CHAPTER 24

FORESTRY

Source of statistics

Statistics relating to total forest area have been derived from data presented to the Forestry and Wood-based Industries Development Conference, Canberra, 1974 by various authorities concerned with forestry administration and by private forestry companies. Other information on forested areas has been provided by the Forestry and Timber Bureau. Statistics of timber and by-products have been compiled from the annual factory collections undertaken by the Statisticians in the several States. Figures of production of gums, resins and tanning barks have been provided by the State forestry authorities. Data of imports and exports of forest products and timber products have been compiled by the Australian Statistician as part of the statistics of overseas trade. The figures shown relate, in general, to years ended 30 June.

Forestry in Australia

Objects of forestry

The main object of forestry authorities is to manage the forests of the country in a manner that will provide maximum benefits, both direct and indirect, for the community. The authorities aim to promote the multiple use concept in management under which forests remain in perpetuity as sources of valuable raw material, areas of natural beauty, sanctuaries for fauna and flora, and areas for scientific investigation and watershed protection. The provision of special protected areas such as forest parks for recreational use and for the conservation of plants and animals is an objective. Forestry also aims at improving existing forests and woodlands by properly controlled harvesting, by protection from such destructive agencies as fire, insects and diseases, and by inducing regeneration. The provision of a partial tree cover on denuded lands where this cover is necessary for protective purposes, and a complete cover when the land is more suited under forest than under other land use are further aims of forestry.

General account of forests and timbers

The area of land in Australia suitable for the production of commercial timber as a primary crop is very small in comparison with the size of the continent. Productive, or potentially productive, forests cover 42.5 million hectares, and of these 99 per cent are natural forests. 35 million hectares of the natural forests are dominated by eucalypts.

Eucalypts. The genus *Eucalyptus* is remarkable in that it includes some 500 known species, ranging in size from the mighty forest giants, mountain ash (*E. regnans*) of Victoria and Tasmania, and karri (*E. diversicolor*) of Western Australia, down to the small mallee species which inhabit vast areas of the inland. The habitats range from the inland plains to the high mountain areas in the Australian Alps, and from areas with the annual rainfall as low as 250 mm to those where it is 4,000 mm. Of the 500 species, only about 100 are used for sawmilling, and not more than 40 of these are exploited extensively.

The better class of eucalypt forest is concentrated mainly in the higher rainfall areas such as the east coast, the highlands of southern New South Wales, Victoria and Tasmania, and the south-western corner of Western Australia. The more important species include blackbutt (*E. pilularis*), tallowwood (*E. microcorys*), flooded gum (*E. grandis*), and red mahogany (*E. resinifera*) of New South Wales and Queensland; alpine ash (*E. delegatensis*) of New South Wales, Victoria and Tasmania; mountain ash (*E. regnans*), messmate (*E. obliqua*) and blue gum (*E. bicostata*) of Victoria and Tasmania; and karri (*E. diversicolor*) of Western Australia. For height and grandeur, mountain ash and karri are unequalled among the broadleaved trees of the world and are excelled only by a few North American coniferous (softwood) species.

In the coastal regions with lower rainfall the eucalypt forests contain many durable species such as the ironbarks, grey gums and bloodwoods of the east coast, and jarrah (*E. marginata*) and tuart (*E. gomphocephala*) of Western Australia. The spotted gum (*E. maculata*) occurring in New South Wales and Queensland is another example.

Along most of the inland streams and adjacent flood-plains there are riverain forests consisting mainly of river red gum (*E. camaldulensis*), a very durable tree which has supplied large quantities of sawn timber, railway sleepers and fence posts.

Eucalypts also occur in open forest and savannah woodland formations in areas receiving a reliable rainfall of about 250 to 500 mm per annum, as on the goldfields of Western Australia where salmon gum (*E. salmonophloia*), brown mallet (*E. astringens*) and wandoo (*E. wandoo*) occur. These trees are of considerable value for firewood, as mining timbers and for fencing. Minor forest products such as sandalwood, tan bark, essential oils, etc., also come from isolated areas in this type of country, and in the more arid areas.

Other broadleaved timbers (hardwoods). Broadleaved genera other than *Eucalpytus* cover a com paratively small portion of the forested land in Australia; however, the areas concerned provide a great variety of timbers suitable for a multitude of uses. There are two basic types of forest containing supplies of broadleaved timbers other than eucalypts, namely, the tropical and sub-tropical rainforests of coastal Queensland and New South Wales and the temperate rainforests of southern Victoria and Tasmania, both of which yield species known collectively as rainforest or brushwood species.

The tropical and sub-tropical rainforest along the eastern coast of Australia contains a large number of different species. Tropical rainforest occurs in northern Queensland in the vicinity of Cairns and on the Atherton Tableland, providing such well-known cabinet woods as Queensland maple (*Flindersia brayleana*), Queensland walnut (*Endiandra palmerstonii*) and the silky oaks. The sub-tropical rainforest found in southern Queensland and northern New South Wales yields the tulip oak, crab apple (*Shizomeria ovata*) and white beech (*Gmelina leichhardtii*). Coachwood (*Ceratopetalum apetalum*) and sassafras (*Doryphora sassafras*) occur in regions to the south near Dorrigo and have yielded valuable timber for many years.

Temperate rainforest which is to be seen in southern parts of Victoria and western Tasmania consists mainly of myrtle beech (*Nothofagus cunninghamii*), but produces also southern sassafras (*Atherosperma moschata*) and blackwood (*Acacia melanoxylon*).

