

3 The current situation

3.1 INTRODUCTION

This chapter summarises the information assembled during the CRA of the South-West Forest Region. More detailed information is contained within the *Comprehensive Regional Assessment Report* (Western Australian-Commonwealth Joint Steering Committee 1998) and associated reports.

3.2 MULTIPLE USE FORESTS

The forests of the south-west are used for a great variety of purposes. These include timber production, mining, nature-based tourism, recreation, apiculture, firewood collection, water production, catchment protection and the harvesting of a range of minor forest products. The Western Australian *Conservation and Land Management Act 1984* (the *CALM Act*) provides for multiple-use management of publicly-owned forested land. Other Acts supplement the *CALM Act* provisions for multiple use by providing for particular activities such as mining.

In 1994, following public consideration, the Department of Conservation and Land Management (CALM) published a ten-year plan for the south-west forests entitled *Forest Management Plan 1994-2003*. This plan was designed to provide for multiple use of the forests within the framework of ecological sustainability and was assessed under the Western Australian *Environmental Protection Act 1986*. The plan is likely to require change as a result of the RFA.

3.3 TIMBER PRODUCTION AND TIMBER INDUSTRY

Of the total area of approximately 2,450,000 hectares of public native forest managed by CALM, the area available for timber harvesting under the current forest management plan (CALM 1994) is :

- jarrah/marri forest - 1,111,000 hectares
- wandoo forest - 50,000 hectares
- karri/marri forest mixtures - 94,000 hectares.

In addition, Western Australia had 148,000 hectares of hardwood and softwood plantations in 1995 (National Forest Inventory, BRS 1997), the majority of which fall inside the RFA region.

In Western Australia, timber industry activity ranges from the production of tree seedlings, growing, tending and managing the forest estate, through to sawn timber conversion and secondary processing to provide a wide variety of wood-based products. The estimated annual gross value of production of the combined hardwood

and softwood sectors of timber and wood based products valued up to the point of first sale is estimated to be around \$400 million.

It is also estimated that there are more than 20,000 people employed directly or indirectly in timber production and timber using industries in Western Australia.

The native forest industry is the largest and more geographically dispersed component of the industry, with some 2,400 people directly employed by industry in logging, haulage, milling and timber dressing. Employment in this sector can be expected to have flow on effects on employment in other sectors which provide goods and services to these sectors such as transport, engineering, fuel and accountancy, and those engaged in the provision of services to the sector employees such as health and education services. The indirect flow on for the native forest timber industry is estimated to be some 2,900 people.

Approximately 400 people are directly employed by CALM in forest management. A further 500 CALM employees are funded from government revenue derived from timber industry royalties. The indirect employment effects of these CALM employees is estimated to be of the order of 1100 people.

Incomplete data is available on the direct employment in the value adding wood processing and manufacturing sectors of the native forest industry, but it is estimated that up to 6,000 are directly employed in manufacturing industries which utilise native timbers to some extent. In addition to the direct employees in these industries, there are indirect effects on employment in other sectors.

Over the past two decades, employment in the native forest sawmilling sector has been in decline while employment in the plantation establishment sector has increased. However, in the last decade, value adding of native forest timber has increased, leading to the enhancement of employment in the timber processing and manufacturing sectors. Employment in the plantation sector is predicted to increase over the lifetime of the RFA. The RFA process considers the timber industry as a whole and not just the native forest sector.

Interest in the availability of both native forest and plantation timber for local processing is currently strong in Western Australia. CALM and the Western Australian Department of Resources Development report that both local and overseas companies are actively investigating the feasibility of extending existing plants or establishing new plants involving a wide range of solid wood, engineered and reconstituted wood products.

Native forest timber production

The annual allowable harvest under the current Forest Management Plan was determined by the Western Australian Minister for the Environment on 16 August 1993, and applies from January 1994 until 31 December 2003. The annual sawlog harvest for the period of this plan was set at:

- karri - 214,000 cubic metres per year of first grade sawlog and 203,000 of other logs.
- jarrah - 490,000 cubic metres per year of first and second grade sawlogs, with a substantial quantity of lower grade material also being available.

A review of the data and methods used to calculate these sustainable yields was conducted as part of the CRA assessment. This included examination of CALM's timber scheduling program (FORSCHEDED) for the determination of long-term sustainable yield. As noted in the Meagher Report (1993), under current log specifications, harvesting practices and conversion technologies, the long-term non-declining level of first and second grade jarrah sawlogs is approximately 300,000m³ per annum.

