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# The Practice of Forestry in the Rangelands of Western Australia

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## Summary

Foresters are making a major and positive contribution to land management and land use planning in the rangeland of Western Australia. Many of these rangelands and woodlands, dominated by Eucalyptus and Acacia, fall into the wider definition of 'forests' which Australia has accepted. Within the rangeland, foresters are managing for biodiversity both on and outside of lands vested in statutory bodies. Within vested lands foresters manage National Parks, Nature Reserves, World Heritage Areas, Ramsar sites, State forests, timber reserves and the sandalwood industry. Outside of vested reserves, management for biodiversity is achieved by cooperative work with the mining industry, aboriginal groups, pastoralists and the Environmental Protection Authority. CALM has an active programme of reserve-acquisition for biodiversity conservation, including the purchase of pastoral leases and the dedication of unallocated Crown land to reserve status.

## Introduction

The Department of Conservation and Land Management (CALM) is the lead agency with responsibility for the conservation of biodiversity in Western Australia. CALM manages 20 million hectares of land on behalf of the community, of which 14 million hectares is rangeland areas of the State north and east of the south-west agricultural and forest zone. CALM also has responsibility for the management of wildlife (flora and fauna) on all land tenures. Management for the conservation of biodiversity is based on the protection of habitat, ecosystems and ecological processes within a secure reserve system and encouragement of ecologically sustainable land practices on adjacent lands.

Rangeland covers about 85 per cent of the State. These are mainly arid and semi-arid regions that carry spinifex, grassland and shrubland, but also include tropical savannah woodland in the Kimberley and extensive mulga (*Acacia aneura*), Eucalypt woodlands and Eucalypt mallee formations.

Approximately one-half of the rangeland is managed for meat and wool production under a pastoral lease system. The remainder is made up of unallocated crown land, Aboriginal Trust land and conservation reserves.

Much of the rangeland has been altered in a brief period of time (less than 150 years). Today about

19 million hectares (20 percent) of pastoral areas are judged by Agriculture Western Australia (AgWA) surveys (WA Department Agriculture, 1988) to be in poor condition.

The Regional Managers in three of the four CALM Regions which cover this large part of the State are forestry graduates. Many of their staff have forestry training. This training and experience has played a major role in the valuable contributions that foresters have made and are making to land management and the conservation of biodiversity.

Foresters' contribution to broad land management coincides with a revised definition of forest used by Australia's State of the Forests Report (1998), where a forest is defined as: "*An area incorporating all living and non living components, that is dominated by trees having usually a single stem and a mature or potentially mature stand height exceeding 2 metres and with existing or potential crown cover of overstorey strata about equal to or greater than 20 percent*". Using this definition, 35 million ha or 14 percent of Western Australia's land mass is defined as forest (as against less than 1 percent previously). These forests are dominated by eucalyptus and acacia (98 percent of the total) and occur on leasehold land (40 percent) conservation reserves (11 percent) and unallocated crown land (38 percent). Forests on Private land and on multiple use reserves account for the balance.

## Conserving Biodiversity in the Rangelands

### *Strategies and policies*

The recognition of the need to conserve the full array of indigenous ecosystems and species has occurred at all community and political levels in various international, national, state, territory and local settings. For example, the World Convention on Biological Diversity, dealt at a global level with issues such as these. The development of the National Strategy for the Conservation of Biodiversity, as a means of providing guidance for the conservation and sustainable management of Australia's biodiversity, resulted from the ratification of this Convention.

Biodiversity in the rangelands is declining most noticeably with the extinction, or reduction in the distribution and abundance, of many medium-sized mammal species. The conservation of biodiversity is essential for the maintenance of ecological processes, including life support systems such as clean air and water, and in maintaining options for future use.

The challenge is to integrate conservation, remedial actions and ongoing management of productive uses in the rangeland in order to protect biological diversity and maintain the ecological processes which provide the productive capacity of its natural resources. This challenge is made more difficult by the fragile nature of many rangeland ecosystems, the unpredictable nature of rainfall and a harsh economic environment.