Turpentine (*Syncarpia glomulifera*), an excellent harbour pile timber resistant to marine borer attack, and brush box (*Tristania conferta*), a superior structural and decking timber, are found in association with some eucalypts in the wetter rainfall areas on the north coast of New South Wales and in Southern Queensland.

Conifers (Softwoods). One of the most important species of native conifers is white cypress pine (*Callitris glauca*). The main cypress pine forests of commercial value occur in New South Wales and southern Queensland west of the Great Dividing Range. The trees are comparatively small, but the timber has particular value owing to its durability including resistance to termites. It is suitable for use as scantlings, flooring, linings, weatherboards, poles, and posts. As much of the area originally covered by cypress pine has been cleared for wheat farming and grazing, the production from the remaining State forests is now strictly regulated to ensure a continuous supply.

Another important native conifer is hoop pine (*Araucaria cunninghamii*), which occurs naturally in the sub-tropical rainforest of southern Queensland and northern New South Wales associated with tulip oak, crab apple, white beech, coachwood, and sassafras. The greater part of the original hoop pine forests has been exploited, but considerable areas have been replanted to this species in Queensland and, to a lesser extent, in New South Wales.

Other native conifers which have played a useful but minor part in the Australian timber industry include bunya and kauri pines (*Auracaria bidwillii* and *Agathis palmerstonii*) of Queensland, and celery-top, Huon and King William pines (*Phyllocladus asplenifolius, Dacrydium franklinii* and *Athrotaxis selaginoides*) of Tasmania. Kauri pine is found in the tropical rainforest of northern Queensland in association with non-eucalypt broadleaved trees, while bunya pine occurs in the sub-tropical rainforests. In the temperate rainforests of Tasmania celery-top, Huon and King William pines are found in association with myrtle beech, southern sassafras and blackwood.

Extent of forested areas

Estimates prepared for the Food and Agriculture Organisation World Forestry Inventory, 1970 gave the total area of forests plus other wooded areas as 137.7 million hectares. Resource data prepared for the Forestry and Wood-based Industries Conference, 1974 show the total area of forest as 42.5 million hectares based on a definition of forest which included plantations, native forest with an existing or potential mature height of 20 metres or more, and cypress pine forest in commercial use, regardless of height. The difference between the areas revealed by the two surveys is largely explained by the fact that the definition of 'forest' was changed considerably between the two reference dates. The following tables show classifications of total forest area in Australia by forest type and by ownership.

CLASSIFICATION OF FOREST AREAS BY FOREST TYPE, 30 JUNE 1971

(*Source:* Forwood Conference, 1974)(*a*)

('000 hectares)

Forest type	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Rain forest	300	..	1,068	..	..	456	37	..	1,861
Eucalypt—									
Productivity(*b*) I	1,183	644	212	..	213	457	..	..	2,709
„ „ II	(*c*)3,678	4,582	1,361	..	2,777	1,838	..	(*c*)	14,237
„ „ III	8,348	559	3,382	..	36	..	..	..	12,325
Tropical eucalypt and paper bark	..	..	4,078	..	..	..	2,450	..	6,528
Cypress pine	1,908	..	1,673	..	..	..	777	..	4,358
Plantations(*d*)	107	109	99	88	40	26	1	13	484
Total forest area	**15,524**	**5,895**	**11,874**	**88**	**3,066**	**2,778**	**3,266**	**13**	**42,503**

(*a*) For further information on data contained in this table, *see* the Report of Panel 2 (Forest Resources) of the Forestry and Wood-based Industries Development Conference, 1974. (*b*) Eucalypt forest types have been grouped into three classes in descending order of productivity. (*c*) Eucalypt forest (probably of Productivity Class II) in the A.C.T. has not been separated from eucalypt forest in N.S.W. (*d*) As at 31 March 1972

CLASSIFICATION OF FOREST AREAS BY OWNERSHIP, 30 JUNE 1971

(*Source:* Forwood Conference 1974)

('000 hectares)

Ownership	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
State(*a*)	2,884	2,412	3,182	70	1,925	926	312	13	11,725
Other public(*b*)	(*c*)6,487	2,755	6,895	..	416	721	2,639	(*d*)	19,912
National parks(*e*)	(*c*)864	128	366	1	34	122	314	(*d*)	1,830
Private(*f*)	5,288	600	1,431	17	691	1,009	..	..	9,036
Total	**15,524**	**5,895**	**11,874**	**88**	**3,066**	**2,778**	**3,266**	**13**	**42,503**

(*a*) Publicly owned land, permanently reserved or dedicated primarily to timber production. (*b*) Publicly owned land, vacant or occupied under lease, not specifically secured for permanent timber production, but on which control of timber rests with the Crown. (*c*) Includes the A.C.T. (*d*) Areas in this category in the A.C.T. have been included in the New South Wales total. (*e*) Publicly owned land, permanently reserved for purposes other than timber production. (*f*) Privately owned land, and leasehold land, where the Crown has no control over timber rights.

Plantations

The indigenous forest of Australia does not contain adequate supplies of coniferous timber, and Australia's requirements have had to be met largely by imports. As a result of the planned policy of the forest services and of several private commercial organisations, the area of coniferous plantations, mainly of exotic species, is steadily increasing. In 1975 the rate of planting was over 35,000 hectares. It was natural that this aspect of forestry should receive earliest attention in South Australia, as this is the State most poorly endowed with natural forest. South Australia now has a large area of planted conifers, and for some years has been obtaining considerable quantities of timber from these plantations. Production is also increasing in other States, and the thinnings from their plantations are already supplying a significant volume of timber. At 31 March 1975, the total area of coniferous plantations was more than 565,000 hectares.