The level of harvest set by the Western Australian Minister for the Environment represented an allowable harvest which took into consideration the need to maintain industry and social stability and provide for reinvestment for value adding while adjusting for the reduced area available for timber harvesting arising from the creation of new reserves.

FORSCHEDED simulations indicate that while the level of first and second grade jarrah sawlog harvest could be maintained at higher than 300,000m³ per annum from the year 2004, this would lead to a substantial decline in these sawlogs by the year 2030.

It is anticipated, however, that the forecast decline in availability of first and second grade jarrah sawlogs may be partially offset by an increase in the uptake of lower grade jarrah logs and the future adoption of whole tree-bole logging methods, together with the further refinement of sawing technologies to enable lower grade logs to be sawn.

In Chapter 4 the impacts on the sawlog yield reported for the various approaches provide an approximation of the change in the long-term sustainable yield. For example, a reduction in first and second grade jarrah sawlog resource of 40,000m³ per annum corresponds to reductions over the RFA period of 490,000m³ to 450,000m³ (to 2003) and 300,000m³ to 260,000m³ (from 2004 to 2017).

The future availability of log supply from native forests will reflect both the forecast levels under the current management plan and any other resource changes resulting from the RFA.

Plantations

According to the National Forest Inventory (BRS 1997), Western Australia had 148,000 hectares of plantations in 1995 and there is currently considerable interest in developing new hardwood and softwood plantations. Within the RFA region there are 1,450,000 hectares potentially available for tree planting and approximately one third of this area (about 500,000 hectares) could conceivably grow *Eucalyptus globulus* at returns that are competitive with agriculture. Plantations not only provide wood, but help lower watertables and ease the problems of salinity.

Over the next 20 years, the sawlog from softwood plantations within the RFA region is estimated to increase from around 300,000 cubic metres per annum to around 700,000 cubic metres per annum, while chiplog supply from these plantations will remain at about 300,000 cubic metres per annum. The hardwood chiplog production from plantations within the broader south-west may expand from around 200,000 to three million cubic metres per annum. This would create employment in some

industry sectors. These wood flow forecasts were provided by growers in early 1996 and are based on their assumptions concerning existing and perceived markets, wood prices and the silvicultural management of their plantations.

According to Meagher (CALM 1993), Western Australia does have substantial capability to produce commercial quantities of hardwood chiplog from plantations. Sawlog production from hardwood plantations is, however, unlikely to replace Western Australia's native forest timber within the next 20 years, irrespective of market changes or technological improvements in the short term. Most of the hardwood plantations are being grown to produce high quality pulpwood and, although the potential to on-grow a portion of plantation hardwoods for sawlog does exist, current trials suggest that the lead time for research, development and cultivation is likely to be more than twenty years.

Sawlogs from hardwood plantations may begin to supplement the native forest timber harvest in about 25 years.

3.4 TOURISM AND RECREATION

Tourism and recreation are important uses of forest areas. A wide range of tourism operators are licensed by CALM to operate in State forests and national parks in the region. An estimated average of 2.38 million visitor trips each year were made to the RFA region during 1995 and 1996. Total expenditure by tourists visiting the south-west region in that period has been estimated at \$250 million a year. Day trippers alone are estimated to spend \$70 million a year in the area.

Private investment in forest-related private tourism projects completed or under construction in the RFA and adjacent coastal regions during 1997 is estimated to exceed \$100 million. Excluding self-employed people, tourism in the Central and Southern forest regions is estimated to contribute to the direct employment of between 4,000 and 6,000 people in these areas.

3.5 MINING AND MINERAL PROCESSING

Mining is the largest industry sector in the RFA region. A range of commodities is currently being mined from a number of sites from about 10 major mining centres in the RFA region, including bauxite, gold, coal, mineral sands (titanium minerals), lithium, tin and tantalum. These mining operations make significant contributions in terms of revenue and employment to the regional, State and national economies. In 1995-96, the industry in the RFA region generated revenue of \$2.68 billion and employed 8,118 people directly. In 1995-96 the Region produced \$1,920 million of alumina, \$270 million of coal, \$235 million of gold, \$198 million of mineral sands and \$58 million of tin, tantalum and lithium. Through demand for services the industry also contributes to the development of engineering, transport and communications infrastructure and service industries plus attendant employment in the region.