In 1992 the Prime Minister's Statement on the Environment addressed the Commonwealth's commitment to the co-operative development of a national reserve system. As a result, the National Reserves System Co-operative Program (NRSCP) was established. The NRSCP aims to facilitate the development of a Comprehensive, Adequate and Representative (CAR) reserve system to be established by the year 2000. The guiding principles of the National Strategy for Ecologically Sustainable Development underpin this Strategy.

As a means of establishing a framework for the National Reserves System, an interim biogeographical regionalisation study of Australia was completed. As a result, a series of bioregions were described and gaps in the reserve system were identified. Seven of the bioregions in Western Australia's rangelands were identified as high priority and a further five as medium priority for reserve establishment.

In 1993 the Commonwealth Government acknowledged that Australia's rangeland, though a valuable asset, was facing continued degradation from a range of threatening processes that included overgrazing, fire, and introduced animals and

plants. The draft National Strategy for Rangeland Management resulted from the recognition by the Commonwealth of the need for a coordinated and co-operative approach to rangeland management. The first of three primary goals set out in this Strategy is for the conservation and management of the natural environment (the remaining two goals relate to sustainable economic activity and the recognition and support for a range of social and cultural values). More specifically, objective ten relates to the need for a CAR reserve system integrated with conservation management strategies on other land. There is a commitment to a co-operative Commonwealth and States/Territories approach to developing a CAR reserve system by using appropriate scientific criteria and with community support.

At the State level the WA Government has recently approved a rangeland management policy, *Managing the Rangelands*, which makes a clear commitment to the establishment and management of a CAR reserve system and the development of environmental objectives for other land uses. The election commitments contained in the WA Coalition Government's *Policies Leading into the 21<sup>st</sup> Century* are quite specific in relation to conservation. The Government has directed CALM to, *inter alia*, establish the framework of a CAR reserve system, through land acquisition in the pastoral zone and co-operative management of off reserve lands, by agreement with lessees. CALM is to seek Commonwealth Government funding for land acquisition and agreement with pastoral lessees for a co-operative approach to land management that is sympathetic to conservation objectives.

The recognition of the need for the conservation of biodiversity is also identified in the Gascoyne - Murchison Rangeland Strategy which recommends, *inter alia*, the establishment and management of a CAR reserve system for that region. The Strategy also recognises the need for off-reserve conservation management measures.

### Existing reserves

Foresters are actively involved in the management of a wide range of tenures within the rangeland. These include National Parks, Nature Reserves and Conservation Parks vested in the National Parks and Nature Conservation Authority (NPNCA) as well as State forest, timber reserves and sandalwood reserves vested in the Lands and Forests Commission (LFC). Within these reserves are included areas with World Heritage Listing (Shark Bay WHA) or proposed for listing (Purnululu Bungle Bungle N.P.). Also included as CALM's responsibility are wetlands of international importance listed under the Ramsar Convention such as Roebuck Bay, and the Ord estuary system.

**Table 1 Conservation status of vegetational types in the regions shown.**

IBRA region	No. of types in region	Types <10% reserved	Types unreserved	No & % of types underrepresented
Murchison	119	71	39	110 92%
Carnarvon	118	56	47	103 87%
Coolgardie	98	33	53	86 88%
Pilbara	89	52	27	79 89%
Gascoyne	72	37	28	65 90%
Yalgoo	66	31	29	60 91%
Total	562	280	223	503

For some areas (Karijini N.P., Millstream-Chichester N.P., Rowles Lagoon N.R., Wanjarri N.R., Purnululu N.P.) management plans have been prepared. Foresters are engaged in the usual range of activities associated with parks and reserves – conservation of natural resources, tourism, recreation, protection from threatening processes (e.g. weeds and feral animals), fire control, access management, liaison with interest groups, Aboriginal culture, and protection of ethnographic and archaeological sites. In some areas Park Councils have been established.