The total production of roundwood from Australia's coniferous plantations is now more than 2.6 million cubic metres per annum and is expected to increase substantially during the next decade.

A special article giving a detailed account of the history and development of coniferous plantations and of the characteristics of individual species is included in Year Book No. 59, page 880.

Broadleaved plantations (mainly *Eucalyptus ssp.*) comprise 33,400 hectares, a much smaller area than for the coniferous plantations. Plantations of ash eucalypts (including *E. delegatensis* and *E. regnans*) for pulpwood in Victoria, and brown mallet (*E. astringens*) for tan bark production in Western Australia make up a substantial proportion of the total broadleaved plantation area. The following tables show total area of plantations in Australia classified by species and by ownership.

AREA OF PLANTATIONS CLASSIFIED BY SPECIES, 31 MARCH 1975

(*Source:* Forestry and Timber Bureau)

(Hectares)

	N.S.W.(a)	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Coniferous plantations—									
Pinus radiata	114,900	119,000	2,400	87,100	23,000	35,000	..	12,900	394,400
Pinus pinaster	..	500	..	6,000	20,400	..	..	..	27,000
Pinus elliottii	(*b*)12,600	..	66,300	..	..	..	..	..	78,900
Pinus caribaea	..	..	7,500	..	..	..	(*c*)400	..	7,900
Araucaria species	1,400	..	36,800	..	..	..	..	..	38,300
Callitris intratropica	..	..	..	..	..	..	(*c*)1,900	..	(*c*)1,900
Other coniferous species	5,300	5,400	4,100	700	..	200	..	1,000	16,900
Total	*134,300*	*124,900*	*117,100*	*93,800*	*43,400*	*35,300*	(*c*)*2,300*	*13,900*	*565,200*
Broadleaved plantations—									
Eucalyptus species	12,200	12,600	(*d*)2,600	1,100	..	900	..	..	29,300
Populus species	2,000	400	..	..	..	..	..	..	2,500
Other broadleaved species	..	..	1,600	..	..	..	..	..	1,600
Total	*14,200*	*13,000*	*4,200*	*1,100*	..	*900*	..	..	*33,400*
Grand total	**148,500**	**138,000**	**121,400**	**94,900**	**43,400**	**36,200**	(*c*)2,300	**13,900**	**598,600**

(*a*) Private woodlets of less then 40 hectares are not included. (*b*) Includes some *Pinus taeda*. (*c*) As at 31 March 1974. (*d*) Includes approximately 400 hectares of native cabinet wood species.

AREA OF PLANTATIONS CLASSIFIED BY OWNERSHIP, 31 MARCH 1975

(*Source:* Forestry and Timber Bureau)

(Hectares)

Ownership(a)	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Coniferous plantations—									
State	107,700	63,000	94,200	75,600	36,700	25,000	(*c*)2,300	13,900	418,500
Other public	600	3,500	..	1,100	..	..	..	..	5,200
Private	(*b*)25,900	58,400	22,900	17,100	6,700	10,400	..	..	141,400
Total	*134,300*	*124,900*	*117,100*	*93,800*	*43,400*	*35,300*	(*c*)*2,300*	*13,900*	*565,200*
Broadleaved plantations—									
State	6,200	5,800	2,100	1,100	..	400	..	..	15,600
Other public	500	1,300	..	..	..	..	..	..	1,800
Private	(*b*)7,500	5,900	2,100	..	..	500	..	..	16,000
Total	*14,200*	*13,000*	*4,200*	*1,100*	..	*900*	..	..	*33,400*
Grand total	**148,500**	**138,000**	**121,400**	**94,900**	**43,400**	**36,200**	(*c*)2,300	**13,900**	**598,600**

(*a*) For definitions of the term 'State', 'Other public' and 'Private', *see* footnotes (*a*), (*b*) and (*f*) to the table Classification of Forest Areas by Ownership on page 897. (*b*) Private woodlets of less than 40 hectares are not included. (*c*) As at 31 March 1974.

Commonwealth Government loans to expand softwood plantations

The first steps in the creation of government plantations in Australia were taken in 1870 in South Australia. Planting commenced in 1876 and has continued except for war time interruption ever since. Small plantations were later established in other States, notably Victoria. Planting progressed at a steady rate between the two World Wars. After the Second World War, planting programs were recommenced, but at a rate insufficient to provide Australia's future requirements for softwood.

In February 1965 the Australian Forestry Council recommended that the rate of expansion of softwood timber plantings in Australia should be increased from their existing level of about 16,000 hectares a year to 30,000 hectares a year for the next thirty-five years. The recommendations envisaged a phased increase in the rate of Government plantings by the various State Governments up to a level of some 26,000 hectares per annum together with plantings by the Commonwealth Government in the Territories of 1,000 hectares per annum, and an average of at least 4,000 hectares per annum by private forest owners. The Council considered that such a program would make a major contribution towards meeting Australia's future requirements for softwood products.

