miles.

Plant and equipment numbers have further increased in keeping with the greater forest area under intensive management. This has led to the establishment of further workshop facilities for maintenance purposes.

### **(iii) Other factors affecting forestry in Western Australia**

As previously stated, an estimated ultimate pine plantation area of 200,000 acres will be necessary in Western Australia to meet the pulp and timber requirements of an increasing population. The Pine Working Plan published in 1950 and revised in January, 1956, is again under review. By June, 1960, the total net area of established plantation amounted to 29,318 acres.

In furtherance of the policy of acquiring suitable areas for the growing of *Pinus radiata*, 14,305 acres of alienated land have been purchased since 1955. Since 1954 intensive soil surveys have been carried out over 50,470 acres.

## **CHAPTER III—Exploitation and Forest Industries**

### **(1) Exploitation**

(a) Subject to the comments made regarding Annual Growth, the sawmilling capacity of State Forest, limited by a prescription laid down in the Working Plan, has been recommended as 55 million cubic feet per annum, an increase of 6 million cubic feet on the 1956 prescription. A more detailed knowledge of the working capital has brought about this change.

Private property over the last five years has yielded approximately 24 per cent. of the total timber supply, a decline of three per cent. The falling trend is expected to continue and State Forests will have to supply the deficiency. Fortunately only some 41 million cubic feet was needed from State Forest and Crown Land in the peak year of 1959, which is well below the permissible cut.

(b) Felling control is attained by Working Plans and treemarking. Import and export controls are exercised through policies of the Commonwealth Government, rather than those of the State, but administered by the State.

(c) Power chain-saws are now used in practically all felling operations.

Only two large sawmills use bush tramlines for extraction purposes. The remainder use log hauling trucks.

### **(2) Forest Industries**

(a) The production of sawn timber rose slightly in 1956, fell a little in 1957 and remained fairly steady until 1960 when it fell again. The fairly steady production was brought about by the increase in

sleeper production, following the lifting of export controls, balancing the fall in local consumption. The reduction in sleeper output was the main cause of the fall in overall production in 1960.

An example of integrated utilisation occurs at the Wundowie charcoal-iron plant. This plant produces sawn timber, dry-distillation products, charcoal from both the sawn waste and forest slash, and sawdust for raising steam.

The plywood industry continues to expand. Apart from imported timbers, it uses local Karri (*Euc. diversicolor*) and increasing quantities of pine from plantations.

One of the most important aids to better utilisation has been the introduction of two finger-jointing plants for the production, initially, of Jarrah (*Euc. marginata*) flooring.

(b) Methods of conversion and size of plants have not altered a great deal since the last report. There is a further trend towards electrification of plants, but changes in methods of conversion have been slight.

Table 10—ANNUAL PRODUCTION AND STOCKS OF TIMBER, PLYWOOD AND PARTICLE BOARD AND PRODUCTION OF PULP AND PULP PRODUCTS

(Volume in 1,000 units)

Product	Unit	Year	
		1959-60	
<b>Timber, Plywood and Particle Board</b>			
<b>PRODUCTION</b>			
Lumber, sawn, planed or dressed	su. ft.	157,997	
Coniferous (softwood)	su. ft.	6,027	
Non-coniferous (hardwood)	su. ft.	151,970	
Boxboards			
Coniferous (softwood)			N.A.
Non-coniferous (hardwood)			N.A.
Sleepers	su. ft.	42,534	
Plywood			N.A.
Particle Board (chipboard)			N.A.
<b>STOCKS</b>			
Lumber, sawn, planed or dressed			
Coniferous (softwood)			N.A.
Non-coniferous (hardwood)			
<b>Production of Pulp and Pulp Products</b>			
<b>WOOD PULP</b>			
Mechanical			
Chemical:			
Dissolving			
Other:			
Sulphite			
Sulphate and Soda			
Semi-chemical			
OTHER FIBRE PULP			N.A.
<b>FIREBOARD</b>			
Compressed			
Non-compressed			
NEWSPRINT			
PRINTING AND WRITING PAPER			
OTHER THAN NEWSPRINT			
OTHER PAPER			
PAPERBOARD			