Sandalwood (*Santalum spicatum*) is a valuable species that is being harvested in accordance with a Federally endorsed management plan and approved code of practice. Owing to the economic situation in Asia, former levels of harvesting of 2,000 tonnes/annum have been reduced considerably in recent years. CALM is encouraging commercial plantations of this species and of the Indian sandalwood (*S. album*); the latter in the irrigation areas of the Ord River floodplain.

Research into more widespread use of eucalypt species for specialty timbers is being conducted at Kalgoorlie. Some species are very dense and have excellent properties for high value products such as musical instruments. Others may prove useful as a source of charcoal for the carbon-in-pulp process, which is used to extract gold from ore.

In the Kimberley region, research is conducted on the establishment and growth of a variety of tropical species including Teak (*Tectona grandis*) African mahogany (*Khaya senegalensis*) and other species.

### Reserve aquisition

Although the existing reserve system is large (20million hectares), there is an inadequate representation of reserves in the rangeland. This is particularly so in the Murchison and Gascoyne

regions where pastoral leases were taken up soon after settlement and are held tightly.

The lack of representation is documented in the Interim Biogeographical Regionalisation of Australia (ANCA, 1993) and by Hopkins et al. (1995). Using cadastral overlays with the CALM estate, and adopting the Caracas standard that there should be a minimum of 10 per cent of each vegetational type in reserves if conservation needs are to be met, Hopkins et al. were able to show that of 562 vegetational types in six rangeland IBRA Regions, only 59 were adequately represented (Table 1). The data show that about 90% of the types in the arid pastoral zone are underrepresented. The selection is no better in the arid interior or the Kimberley.

Recognising this deficiency, CALM commissioned David Wilcox AM to review the situation and prepare a report titled “*The Potential for Enlarging the Conservation Estate in the Arid Rangelands*”, 1996. The report identified eight strategies for achieving conservation objectives and provided some costing for those strategies that involved existing pastoral leases.

Various studies have identified that there are few conservation reserves in the rangeland and CALM is developing an approach to assist in the identification of land with important conservation values. CALM is seeking to establish a system of conservation reserves based on nationally recognised criteria (comprehensiveness, adequacy and representativeness), to cover approximately 15 percent of the land area, in reserves of viable size, with good boundaries, and which are reasonably well distributed in the landscape.

### Proposals involving unallocated crown lands (ucl)

One way of expanding the conservation estate involves vesting of unallocated crown land as reserve. Usually the process is undertaken by

CALM preparing a regional management plan (eg Goldfields Regional Management Plan, 1994-2004) which identifies the existing estate, proposed additions, constraints etc. In the Kimberley, a consolidated publicly available report (Burbidge et al. 1991) identified a large number of potential conservation areas.

The usual procedure then is to involve the Department of Land Administration (DOLA), the Pastoral Lands Board (PLB), the Local Government Authority (LGA) and the Department of Minerals and Energy (DOME) in negotiations. Often there is opposition from the LGA (usually over road building materials) or from DOME (over the mineral prospectivity of the area). Negotiations can be protracted and may span many years. Recent negotiations with DOME in relation to State forest and reserves other than A class has eased their concerns over access for mineral exploration. As a result, DOME's power of veto has been used more sparingly, especially in the Goldfields Region.

Nevertheless, significant progress has been made with declaration of such areas as the Francois Peron N.P. and Kennedy Ranges N.P.

### **Pastoral lease purchases**

CALM has steadily been purchasing pastoral leases on the open market to assist the conservation and management of sandalwood and to enhance the conservation of biodiversity. To date 12 leases totaling 2 million hectares have been purchased; these are held in the name of the Executive Director until the tenure and management purpose can be altered. The procedure is similar to that described above for ucl with DOLA, LGAs, PLB and DOME being involved in the negotiations. Leases were purchased in all four Regions – Goldfields, Mid West, Pilbara and Kimberley. Some were purchased opportunistically: eg Peron Pastoral lease as part of the development of the Shark Bay World Heritage Area, Mt Hart and Charnley River in the Kimberley. Others have been purchased as part of a more structured approach.