In February 1966 the Commonwealth Government endorsed this recommendation and agreed, as a first step towards achieving the proposed annual target of 30,000 hectares, to provide financial assistance to each State, over a five-year period commencing 1 July 1966, to enable them to accelerate their rate of softwood plantings. The assistance, which was provided to the States under section 96 of the Constitution, took the form of long-term loans repayable over twenty-five years with repayments of principal and the payment of interest commencing ten years after the date of each advance.

The *Softwoods Forestry Agreements Act* 1967 authorised the Commonwealth Government to enter into agreements with each of the States to provide financial assistance by way of loans during the financial years 1966–67 to 1970–71 inclusive.

In February 1969 the Australian Forestry Council recommended a continuation of Federal financial assistance to the States for softwood timber planting for a further five-year period. The resulting *Softwood Forestry Agreements Act* 1972 authorised the Commonwealth Government to provide financial assistance to the States, by way of loans, during the financial years 1971–72 to 1975–76 inclusive. These loan funds are to be provided on the same terms and conditions as for the first program. Consideration is currently being given to whether the Commonwealth Government should give further financial assistance to the States in a third program.

Payments under the two Acts to all States have been as follows: 1966–67, $291,000; 1967–68, $3,456,000; 1968–69, $3,872,000; 1969–70, $4,814,000; 1970–71, $4,784,000; 1971–72, $389,338; 1972–73, $9,459,000; 1973–74, $4,875,000; 1974–75, $7,124,000; 1975–76, (estimated) $8,595,000.

Forest administration and research

Forestry and Timber Bureau. The functions of the Forestry and Timber Bureau were laid down in the *Forestry and Timber Bureau Act* 1930. They included forestry research and education, the study of timber supply, and advice to the Commonwealth Government on forestry matters. Following the transfer of the Australian Forestry School to the Australian National University in 1964 as the Department of Forestry in the University, the research functions of the Bureau were taken over by the Commonwealth Scientific and Industrial Research Organisation (C.S.I.R.O.) on 1 July 1975 as the nucleus of their new Division of Forest Research. The remaining non-research functions of the Bureau, which include policy advice formulation, economic studies and the collection and dissemination of information and statistics on forest resources and industry, are administered by the Department of Primary Industry.

Commonwealth Scientific and Industrial Research Organisation. The newly created Division of Forest Research covers a wide range of studies including the following: forest genetics, controlled environment, forest nutrition, forest botany, tree seeds, forest ecology, forest entomology and pathology, fire protection and watershed management. The Division maintains six regional establishments in the States and the Northern Territory. These research stations are run on a co-operative basis with State forest services and private forest companies or other Government instrumentalities. The Divisions of Building Research and Chemical Technology carry out a wide range of investigations relating to the properties of wood and the uses of wood and wood products. Research on processing logs and timber, solid and composite wood products, timber engineering, and the applications of wood in building is undertaken by the Division of Building Research. The Division of Chemical Technology was created in February 1974 following a reorganisation of the C.S.I.R.O. research effort in which the previous Division of Applied Chemistry ceased to exist as a separate entity. The research program of the new Division of Chemical Technology is directed towards the recycling of resources, utilisation of renewable resources, and the protection and conservation of natural resources. Problems of the pulp and paper industry, and bushfire research are receiving particular attention.

Most of the present forest products activities of both Divisions are conducted at the C.S.I.R.O. Forest Products Laboratory in South Melbourne. The Divisions provide assistance to individuals and industry, administer courses of instruction on timber properties and usage, and maintain co-operative projects with overseas authorities operating in the same fields.

Forestry in the Territories. The management of forests in the Australian Capital Territory is the responsibility of the Forests Branch of the Department of the Capital Territory. Forests in the Northern Territory are under the control of the Forestry Section of the Department of the Northern Territory.

Forestry activities of the States. Forestry on State-owned lands in the various States is the responsibility of the respective State Governments, but they do not exercise any control over forestry activities on private property. The powers and functions of State forest authorities are laid down under forest Acts and Regulations. In each State there is a department or commission to control and manage State forests. Its functions include the introduction of proper measures for the control and management of forest land; the protection of forest land; the conversion, marketing and economic utilisation of forest products; the securing of an adequate and permanent reservation of State forests; and the establishment and maintenance of coniferous forests to remedy the existing deficiency of conifers in Australia. All State forest services are actively engaged on research programs. Annual reports are issued by each State forest authority.

In addition to developing permanent forest reserves in each State, foresters are surveying all forested Crown lands with a view to obtaining dedications of new State forests to add to the permanent forest estate or to release for other uses areas unsuitable for forestry. In the States publicly owned land permanently reserved or dedicated primarily for timber production amounts to 11.7 million hectares, the timber on a further 19.9 million hectares not specifically reserved for permanent timber production being under the control of the Crown.

Private forestry. Privately owned lands contribute considerably to the total production from Australian forests. The most important areas of managed native forest in private ownership are the forests owned by pulp and paper companies. Schemes of financial assistance to individual land owners—designed primarily to encourage establishment and management of coniferous plantations—have been introduced by the Governments of New South Wales and Victoria.

The area of privately owned coniferous plantations is rapidly increasing, and here again the pulp and paper companies are very active. In step with the increase in afforestation programs, the number of professional foresters employed in private forestry enterprise is increasing, while several are engaged on research.

The area of plantations established by private companies and individuals is included in the table on page 898.