Over the past decade there has been significant expansion in production by all these operations in the RFA area. With world class resources in bauxite, gold, tantalum, spodumene and mineral sands, it is likely that production will continue to increase to meet expanding market demand. Bauxite from the South-West Forest Region currently provides approximately 20% of world alumina production and the Greenbushes pegmatite is the world's largest producer of lithium and tantalum, and contains the majority of the world's identified resource of tantalum. The Collie coalfield is the only producer of coal in Western Australia and in 1996-97 Collie coal generated 45% of Western Australia's electricity.

A total of 83 exploration tenements existed in the RFA region at the end of 1997, along with 279 mining titles. A further 107 tenement applications were under consideration. As the Western Australian *Mining Act* requires a minimum of \$20,000 be spent on exploration licences in the first year, rising in subsequent years, investment in exploration represents a significant element in the regional economy. Assessment of mineral resources within the forest region based on current knowledge of the geology has shown there is potential for thirteen types of metalliferous deposits, five industrial commodities and coal and oil/gas. About half the region is estimated to have moderate and high mineral potential for mineral deposits of significant economic benefit. Ongoing exploration is required to maintain a competitive industry in the region.

3.6 OTHER FOREST PRODUCTS

3.6.1 Apiculture

In 1995-96 there were 1,025 registered beekeepers operating in Western Australia, using approximately 2,500 apiary sites. A further 72 beekeepers operated solely on private property. During 1996 the total farm gate value of the beekeeping industry in Western Australia was \$7.03 million.

CALM registers all apiary sites on public land and co-ordinates site selection to minimise such factors as dieback spread. Beekeeping is allowed in National Parks and Nature Reserves under existing licences, however, a moratorium currently exists preventing the establishment of any new apiary sites in these areas. Extension of this moratorium is currently being reviewed.

3.6.2 Floriculture

The native forests are an important source of wildflowers for the floriculture industry. About 260 species of native flora are exploited by the industry in Western Australia. During 1992-3, there were approximately 700 registered pickers operating in public native forest. The farm gate value of Western Australian wildflower production in this period was more than \$7 million, which included a bush harvested component valued at \$3.7 million. Bush picked produce accounted for approximately 35% of the total Western Australian wildflower market and contributed \$5.5 million to the value of exports during 1992-3.

CALM regulates the floriculture industry and issues licences to ensure harvesting does

not pose a threat to flora conservation. Conditions apply to all licences specifying quotas, area, timeframe, allowed access and the need to provide a monthly statement of the amount harvested. As a general rule wildflower picking is not permitted in national parks, conservation parks and nature reserves.

3.7 BIODIVERSITY

The South-West Forest Region biodiversity assessment was undertaken at the species and ecosystems levels and included reviews of the responses of these elements to disturbance. The region is the major forested area of Western Australia, and supports a range of forest ecosystems and plant and animal communities that are restricted to this corner of the Australian continent. The forests are generally dominated by jarrah (*E. marginata*) and/or karri (*E. diversicolor*) and marri (*E. calophylla*). Jarrah is the most widespread tree species in the region, occurring in a wide range of environments and ranging in form from tall closed forest in the high rainfall and high fertility soils of the southern part of the region to open dry woodland in the eastern part of the region. A detailed description of the region's biodiversity is contained in the CRA report.

3.7.1 Forest ecosystems

Twenty seven forest ecosystems were mapped throughout the region. In addition to forest and woodland types, the mapped ecosystems include some non-forest areas such as rock outcrops, swamps and heathlands, which are of particular importance for some elements of biodiversity. Four forest ecosystems in the region are recognised under the JANIS criteria as rare and therefore have a target of protection of all remaining examples. These ecosystems are protected to varying extents in existing reserves, reserves proposed in the Forest Management Plan 1994-2003 and in informal reserves.

Details of the current reservation levels of forest ecosystems are provided in Appendix 6.

3.7.2 Flora

Over 3,200 taxa of native vascular plants have been recorded for the RFA region, including 462 species of particular conservation significance. The CRA identified areas of high species richness and areas important as centres of endemism, relictual flora and flora with disjunct distributions:

- species richness was highest in areas such as the Blackwood Plateau; the Coastal Plain south of Busselton and the forests north-east of Walpole, between the Frankland and Kent Rivers, and to a lesser extent the Darling Scarp east of Perth;
- areas particularly important as centres of endemism include larger areas on the Coastal Plain south of Busselton; the Scott River plain; between the Frankland River and Denmark; between the Canning and Helena Rivers; west of York and between Bindoon and the Moore River;
- larger areas important for relictual flora species include areas between Waroona and Stirling Dams; on the Scott River plain north-west to the Blackwood River; north-east of Point D'Entrecasteaux and around Lake Surprise between the Frankland and Kent Rivers;
- larger areas identified as important for disjunct flora species, occur between the Canning and Helena Rivers; south-west of Northam, around Collie; on the Scott River Plain; around Lake Surprise between the Frankland and Kent Rivers and in smaller patches near Dwellingup.

