FORESTERS AND THE WA FOREST ESTATE

By Roger Underwood

Abstract

Foresters in WA take particular pride in their two most significant achievements: the creation of the forest estate in the southwest of WA, and the professional management of this estate over nearly 80 years. Both were achieved in the face of opposition from vested interests, and apathy from the wider community.

Forests were not originally regarded as a legitimate land use, but as land awaiting conversion to a higher use, i.e. agriculture. It was only after the creation of the Forests Department in 1919 and the appointment of the first professional foresters that forests were dedicated as inalienable Crown reserves.

It took over 40 years to secure today's forest estate, a process requiring technical, professional and political skills. Foresters were driven by an ideal of sustainable management which was not fashionable at the time. WA's early foresters were also required to develop from scratch an entire forest management system. They did not always get it right at first, but effective systems evolved through adaptive management based on research and experience.

Originally mostly classified as State Forest, the estate has now been significantly reclassified to national park, nature reserve and conservation park, plus there is a comprehensive network of "informal reserves" within State forests. Foresters were also responsible for initiating this reclassification, through the designation of Conservation MPAs within State Forest, which later formed the core of a new reserve system developed since about 1990 and through measures introduced in the 1980s to minimise the visual impact of timber cutting.

The role played by foresters in native forest management in WA has been greatly diminished in recent years. Nor are the forests as intensively managed as was once the case. Nevertheless, the secure and widely admired estate of forested national parks and protected areas in south western WA stands as a memorial to the work of the forestry profession, and the management systems they developed remain available for future managers to adopt.

1. Introduction

The forest estate in Western Australia referred to in this paper is the area of tall eucalypt forest in the southwest corner of the State. It is dominated by two main species: jarrah (*Eucalyptus marginata)* and karri (*E diversicolour)*, although there are several other tree species found in abundance in some areas, notably marri (*E calophylla)*, wandoo (*E wandoo),* tuart (*E gomphocephala),* WA blackbutt *(E patens)* and red and yellow tingle (*E. jacksonii* and *E guilfoylii).* Inland of the southwest corner there was once a magnificent sweep of eucalypt and acacia woodland, extending over tens of millions of hectares. Almost all of this has been cleared and converted to farmland. There remain extensive multispecies woodlands on the rangelands further east which are today managed for grazing and conservation; they are not discussed in this paper.

The tall forests of the southwest have moved through three phases since European settlement in 1829.

Phase 1: Forests as farmland-in-waiting

For most of the first 80 years forests were considered to be expendable. The popular concept was that the highly valuable timber would be cut and then the cutovers converted to a "higher" land use, i.e. agriculture. This process was encouraged by government and moved rapidly up along the fertile river valleys in the

jarrah forest. The conversion of forest to farm would have been even more widespread had it not been for two factors: (i) upland jarrah forest soils are lateritic and infertile; and (ii) the karri forest was remote, dense and comprised very large trees which were difficult to clear. Early settlers quickly realised they could move through the forest belt east to the Avon Valley and beyond where they found native pastures, good soil and easy clearing.

This phase of forest history began to draw to a close after the appointment in 1916 of Charles Lane-Poole as Conservator of Forests, the first professional forester in WA who knew what he was doing and was supported by good legislation and an agency of his own. A Forests Act ("an Act to Provide for the Better Management and Protection of Forests" as it was succinctly subtitled) was passed in 1918 (Wallace 1968) and the Forests Department came into being in 1919 – the first, only and last government department in Western Australia solely dedicated to forest conservation and management. The pressure to convert forests to farmland was still high during the 1920s, and persisted until the 1960s, but from the late 1920s onwards it faced legislative barriers as well as opposition from foresters.