Forestry education

The Australian National University's Department of Forestry in Canberra and the School of Forestry of the University of Melbourne offer undergraduate courses leading to a Bachelor of Science degree in forestry. Universities in all States have facilities for post-graduate studies for forestry graduates. Foresters for the Forests Commission of Victoria are trained at a departmental Forestry School at Creswick, Victoria. States other than Victoria offer traineeships to students selected for university training in forestry. These traineeships support the students and meet their expenses throughout the four year university course. Successful graduates are appointed as forestry officers in the State Forest Services. The Commonwealth Government also offers forestry scholarships to cover the cost of university training in forestry for those selected. A limited number of post-graduate scholarships are also available.

The Australian Forestry Council

The Australian Forestry Council comprises the Ministers responsible for forestry in the six State Governments and the Commonwealth Government.

The Council is intended to provide the means for the mutual exchange between the State and Commonwealth Governments of information and views on forestry. It co-ordinates research into problems affecting the establishment, development, management, and fire protection of all forests, and the utilisation of forest products. It assists in co-ordinating the work of State and Commonwealth Governments and also private enterprise in the development of Australian forestry.

The Council is supported by a Standing Committee, consisting of the Director-General of the Forestry and Timber Bureau, the heads of each of the six State Forest Services, the Chief of the Division of Forest Research, C.S.I.R.O., and the Secretary of the Department of the Northern Territory.

Fire protection

The provision of adequate fire protection is one of the main problems facing forest and rural authorities. Government and private forestry organisations are responsible for the protection of about 21 million hectares of forest land, of which a relatively accessible area of 11 million nectares is given a high degree of protection, about 7 million hectares in the more inaccessible areas receive a lesser degree of protection, and about 3 million hectares are at present not protected. Other extensive forest areas consisting mainly of vacant Crown land, but including land under private ownership or leasehold, are either not protected or are given some degree of fire protection by rural fire-fighting organisations or Government-financed fire protection associations.

During the 1973–74 fire season a total of 508 fires were recorded over the area of 21 million hectares of forest land afforded either intensive or extensive protection by forest authorities. The area burnt by these fires totalled 32,000 hectares or 0.2 per cent of the area protected.

The number of fires and the area of native forest burnt during the last ten years is shown in the following table.

NUMBER OF FIRES AND AREA BURNT IN PROTECTED FORESTS(a)

(*Source:* Forestry and Timber Bureau)

Year	*Number of fires*	*Forest area burnt*	*Percentage of forest area burnt*
		'000 hectares	
1964–65	2,307	658	4.1
1965–66	1,865	188	1.2
1966–67	1,422	157	1.0
1967–68	1,754	305	1.9
1968–69	2,165	763	4.7
1969–70	905	53	0.3
1970–71	1,018	71	0.4
1971–72	1,195	185	1.1
1972–73	1,816	348	2.2
1973–74	508	32	0.2

(a) The area receiving protection has been taken as the 21 million hectares for which State forest services provide protection.

Very intensive fire protection is afforded to the coniferous plantation area of Australia. This area is increasing rapidly and the annual planting program is now between 25,000 and 30,000 hectares. During the 1973–74 fire season a total of 441 hectares was burnt, representing 0.09 per cent of the area of 493,000 hectares for which fire statistics are available.

The area of coniferous plantations burnt during the past ten years is shown in the following table.

CONIFEROUS PLANTATIONS AREA BURNT AND TOTAL AREA

(*Source:* Forestry and Timber Bureau)

Year	*Number of fires*	*Area burnt*	*Area of coniferous plantations(a)*	*Percentage of coniferous area burnt*
		hectares	'000 hectares	
1964–65	n.a.	1,267	225	0.56
1965–66	n.a.	615	247	0.25
1966–67	n.a.	187	267	0.07
1967–68	n.a.	117	295	0.04
1968–69	39	909	316	0.29
1969–70	51	60	354	0.02
1970–71	40	568	402	0.14
1971–72	113	127	429	0.03
1972–73	138	326	451	0.07
1973–74	100	441	493	0.09

(a) This area does not include certain privately owned coniferous plantations for which fire statistics are not available.

Detailed information on fire protection is given in Year Book No. 55, 1969, pages 966–7.

Employment in forestry

In the following table details are shown of the number of persons employed by State forestry departments, the Department of the Capital Territory, the Department of the Northern Territory, the Forestry and Timber Bureau in the relevant States and Territories, and the private sector of the forestry industry at 30 June 1975. The table excludes staff of forestry training establishments.

PERSONS EMPLOYED IN FORESTRY(*a*), 30 JUNE 1975

Occupational group	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Professional staff—									
Foresters	209	253	117	62	63	76	13	43	836
Others	90	60	106	26	2	20	..	13	317
Field and other technical staff	86	339	119	57	289	215	40	54	1,199
Clerical staff	496	306	272	127	79	133	17	58	1,488
Labour(*b*)	1,305	1,708	1,818	396	569	623	83	112	6,614
Extraction(*c*)	3,486	1,096	2,450	304	763	2,104	10	69	10,282
Total	**5,672**	**3,762**	**4,882**	**972**	**1,765**	**3,171**	**163**	**349**	**20,736**

(*a*) The Forestry and Timber Bureau has provided figures for employment within its own organisation. (*b*) Staff engaged in silvicultural forest works, etc. (*c*) Staff engaged in felling, carting, etc. Includes direct employees only.

Log sawmilling and veneer and plywood, etc., manufacturing activities

Selected details of the operations of establishments engaged in log sawmilling and the manufacture of plywood, etc., are set out in the tables below. These details were compiled from the annual census of Manufacturing for 1973–74. For further details of the Manufacturing Census *see* Chapter 21, Manufacturing Industry.