Seventy two scheduled threatened (declared rare flora) and 390 priority flora species are found in the region. These include 52 taxa also listed under Schedule 1 of the

Commonwealth *Endangered Species Protection Act 1992*. Declared rare flora (DRF) are considered in the planning process for both fire management and timber harvesting. The Western Australian *Wildlife Conservation Act 1950* provides mechanisms for the protection of rare and endangered plants.

Interim recovery plans are published, or in preparation, for those threatened plants listed as both critically endangered in Western Australia and on Schedule 1 of the Commonwealth *Endangered Species Protection Act 1992*. Altogether, 36 taxa which are listed as endangered or vulnerable on Schedule 1 of the Commonwealth *Endangered Species Protection Act 1992*, but not listed as critically endangered in Western Australia, required the preparation of conservation statements to clarify their current status and necessary management actions. These taxa are currently addressed in regional rare flora management programs and the preparation of interim recovery plans will be addressed as part of the RFA implementation process.

3.7.3 Fauna

The landscape of the South-West Forest Region is relatively uniform in comparison to the deeply incised and varied landscapes of eastern Australia. Many species of the south-west forests, especially mammals and birds, tend to occur broadly across the landscape, although some groups, particularly the invertebrates, can be quite restricted in occurrence. The distribution of these species is influenced by factors such as the diversity of understorey flora, soil moisture, rainfall, variations in relief and the frequency, intensity and seasonality of fires.

A number of mammal species unique to Western Australia, such as the Quokka, occur in the region. The south-west forests and woodlands are also refugia for a number of critical weight-range species such as the Numbat and Chuditch which were once widespread in the arid and semi-arid regions of Australia but have contracted in distribution south-westwards into the forest environment. These species are among a group of mammals ranging in weight from 500 grams to 5 kilograms, which have been identified as particularly vulnerable to changing land use, feral predators and competition from introduced species. Many critical weight range mammals have become extinct in Australia. Perup Nature Reserve and similar areas have been particularly important refugia in historical times for critical weight range species, and have allowed the survival of species which have now been reintroduced in other areas following the decline in feral predators as a result of a successful baiting program.

The geological history of this region has greatly influenced the development of the fauna, supporting endemic species unique to the south-west such as the Sunset Frog (*Spicospina flammocaerulea*), and allowing the persistence of elements of Gondwanan invertebrates, such as the mygalomorph spiders, in small refugia where favourable environmental conditions have been maintained. Although fire is one of the most defining elements of the south-west forest landscape, relictual species have persisted in small, infrequently burned refugia such as occur within the mixed karri/tingle and jarrah/tingle wet sclerophyll forests.

An important achievement of the CRA has been the amalgamation of available datasets into the first comparatively comprehensive fauna database in Western Australia, held at the Western Australian Museum. This database includes

approximately 64,000 records of birds, mammals, reptiles, frogs, and freshwater fish, and an additional 381 records for 89 highly endemic, relictual or restricted invertebrate species.

The CRA identified 123 fauna taxa as being of conservation significance. Nine of these species are currently listed in Schedules 1 and 2 of the Commonwealth *Endangered Species Protection Act 1992*. Six of these have recovery plans for their protection and a recovery plan is in preparation for the Western Ringtail Possum. Recovery Plans for the remaining species will be addressed in the implementation of the RFA.

There are currently 18 listed vertebrate species and 11 invertebrate taxa occurring within the RFA region which are declared under the Western Australian *Wildlife Conservation Act 1950*, and their protection is considered in forest management planning and practices. Additional mechanisms for the conservation of fauna species of conservation significance will be considered by governments in developing the Regional Forest Agreement.

3.8 OLD-GROWTH

The nationally agreed JANIS criteria were designed to provide for the protection of the range of biological, aesthetic and cultural values attributed to old-growth forest. Although in the south-west forests there are no documented examples of plants or animals dependent on old-growth forests, the targets specified in JANIS are designed to provide for adequate protection of elements of biodiversity even when these are poorly known.

The cultural and aesthetic values of old-growth are based on community and individual values. The JANIS criteria propose that to meet community expectations, old-growth forest should be protected in areas which optimise those values, and that in some cases additional reservation of old-growth may be required other than for biodiversity purposes.