Phase 2: Forests as multiple use forests

From about 1920 for about another 80 years, the objective of management for southwest forests was multiple use with a long-term vision of achieving a sustainable yield of all forest values. Initially the dominant value was timber, because in those days timber from native forests was a valuable commodity which contributed significantly to the development of the State. The timber industry was the largest manufacturing industry in WA and sawn timber was the third major export after wheat and wool. The timber industry also provided employment for many thousands of West Australians. From the outset, however, foresters knew that if forests were managed properly for the sustained production of timber, all of the other forest values could also be sustained. These were recognised as including water catchment protection, conservation of soils, waterways and landscapes, provision of recreational opportunities and habitat for native fauna and flora. In fact the Forests Department's very first planning document was a management plan for the forests surrounding the Mundaring Weir, and the priority for management was water catchment protection, not timber production.

The forester's vision of a multipurpose forest however was not shared by that section of the community who became known as environmentalists. They believed that timber production and conservation of other forest values (especially the protection of biodiversity) were not compatible. These views arose in the 1970s, a time when the timber industry was declining in economic importance, and a more prosperous community could afford to meet their demand for timber by importing forest products. Eventually the environmentalists' views became politically dominant and a widescale conversion of State Forests to national parks began. Ironically, this process had been initiated by foresters, although they did not envisage it going as far as it has, nor that it would lead ultimately to foresters having little involvement in native forest management in WA.

Phase 3: The patchwork forest

During the late 1970s and early 1980s, the Forests Department accepted the need to formally state that State Forests were to be managed for the whole range of forest values. A forest policy statement to this effect was published (Forests Department 1976), and a new management strategy adopted. This involved the designation of Management Priority Areas (MPAs) within State forest (White and Underwood, 1988). The concept was that multiple use would continue to be the underpinning philosophy, but particular uses would receive a priority for management in particular forests. Any activity in an MPA must ensure that the nominated priority use did not suffer. Of most interest in this paper were the MPAs for Conservation of Flora, Fauna and Landscape which were designated over some of the finest areas of State Forests at that time, the process of selection being based on detailed biological surveys (Christensen 1992). Timber production was not a permitted use in these areas, and they became in effect pseudo-national parks. There were also MPAs where the designated priority was recreation, catchment protection or water production.

This system did not survive the formation in 1985 of the Department of Conservation and Land Management, which absorbed the three agencies formerly responsible for forests, national parks and wildlife. Over the next decade or so the MPAs for Flora Fauna and Landscape were converted to national parks or similar tenures, as were substantial areas of former State Forest which had been assigned various management priorities. Multiple uses still occur in southwest forests, but the stated dominant aim is protection of biodiversity, and this applies irrespective of forest tenure. All other demands (with the exception of bauxite mining in the jarrah forest - see below) are subsidiary. On the ground, the forest is a patchwork quilt of many different tenures, all vested in the Conservation Commission but managed by the Department of Conservation and Environment (DEC). DEC is responsible for environmental protection, management of the conservation land and marine estate and wildlife protection for the whole of Western Australia, as well as for the protection of all Unallocated Crown Lands.

The evolution from unmanaged and largely unwanted forests pre-1920 into what is today a single large and well protected (in a legislative sense) biodiversity reserve took place within a period of about 85 years. The current system of national parks and protected areas embedded within WA forests easily meets the internationally accepted standards for a Comprehensive, Adequate and Representative reserve system.

What is mostly overlooked today is that this situation only became possible because of the work done by foresters to acquire, secure, regenerate and protect the forest estate in the first place. Without their intervention much of the present day State Forests and forested national parks and protected areas of the south west would have been converted to farmland.

2. *The creation of State forests*

The first professional foresters in WA were faced by two over-riding difficulties:

(i) There was no permanent forest estate on which to base a sustainable forest conservation program. Apart from a few minor reserves for specific purposes scattered about the southwest, the bulk of the forest was Vacant Crown Land, that is, land owned by the State government for which no purpose had been allotted, and no future mapped out.

(ii) No scientific forestry had ever been practiced in Western Australia, and the department's foresters had pretty much to start from scratch. In this respect the two most pressing issues were how to regenerate areas which had been cutover for timber over the previous 100 yrs or so; and how to protect the forest from the ravages of high intensity bushfires. But in addition they had none of the supporting systems which today are taken for granted, like maps, roads, staff and funds.