MANUFACTURING ESTABLISHMENTS—LOG SAWMILLING (A.S.I.C. CLASS 2511)(*a*) SUMMARY OF OPERATIONS, 1973-74

		N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Establishments in operation at 30 June	No.	414	239	303	36	94	148	2	4	1,240
Employment(*b*)	,,	4,960	3,160	3,394	580	2,151	1,489	(*c*)	(*c*)	15,960
Turnover	$'000	86,638	56,822	50,370	11,794	30,246	24,450	(*c*)	(*c*)	264,708
Value added	,,	53,616	35,702	29,143	4,930	20,718	14,130	(*c*)	(*c*)	160,599
Fixed capital expenditure (outlay on fixed tangible assets less disposals)	,,	3,360	3,344	1,957	492	825	1,193	(*c*)	(*c*)	11,305

(*a*) Australian Standard Industrial Classification. *See* page 728. (*b*) Average over whole year; includes working proprietors. (*c*) Not available for publication.

MANUFACTURING ESTABLISHMENTS—PLYWOOD, VENEER AND MANUFACTURED BOARDS OF WOOD (A.S.I.C. CLASS 2513)(*a*): SUMMARY OF OPERATIONS, 1973-74

		N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Establishments in operation at 30 June	No.	40	12	28	7	3	3	..	..	93
Employment(*b*)	,,	2,931	883	2,155	(*c*)	(*c*)	401	..	..	7,727
Turnover	$'000	60,077	21,699	42,483	(*c*)	(*c*)	11,122	..	..	167,349
Value added	,,	28,264	9,042	20,383	(*c*)	(*c*)	5,677	..	..	78,070
Fixed capital expenditure (outlay on fixed tangible assets less disposals)	,,	3,259	4,425	1,599	(*c*)	(*c*)	236	..	..	10,522

(*a*) Australian Standard Industrial Classification. *See* page 728. (*b*) Average over whole year; includes working proprietors. (*c*) Not available for publication.

Forest production

FOREST PRODUCTION(a), 1974-75

		N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
Production of logs for sawing, peeling, slicing or pulping—										
Broadleaved—										
Eucalypt and related species	'000 m³	2,259	1,961	455	7	1,055	3,916	..	..	9,653
Rain forest species	,,	122	..	206	..	..	..	..	..	328
Coniferous—										
Indigenous forest conifers—										
Cypress	,,	137	..	184	..	..	..	..	..	321
Other	,,	..	..	47	..	..	11	..	..	58
Plantation grown conifers	,,	271	828	169	904	129	70	..	116	2,487
Total	,,	**2,788**	**2,789**	**1,061**	**911**	**1,184**	**3,997**	..	**116**	**12,847**
Gross value of forest products(b)—										
Logs(c)	$'000	38,522	42,575	18,829	13,548	12,041	46,233	6	1,080	172,833
Other forest products(d)	,,	12,694	6,206	6,334	2,763	7,954	3,788	5	63	39,806
Total	,,	**51,216**	**48,781**	**25,163**	**16,311**	**19,995**	**50,021**	**11**	**1,142**	**212,639**
Local value of forest products(e)—										
Total	,,	**51,176**	**48,447**	**17,107**	**16,283**	**18,418**	**42,862**	**11**	**1,142**	**195,445**

(a) Excludes some production from private land thought to be relatively small, details of which are not available. (b) Gross production valued at principal markets. *See* the chapter Miscellaneous for a more detailed reference to the value of production of forestry, as well as a brief explanation of the terms used. (c) *See* footnote (c) to the table Forest Production: Australia, below. (d) Includes firewood, sleepers, transoms, girders, bridge timbers, mining timber, poles, piles, charcoal (forest production only), tanning bark, essential oils, eucalyptus leaves, crude rutin. (e) Gross production valued at place of production. *See* footnote (b) above.

FOREST PRODUCTION(a): AUSTRALIA

		1970–71	*1971–72*	*1972–73*	*1973–74*	*1974–75*
Production of logs for sawing, peeling, slicing or pulping—						
Broadleaved—						
Eucalypt and related species	'000 m³	7,088	7,606	8,381	9,423	9,653
Rain forest species	,,	363	370	396	316	328
Coniferous—						
Indigenous forest conifers—						
Cypress	,,	330	333	350	346	321
Other	,,	66	71	80	61	58
Plantation grown conifers	,,	2,058	2,057	2,272	2,287	2,487
Total	,,	**9,905**	**10,436**	**11,478**	**12,433**	**12,847**
Gross value of forest products(b)—						
Logs(c)	$'000	101,645	115,257	133,964	159,397	172,833
Other forest products(d)	,,	35,523	35,921	36,610	33,946	39,806
Total	,,	**137,168**	**151,177**	**170,574**	**193,344**	**212,639**
Local value of forest products(e)—						
Total	,,	**126,173**	**138,809**	**154,919**	**176,213**	**195,445**

(a) Excludes some production from private land, thought to be relatively small, details of which are not available. (b) *See* footnote (b) to the table Forest Production, 1974–75, above. (c) Included in this category are amounts attributable to sawmillers who carry out their own logging activities as a secondary part of their operations. As such, the values are attributable to the sawmilling industry which is part of manufacturing industry. However, the amount has been included in this table so that the overall value of forest products might be shown. The amount in question was estimated to be $29.5 million in 1969–70 or 30.5 per cent of the total of $96.6 million. An estimate of the amount for subsequent years is not available. (d) Includes firewood, sleepers, transoms, girders, bridge timbers, mining timber, poles piles, charcoal (forest production only), tanning bark, essential oils, eucalyptus leaves, crude rutin. (e) Gross production valued at place of production. *See* footnote (b) to the table above.