Table 11—SIZE OF FOREST INDUSTRIES, YEAR 1958-59

Nature of Industry	No. of Industrial Units by Size			No. of Persons employed annually			Quantities of round wood used 1,000's cu. ft.
	(a)	(b)	(c)	Whole Time	Part Time	Total	
<b>PART I—PRIMARY</b>							
1. Sawing ....	19	75	148			4,050	
2. Plywood, veneer, etc.	1	1	1			N.A.	
3. Particle board ....	Nil	Nil	Nil			Nil	
4. Paper making ....		1				N.A.	
5. Felling and Extraction (excludes apiarists 160) ....						1,582	
<b>TOTAL—PRIMARY</b> ....						5,632	(1)
<b>PART II—SECONDARY</b>							
1. Bark mills ....		4				4	
2. Joinery ....		181				1,235	
3. Cooperage ....		5				N.A.	
4. Boxes and cases ....		5				94	
5. Woodturning, Wood-carving, etc. ....		4				12	
*6. Wall and ceiling boards (not plaster or cement) ....		1				N.A.	
7. Cabinet and furniture making ....		150				1,010	
8. Picture frames ....		3				N.A.	
9. Cardboard boxes, cartons and containers ....		4					
10. Paper bags ....		8				120	
<b>TOTAL—SECONDARY</b> ....		365				2,475	(1)

\* Includes factories making building board of straw and factories supplying a decorative finish to boards manufactured elsewhere.

(1) Incomplete.

## CHAPTER IV—Organisation of Research and Education

### (i) Education

There have been no changes in the methods of training for professional staff since 1955.

The forester trainee scheme mentioned in the previous report continues to operate satisfactory. It has been found advisable, however, to insist on higher educational standards for applicants.

### (ii) Research

Some re-organisation of research has taken place in the last five years. Research centres have now been established at three centres—Metropolitan, Dwellingup and Pemberton. The last centre carries out silvicultural research in the karri forest region and will

shortly be transferred to Manjimup the main centre of administration for this region. The Dwellingup laboratory continues to handle soils research and investigations into jarrah silviculture. The Metropolitan research branch deals mainly with problems associated with exotic coniferous plantations and arboriculture.

In 1959, the Commonwealth Forestry and Timber Bureau appointed a research officer to the Dwellingup Research Station. The officer is engaged on fundamental research in jarrah silviculture.

Five research bulletins were published by the Forests Department in 1960. These were:—

- Bulletin 64—Ash bed effects in Western Australian soils.
- Bulletin 65—The development on jarrah regeneration.
- Bulletin 66—Germination stimulation in *Pinus pinaster*.
- Bulletin 67—Variation in the growth rate and quality of *Pinus pinaster*.
- Bulletin 68—The fertiliser factor in *Pinus pinaster* plantations on sandy soils of the Swan coastal plain, Western Australia.

#### (A) STAFF

	Forest Research	Forest Products Research	Education	Total
GRADUATES	4	1 and Utilisation	1 and Administration	6
TECHNICAL	3	1		4
CLERICAL	2			2
<b>TOTAL</b>	<b>9</b>	<b>2</b>	<b>1</b>	<b>12</b>

#### (B) TRAINEES

	Forestry	Other	Total
TO BE GRADUATES	13		13
OTHER	8		8
<b>TOTAL</b>	<b>21</b>		<b>21</b>

### CHAPTER V—Employment in the Forests

Since 1955, the position in respect of superior staff has further improved, but the numbers are not quite sufficient to fulfil all requirements of expansion of forest projects.

The permanent labour force has now reached a satisfactory level and has been sufficient to meet forestry works programmes.

Over the five year period the sawmilling industry has been able to adequately satisfy its demand for labour.

Table 12—EMPLOYMENT IN THE FORESTS

	State and Communal	Private Forests	Total
(i) Superior staff (mainly University trained)—			
(a) Forest .....	20		20
(b) Research .....	4		4
(c) Other specialised services .....	2		2
(ii) Subordinate forest staff—			
(a) Trained .....	114	Not available.	114
(b) Untrained .....	8		8
(iii) Clerical (includes accountants) .....	62		62
(iv) Other miscellaneous subordinate staff (e.g., draftsmen and unqualified engineers) .....	20		20
(v) Permanent labour force (A/R. 1960)	539		539
<b>Total .....</b>	<b>777</b>		<b>777</b>