The initial aim was to create a forest estate which was dedicated and secure. By *dedicated* was meant that its purpose was defined, thus allowing management plans to be developed which would achieve that purpose or those purposes. By *secure* was meant that the forest would remain as forest, in a dedicated reserve, in perpetuity. The most critical need was to make it extremely difficult for governments to freehold good forest land and allow it to be cleared for agriculture.

The process by which this was achieved involved three main steps, as follows:

1. ***Definition of State forest***

During the early years of the 20th century large areas of "State Forest" had been declared under the Land Act for woodlands in the eastern goldfields, with the aim of protecting the bushland around dusty mining towns. However, these were not A Class Reserves, and they were later revoked.

The foresters responsible for the drafting of the new Forests Act in 1917 were careful to include in it a new definition of "State forest" which had the same security of tenure as an A Class Reserve.

This meant that once an area had been dedicated as State Forest, this status could not be revoked without an Act of Parliament, i.e., agreement of both Houses of Parliament. Status equivalent to an A Class Reserve would make the new State Forests as secure as it was possible to make them.

2. *Forest survey and classification.*

A massive program of surveying and classifying the forests commenced in 1917. This began before the Forests Act had been passed, so that designation of the first new State Forests could then occur without delay. The work was pioneering in every sense of the word. Firstly it involved the formation of special Classification teams, who were sent out into the forests to physically measure, describe and appraise them. Although mostly completed by the mid-1920s, survey and classification work continued in the more remote parts of the southwest right into the 1950s.

The forest classification work has been well described by two famous WA foresters: Dick Perry, who was involved in the early work south-east of Busselton just after World War 1 (Perry, 1985) and Barney White who was involved in its final phases north of Denmark in the early 1950s (White 1985). Each team was led by a forester and comprised a surveyor (a representative of the Lands Department), one or two Assistant Foresters and survey hands. The areas into which they went were unmapped and mostly trackless, and the teams lived in the bush for months at a time. The work involved running hundreds of "assessment lines", each line being ten chains in length and one chain in width, giving a plot size of ten square chains or one acre (0.4 hectares). The start point and direction of each line was surveyed so that later the topographical information collected could be accurately transferred to the new maps being developed by the department at that time. Information was recorded about forest type, soils, tree heights and diameters (allowing the calculation of timber volume), understorey species, creeks, rock outcrops, swamps and high points.

The classification work extended over millions of hectares. As well as being the first forest inventories in the State, they were also the first broad-acre ecological surveys and the first formal land use studies undertaken in WA. The information generated was used to determine the suitability of the land for future agricultural development (Williamson 2005).

The data collected by the classification teams was collated, mapped and sent to Head Office in Perth. There eventually decisions were made about land use and priorities and the next phase in the process of securing State forest would commence.

3. *The political process.*

The final phase in the creation of State Forests was to some extent the most difficult. The Forests Department had to prepare detailed maps showing the proposed new State forests and prepare a Bill to go before Parliament. Each new State Forest was given a number and its boundaries precisely described. Bills were debated in both Houses of Parliament, and if approved would then go to the State Governor for his consent. The final step was to have the new State Forests "gazetted", that is, their details published as an Order in Council in the Government Gazette, and then subject to a last review by both Houses of Parliament.

It was a miracle that any State forests were created at all, given the community attitudes of the time. The process was fiercely opposed in many quarters and supported by almost no-one. Opponents included agricultural and pastoral interests, the mining industry and local communities in the southwest. Foresters were heavily criticised in the media and described as "land grabbers". The parliamentary process was slow and tortuous, moving in fits and starts depending on which parties were in government. The initial work was not helped by a famous falling out between Lane-Poole and the then-Premier James Mitchell, resulting in Lane-Poole's resignation. And all through the 1920s, Mitchell was pushing his Group Settlement Scheme, aimed at creating a West

Australian dairy industry, which would result in the freeholding and wholesale destruction of hundreds of thousands of hectares of prime forest county (Bolton, 1972).