Timber and timber products

Mill production of timber

Particulars of logs treated and the production of sawn, peeled and sliced timber by sawmills and other woodworking establishments are shown in the following table.

OUTPUT OF AUSTRALIAN-GROWN TIMBER: ALL MILLS(*a*), 1973-74

('000 cubic metres)

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*A.C.T.*	*Aust.(a*
Sawn, peeled or sliced timber produced from logs—								
Broadleaved	859	681	275	10	(*b*)	(*b*)	..	2,563
Coniferous	176	138	155	251	(*b*)	(*b*)	15	773
Total timber produced	**1,035**	**819**	**430**	**260**	**403**	**374**	**15**	**3,337**

(*a*) Includes Northern Territory. (*b*) Not available for publication. Included in total.

AUSTRALIAN-GROWN LOGS SAWN AND TIMBER PRODUCED, ALL MILLS AUSTRALIA

('000 cubic metres gross hoppus)(*a*)

	1968–69	*1969–70*	*1971–72*	*1972–73*	*1973–74*
Logs sawn—					
Broadleaved	5,335	5,260	5,125	5,375	n.a.
Coniferous	1,288	1,304	1,457	1,565	n.a.
Total logs sawn	**6,623**	**6,564**	**6,582**	**6,940**	**n.a.**
Sawn, peeled or sliced timber produced from logs above—					
Broadleaved	2,620	2,672	2,584	2,561	2,563
Coniferous	763	714	782	848	773
Total timber produced	**3,383**	**3,386**	**3,367**	**3,408**	**3,337**

(*a*) Gross hoppus measure is approximately 78.5 per cent of the true volume.

In addition to the mill production of timber shown in the preceding tables, a large quantity of hewn and round timber, e.g. sleepers, piles, poles, fencing timber, timber used in mining and fuel, is obtained directly from forest and other areas. Information in respect of the value of this output may be found in the tables dealing with forest production on page 903.

Veneers, plywood, etc.

Cutting of timber for the manufacture of veneers, plywood, etc., has been carried out in most States for a number of years. In recent years this has been considerably extended, since plywood manufacture has allowed the use of some species unsuitable for sawing. Special attention has been paid to ensure that logs suitable for peeling are diverted to ply factories.

PLYWOOD PRODUCED: AUSTRALIA

('000 square metres: 1mm basis)

State	*1968–69*	*1969–70*	*1971–72*	*1972–73*	*1973–74*
New South Wales	31,452	35,062	32,080	36,047	40,290
Queensland	37,781	44,420	41,110	78,124	40,108
Other States	33,823	35,419	30,956		30,592
Australia	**103,056**	**114,901**	**104,146**	**114,171**	**110,990**

Of the total plywood produced in 1973–74, 46,956,072 square metres (mm basis) were classed as 'Commercial', 51,687,250 as 'Waterproof', 4,423,113 as 'Case', and 7,924,018 as 'Sliced fancy'.

During 1973–74, 340.5 million square metres (mm basis) of veneers were produced by the rotary process for the manufacture of plywood. In addition, 6.6 million square metres of sliced veneers were produced.

Manufactured boards

Particle board, resin bonded, amounted to 24,424,299 square metres during 1973–74.

Woodchips

Woodchips are manufactured from sawmill waste and other timber otherwise of little or no commercial value. Their primary use is the production of wood pulp. The recently established woodchip industry in Australia at present produces only for export to Japan, although there are long-term plans for the Australian production and export of wood pulp made from woodchips.

There are four companies, three in Tasmania and one in New South Wales, which operate chipping mills and which have entered into agreements to export woodchips to Japanese pulp mills. The contract covering the export of woodchips from New South Wales, spanning a 20 year period, allows for an annual export of 610,000 tonnes of chips; the total quantity under contract being 3.4 million tonnes. Exports from Tasmania are covered by four contracts, ranging in length from 5½ to 15 years, and involving a total quantity of 22.2 million tonnes. The Tasmanian contracts involve annual shipments ranging from 310,000 to 710,000 tonnes. It is expected that by 1988, these four projects will export a total of 30 million tonnes of woodchips to Japan valued at about $460 million. All four companies had commenced exports by 1972. Supplies of timber for chipping will come from State and privately owned forest lands, and from sawmill residues.

In addition to the above projects, a 15 year contract has been concluded between a Western Australian company and Japanese paper makers for the supply of up to 760,000 tonnes of woodchips per annum, valued in total at about $200 million, from Western Australia.

Wood pulp and paper

Wood pulp. During 1973–74 wood pulp production was 616,580 tonnes of chemical, mechanical and other pulp. During the previous year production was 532,492 tonnes.

Paper and paper board. Paper and paper board are manufactured in all States but the greater part of the industry is in New South Wales, Victoria and Tasmania. A wide variety of paper and paper board is produced in Australian mills. The table below gives details of the production of some of the principal items.