The JANIS criteria provide the basis for identifying and mapping old-growth. Because of their ecological differences, the methodology used to map old-growth in Western Australia differs for wet sclerophyll forest (karri and its mixtures) and the dry sclerophyll forests (jarrah and its mixtures and wandoo). A summary of old-growth within 20 forest ecosystems shows that seven ecosystems have a current area of old-growth exceeding 10,000 hectares (five jarrah ecosystems, one karri, one wandoo). The most extensive areas of old-growth occur in the Jarrah South forest ecosystem (160,500 hectares), the Karri Main Belt forest ecosystem (53,300 hectares) and the Jarrah Blackwood forest ecosystem (48,500 hectares). Another seven forest ecosystems contain old-growth between 1,000 and 10,000 hectares in extent. The CRA report identified old-growth as rare or depleted in 10 out of 20 forest ecosystems.

Details of the current reservation levels for old-growth forest are provided in Appendix 6.

3.9 WILDERNESS

The assessment of wilderness in the South-West Forest Region identified no areas that

met the nationally agreed size threshold. Areas identified through the study, below the wilderness size threshold but with high values of remoteness and naturalness, were considered in the assessment of national estate values. All these areas occur within the “natural landscapes” identified through the assessment of national estate values.

Roads are the primary limitation on the size of areas of high wilderness quality in the region through their effect on the National Wilderness Inventory indicators of remoteness from access and apparent naturalness. Depending on management constraints, particularly for fire control, opportunities may therefore exist within some reserves to enhance wilderness quality through road closure or restriction of access.

3.10 NATIONAL ESTATE

The assessment of national estate values for the CRA of the South-West Forest Region has resulted in the identification of areas of indicative national estate significance for a wide range of values. These include extensive natural values such as natural landscapes and old-growth forest, localised values such as sites supporting populations of rare and endangered species and centres of endemism, disjuncture or unusual richness of species or communities. A large number of places of indicative national estate cultural value (both Indigenous and non-Indigenous) were also identified throughout the region. The larger areas of indicative national estate significance for natural values occur within the less disturbed forests in the south of the region, although several areas of substantial size, with aggregations of national estate natural values, have also been identified in the northern forests. Details of the national estate assessment are provided in the separate report *National Estate Identification and Assessment in the South-West Forest Region of Western Australia*.

3.11 WORLD HERITAGE

A World Heritage Expert Panel was convened and has identified places in Western Australia that warrant further investigation to assess their potential world heritage values. Themes identified by the Panel as possibly being expressed in places in Western Australia are palaeoplains, Eucalyptus-dominated vegetation and Aboriginal Dreaming sites. Details are in the World Heritage Report (1997).

The identification of possible world heritage themes was carried out to enable consideration of the full range of forest issues in the development of the RFA. The identification of potential places by the Expert Panel forum constitutes only a portion of the methodology used to determine those places of outstanding universal value. Those places listed above do not constitute ‘identified properties’ under the Commonwealth *World Heritage Properties Conservation Act 1983*.

3.12 ECOLOGICALLY SUSTAINABLE FOREST MANAGEMENT

Six principles underline an ecologically sustainable forest management system. These are:

1. conservation of biological diversity;
2. maintenance of productive capacity of forest ecosystems;
3. maintenance of forest ecosystem health and vitality;
4. conservation and maintenance of soil and water resources;
5. maintenance of global carbon cycles; and
6. maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies.

Assessment of the maintenance of the full range of natural and cultural heritage values identified under the Commonwealth *Australian Heritage Commission Act 1975* is included in these principles.

An independent panel of experts examined the process operating in the South-West Forest Region and found that:

“The current environment management system for the South-West Forest Region meets many of the requirements of a system to pursue ecologically sustainable forest management. Strengths of the forest management system in place in the South-West Forest Region include a well developed system for integrated planning and implementation on a regional basis, supplemented by individual management plans for specific areas. The predominantly top-down approach uses modern technology, research, specialist skills and professional judgment to advantage.

Deficiencies include overlapping and sometimes inconsistent Commonwealth and State legislation; duplication of processes due to the provisions of two overlapping pieces of State legislation and associated administrative arrangements; insufficient monitoring of outcomes of forest management to provide for continuing improvement, and gaps in legislation, policy formulation, planning and implementation concerning specific areas - notably flora and fauna legislation, biodiversity, heritage management and private forests.” *Assessment of Ecologically Sustainable Forest Management in the South-West Forest Region of Western Australia report* (Independent Expert Advisory Group 1997).

A summary of the panel’s recommendations is at Appendix 10.