There were three key people in the creation of the WA forest estate: foresters Lane-Poole and his successor as Conservator Stephen Kessell who were the visionaries and the architects, and Phillip Collier, who as Minister and Premier, had the political skills to push the legislation through.

The passion for their work, and the sense of urgency within the forestry profession, is revealed in this extract from a memo written by Lane-Poole in 1920 to Mr McKay, Clerk to the Minister for Lands: *"The classification work [must] be pushed on between Big Brook* [Pemberton], *the Gardner, the Shannon River and the Nornalup Road, so that the extensive area of land carrying karri may be surveyed as soon as possible. All the country between Big Brook and the Deeside Road is now done, and the plans are being prepared. [Forester] Brockman expects to complete the work before the rains drive him back into the jarrah country. As soon as the weather permits, say October, the classifiers [must] be thrown into the country between Big Brook and Manjimup to the east, and Nannup south to the sea on the west. In the meantime the classifiers, as soon as the rain sets in, say May, to go north and tackle all the country between Manjimup and Bridgetown on the west, and the edge of the big jarrah on the east".*

It took until the 1960s to complete the dedication of a secure forest estate in WA, although the bulk of the reservation had occurred during the late 1920s and 1930s, as the following table shows:

Year	Cumulative area of permanently dedicated State forest (hectares)
1918	0
1919	1,271
1920	17,374
1922	19,934
1924	51,256
1925	60,838
1926	412,004
1927	545,840
1928	775,694
1929	1,222,438
1931	1,227,978
1932	1,229,372
1934	1,235,459
1935	1,241,883
1937	1,242,591
1938	1,312,095
1940	1,313,543
1954	1,361,700
1955	1,419,226
1956	1,452,207
1957	1,478,511
1958	1,517,320
1959	1,578,184
1963	1,617,471
1964	1,618,890

As the new State Forests were gazetted, they were progressively numbered from 1 to 70. The list includes many famous West Australian forests such as SF 1 (the Ludlow Tuart Forest, gazetted in 1919), SF 7 (the Helena River catchment, 1924), SF 51 (Dryandra, 1934) and SF61 (the Julimar, 1956). The heart of the karri forest around Pemberton and along the Warren River was secured in the 1920s.

3. Minor forest reserves

In addition to State forests, there were numerous reserves created under the Forests Act during the early years of the 20th century, often called Timber Reserves, plus a great number of small areas reserved under the Lands Act which had forest on them. The latter were usually designated "Timber for Settlers" or "Stopping Place for Travellers and Stock". Forests Act and Land Act reserves were generally B or C Class reserves, and were often tiny, and surrounded by cleared farmland. In some cases a Timber Reserve was created over an area of forest to ensure that the timber could be recovered before the area was alienated.

Most of these reserves still exist today, and some of the larger or more biologically significant have been converted into nature reserves. On the whole, however they have not been well managed over the years and their contribution to the conservation estate has been marginal.

4. The anomalies

The processes and outcomes described above are generalised and do not take into account three important anomalies.

Anomaly #1: the d'Entrecasteaux national park

At the time of the formation of CALM in 1985 there were only a handful of "pocket-handkerchief" national parks and nature reserves within the forest area of the south west. Moreover, there were no large areas of forest on private property with significant conservation values that might have made them candidates for conversion to national parks. Therefore to create the national park estate which exists today it was necessary to reclassify existing State Forests. This process began with the transfer from State Forest to national park of the Shannon River basin in the late 1980s, and continues as we speak.

The d"Entrecasteaux national park is an exception. This is located along the southern extremity of the karri country on the lower south west coast. This large area comprises a mixture of wetlands, heathlands, woodland, open dunes and "islands" of tall forest. It is an area of great diversity and beauty. For over a century up until the 1970s, the area was Vacant Crown Land, but pastoral leases had been granted to cattlemen from inland farming districts. When it became known that these areas had been pegged for mineral sands mining, a small group of foresters from Manjimup and Pemberton prepared a significant submission to government to have this area designated a national park (Bradshaw, 1975). This private initiative was outstandingly successful, and still represents the single most significant creation of a "new" conservation reserve in south western WA.