PRODUCTION OF PAPER PRODUCTS: AUSTRALIA

(tonnes)

Type of paper	*1971–72*	*1972–73*	*1973–74*	*1974–75*
Newsprint	181,477	199,054	204,075	196,405
Blotting	443	(a)	(a)	(a)
Duplicating	14,594	(a)	(a)	(a)
Printing and writing	126,367	138,124	173,973	159,715
Wrapping	283,949	299,891	347,745	284,911
Paper felts	1,276	989	844	417
Paper boards	382,033	411,246	443,905	373,639

(a) Information not available for publication.

Imports

IMPORTS OF FOREST PRODUCTS, TIMBER AND TIMBER PRODUCTS AUSTRALIA

		Quantity			*Value ($'000 f.o.b.)*		
		1972–73	*1973–74*	*1974–75*	*1972–73*	*1973–74*	*1974–75*
Crude wood, timber and cork—							
Wood waste and charcoal		..	..	..	13	13	26
Wood in the rough or roughly squared	'000 m³	103	104	43	3,197	5,002	1,777
Wood shaped or simply worked—							
Railway or tramway sleepers	,,	..	..	13	..	..	1,863
Timber, sawn lengthwise, sliced or peeled, but not further prepared, of a thickness exceeding 5 mm—							
Conifer—							
Douglas fir	,,	467	461	383	25,576	37,931	30,097
Hemlock and balsam	,,	103	165	66	4,269	10,929	4,692
Radiata pine	,,	53	50	39	2,027	2,551	2,594
Redwood	,,	10	18	3	1,073	2,636	450
Western red cedar	,,	83	109	86	6,229	13,120	9,056
Other	,,	34	27	24	2,333	2,236	(*a*)2,066
Total conifer	,,	*750*	*830*	*784*	*41,507*	*69,403*	*48,955*
Non-conifer(*b*)	,,	295	380	268	19,543	34,702	23,795
Timber (including blocks, strips, etc.), planed, tongued, grooved, rebated, etc., but not further manufactured—							
Conifer	'000 m³	24	23	29	1,668	2,118	3,405
Non-conifer	,,	55	35	38	2,033	4,172	4,841
Cork, raw and waste		..	..	..	293	482	623
Selected items of forest origin, other than crude wood, timber and cork—							
Tanning extracts of vegetable origin	tonnes	2,262	4,247	2,468	465	971	707
Wood and cork manufactures (except furniture)—							
Veneers, plywoods, 'improved' or reconstituted wood and other wood, worked, n.e.s.		..	..	..	11,622	22,629	20,892
Wood manufactures n.e.s. (household utensils, domestic utensils, building carpentry, etc.)		..	..	..	6,701	10,503	12,027
Cork manufactures		..	..	..	1,968	2,827	4,864

(*a*) Includes a value of $5,700 for which no quantity has been included. (*b*) Total values for this item for 1972–73, 1973–74 and 1974–75 include values of $212,000, $100,000, and $181,000 respectively, for which no quantities have been included.

Exports

EXPORTS OF AUSTRALIAN FOREST PRODUCTS, TIMBER AND TIMBER PRODUCTS(a) AUSTRALIA

		Quantity			*Value ($'000 f.o.b.)*		
		1972–73	*1973–74*	*1974–75*	*1972–73*	*1973–74*	*1974–75*
Crude wood, timber and cork—							
Wood waste and charcoal (including shell and nut charcoal)	'000 m³	..	..	..	3	3	44
Pulpwood	,,	..	6	45	..	562	1,139
Wood in the rough or roughly squared	,,	7	7	13	277	607	629
Wood, shaped or simply worked—							
Railway sleepers	,,	30	14	38	2,489	1,183	3,511
Timber, sawn lengthwise, sliced or peeled, but not further prepared, of a thickness exceeding 5 mm—							
Conifer	,,	2	1	1	131	192	228
Non-conifer—Jarrah	,,	5	15	4	397	1,101	350
Other	,,	26	26	18	2,745	3,407	2,601
Timber (including blocks, strips and friezes for parquet or wood block flooring, not assembled), planed, tongued, etc.—							
Conifer	,,	7	2	1	278	214	216
Non-conifer	,,	10	5	9	281	845	388
Cork, raw and waste	tonnes	2	5	5	3	5	12
Selected items of forest origin other than crude wood, timber and cork—							
Natural gums, resins, gum-resins, balsam and lacs	,,	611	345	392	218	155	151
Duboisia leaves	,,	1,026	n.a.	n.a.	915	858	1,228
Eucalyptus oil	,,	118	117	104	194	407	611
Wood and cork manufactures (except furniture)—							
Veneers, plywood boards, etc.—							
Wood sawn lengthwise, sliced or peeled, not further prepared, veneer sheets and sheets for plywood, of a thickness not exceeding 5 mm	'000 m³	728	490	271	477	347	235
Plywood, blockboard, laminated wood products, inlaid wood and marquetry, cellular wood panels—							
Plywood	,,	645	595	387	946	970	1,003
Other	,,	91	277	111	68	312	262
Reconstituted wood, in panels, sheets or strips, and improved wood		..	..	..	472	488	256
Wooden beadings and mouldings		..	..	..	72	45	111
Wood simply shaped or worked, n.e.s.		..	..	..	73	138	32
Wood chips	tonnes	1,553,334	2,663,852	2,565,614	23,040	39,748	46,437
Wood manufactures n.e.s.		..	..	..	925	852	981
Cork manufactures n.e.s.		..	..	..	128	300	433

(a) Excludes re-exports.