Anomaly #2: The "informal reserves"

In addition to national parks and nature reserves, there is an extensive system of "informal reserves" laid out within State Forest. These include buffer strips along waterways and roads and around wetlands and rock outcrops, areas specially designated as fauna corridors or surrounding recreation sites, and even individual trees. These areas are managed as if they were nature reserves. Originally called "Road, River and Stream Reserves" these were an initiative of foresters in the early 1970s as a means of minimising the visual and hydrological impacts of clear felling in the karri forest. This network has since been extended

throughout State Forest, and although they are managed as if they were nature reserves, they have no legislative security, other than the protection of their status through the forest management plan and the fact that they have become a routine aspect of management.

Anomaly #3: Bauxite mining in the jarrah forest

Although State Forests are highly secure in terms of minimising the risk of alienation ("freeholding") they are not protected from mining. This is because the original Forests Act was only agreed to by Parliament if it was subordinate to the Mining Act. Consequently, two alumina producers have been granted huge mining leases over the northern and eastern jarrah forest, allowing them to mine bauxite. Mining involves the complete clearance of the forest ecosystem, including removal of the forest soil to a depth of many metres. Approximately 1000 ha of forest are cleared annually. This has been going on for over 40 years and it is estimated that bauxite reserves will last for another 50 years at the current rate of mining. This will mean that mining will take out a high proportion of the northern jarrah forest which is outside national parks.

Elsewhere, south west forests have also been cleared and subjected to open cut mining for gold, mineral sands and coal, and forest clearance for minerals production continues today, although mostly these operations affect only small discrete areas of forest.

Bauxite mining has always been opposed by foresters (Institute of Foresters, 1980) on the grounds that it represents permanent modification of the forest ecosystem through removal of the soil and disruption of forest management, in particular bushfire management, over very large areas of very fine forest. The imposition of bauxite mining over State Forest represents the greatest setback that professional foresters experienced in their efforts to conserve and protect native forests.

5. Community support and attitudes to forests

Right through the period in which State Forests were being created, the process had little community interest or support. Even within government there was no support for forest conservation outside the Forests Department, there being no departments of environment or conservation in those days. Quite apart from the decision by government to allow broad-acre open cut mining in the jarrah forest, the pressure to alienate State Forests for new farm development was intense in the years immediately after World War 2 (Wallace, 1968) and only declined after about the mid-1960s. Nevertheless, as late as 1982 I recall fighting off requests for freeholding of State Forests, the applications by settlers being strongly supported by the Department of Agriculture.

The broader West Australian community only finally became interested in forests in the late 1980s, the focus being the timber industry which was unfairly portrayed as destroying the forest and with the full support of the forestry profession. This led to a campaign to have State Forests "set aside in conservation reserves", a concept that ignored the fact that State Forests were already conservation reserves, and were being managed to ensure the forests survived in perpetuity. Nevertheless, the campaign was politically effective, and by 2003 the process of converting State Forests into national parks was reminiscent in its intensity to that which had created the State Forests in the first place.

There are some ironies relating to the community attitude to forests in WA.

The first is that for all of the period from the formation of the Forests Dept in 1919 to its absorption into CALM in 1985, forest management and conservation in WA was the responsibility of a small cadre of professional foresters. To a very large extent the public and the government was happy to leave it to them, and they quietly went about their business, overseeing every aspect of the task from acquiring, dedicating and guarding State Forests to developing policy and overseeing day-to-day operations, research and administration.

This situation came to an abrupt end with the advent of "community concern" about forest conservation in the 1980s. The formation of CALM, the hiving off of a splinter agency (the Forest Products Commission) and then the transformation of CALM into DEC has meant that Western Australia no longer has a professionally-led government agency whose sole interest and passion is forests. DEC has huge responsibilities in environmental protection and land and marine management across the whole state, and forests are only a very minor aspect of these responsibilities. This has left forests in State Forest and national parks alike less well-cared for than was previously the case. There are many examples, the most notable being the closure of forest districts and field research centres, the decline in the number of trained forest officers, the demarcation between planning and operations, and the redirection of field staff from forest work to environmental regulation. Opposition from environmentalists, reductions in funding and the erection of bureaucratic barriers have also made it harder for field staff to achieve bushfire management programs. As a result WA forests are once again experiencing large high intensity wildfires on a scale not seen since 1961. The standard of maintenance of forest roads and recreation sites has also fallen dramatically.

The second great irony is that the community's love of national parks does not translate into adequate funding for their management. Nor does the concern for native forests extend to other people's forests – more than a quarter of the timber used in WA today is imported, mostly from countries without effective forest conservation programs.

The final irony is that the same forests regarded as being threatened by foresters were in fact a product of their work. After 80 years of forestry management the State's forests were seen to be so beautiful and to have such high conservation value that they must immediately become national parks. Classic examples are Boranup, one of the State's most popular forested national parks – it was clearfelled (and regenerated) over 100 years ago - and the new national park created from State Forests near Mundaring Weir which were cut over for half a century to provide firewood for the pumps of the Goldfields Water Supply scheme, and progressively regenerated under the care of three generations of foresters.

6. Future challenges

It is one thing to create a comprehensive, adequate and representative system of forest reserves. It is another thing to look after it. Setting aside the on-going permanent loss of natural forest ecosystems due to bauxite mining, there are four critical challenges for West Australian forest managers in the future:

1. ***Fire.*** Eucalypt forests need regular mild fire to stay healthy, to enable the various demands on the forest to be met in perpetuity, and to render them safe from the ravages of large high intensity wildfires. This fact is not understood, or is denied by many politically influential environmentalists and academics. Misguided attempts to take fire out of the forest, in other words to replace frequent mild patchy fires with landscape-level conflagrations, will have a disastrous impact on forested national parks and could eventually lead to a loss in community support for conservation reserves.

2. ***Climate change.*** If, as some people postulate, our climate becomes warmer, and if drying trends continue, it is possible that pressure will resume to convert high rainfall forests into irrigated farmland. Old growth forest in National parks should be inviolable, but areas within national parks carrying young regrowth or areas incinerated by high intensity wildfire, will be vulnerable.

3. ***Lack of professional staff in the forest.*** Foresters are uniquely trained to care for, regenerate and protect forests and are the only profession devoted specifically to them. Professional foresters were once stationed all over the southwest, each with a patch and a staff of field officers and forest workers (Underwood, 2006). The modern tendency to replace foresters with environmental scientists and to withdraw field staff to regional centres means there are fewer people in the forest who are living and breathing forest protection and conservation on a daily basis.

4. ***Research.*** There has been a major decline in the number of research scientists stationed in and devoted to forest research over the last decade. Increasingly research is being done by academics in cooperative research centres located in the cities. The evolution of forest management in WA is to a large extent a history of progressive implementation of research findings, for example the technologies of prescribed burning, thinning, regeneration, dieback mapping, catchment management, wildlife conservation and feral animal control. Failure to continue with field-based operational research in the forest will lead to stagnation, and eventually to an inability to deal with new challenges.

7. Conclusion

The recent creation of a comprehensive, adequate and representative system of national parks and nature reserves in the tall forest zone of south western WA was only possible because State Forests had been acquired and secured in the first place and then responsibly managed for decades. This is an achievement for which the State's foresters have never received credit.

By the 1960s forest management in WA had also been brought to a high level of development, still unmatched in many countries of the world. The science and practice of forestry had evolved to a point at which foresters felt confident they could meet the policy objectives of the day. This is not to say that they were all-knowing; like any profession, they continued to study, learn, and evolve. What they brought to the job however, was a single-minded passion for forest conservation, forest health and forest protection, coupled to practical experience and skills in the bush. No other profession has arisen to fill the vacuum left by their demise, a situation which is possibly the biggest threat to the long term health and viability of West Australian forests.

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