### *Sandalwood conservation and regeneration programme (SCARP)*

Four pastoral leases (mainly in the Goldfields) were purchased in the early 1990's as part of a SCARP programme. These leases were destocked to remove the major threat to sandalwood seedlings, which are very palatable to livestock and rabbits. The closure of artificial waters will also help with the reduction of other feral herbivores such as goats, and should result in a kangaroo population that is in equilibrium with the

environment. Harvesting may be approved in accordance with the Management Plan. Other areas will be zoned and excluded from harvesting.

### *Gascoyne Murchison rangeland strategy*

The Gascoyne Murchison Rangelands Strategy (GMS) is a Regional Strategy prepared as a multi agency industry and community proposal that was successful in obtaining Natural Heritage Trust and State funding. In April 1998 the GMS was formally launched by the State Government and CALM was allocated \$6.8m over six years in new State funds for the establishment of a CAR reserve system, with recurrent costs of management to be met through CALM's net appropriation budget. Because of the recognised deficiencies in the region's conservation reserve system, it is expected that significant funding will be available from the Australian Government under the National Reserve System Programme of the Natural Heritage Trust.

To date three pastoral leases have been purchased within the GMS region and a further two are being negotiated. Over 40 pastoral lessees have currently approached CALM and negotiations over purchase are continuing. So far, in accordance with the Commonwealth NHT agreement, Environment Australia has reimbursed CALM for two thirds of the cost of purchase. It is likely that up to a further 25 leases totaling 5 million hectares could be purchased as part of this program alone.

In addition to the Gascoyne Murchison Rangeland Strategy, the Natural Heritage Trust also provides financial assistance for land purchase in other priority IBRA Regions. In the Pilbara region this assistance has helped with the purchase of four leases – Cane River, Mt Minnie, Meenthenna and part of Nanutarra.

### *Setting priorities*

The expenditure of public funds for land acquisition and ongoing management costs requires a transparent, structured approach to identifying natural ecosystems and areas of significant conservation value. CALM has developed a set of criteria for prioritising land which could be acquired for addition to the conservation estate or managed by way of voluntary agreement. These criteria are based on the Interim Scientific Guidelines for Establishing the National Reserve System, but have been expanded to include additional criteria including social, cultural, economic and planning matters. Broad scale vegetational and geological mapping combined with detailed biological data are used where these exist. Other information such as rangeland condition reports (AgWA) are also valuable. Finally a comprehensive inspection of each lease is

completed to ascertain condition of infrastructure, ecosystems and threatening processes. This approach to identifying areas of the State of highest priority will ensure that a CAR reserve system is achieved, given the limited funds that are available.

Any land acquisition proposal will need to take account of mineral prospectivity, (including petroleum), existing or proposed infrastructure such as transport and communications corridors, and implications of native title.

### Purchase

CALM has responsibility for the purchase of properties, by utilising the services of the Valuer General and of a settlement agency, or of the conveyancing section of the Crown Solicitor's Office as appropriate.

Once purchased, leases are transferred initially to the Executive Director of CALM and registered at the Office of Titles, WA Department of Land Administration. Within six months CALM will commence the process of vesting these lands in the National Parks and Nature Conservation Authority as formal reserves under the CALM Act. This will require appropriate discussion and agreement from relevant governmental agencies (including the Department of Minerals and Energy), the Pastoral Lands Board, the local government authority, and also will have to be consistent with the Native Title Act 1993.

### Management

Interim Management Guidelines (IMGs) for the management of each area of land acquired will be prepared within six months of purchase. These guidelines address, *inter alia*, the following issues:

- protection of conservation values;
- destocking;
- closure of artificial waters;
- removal/retention of infrastructure;
- control of feral animals and weeds;
- control and prescribed use of fire;
- boundary fencing;
- internal road networks;
- adjustment of pastoral lease boundaries if required; and
- opportunities for tourism.

These IMGs will identify budgetary requirements which will usually be funded by the relevant CALM regions. IMGs can be made available to interested parties.

IMGs will form a precursor to formal reserve management plans prepared with public input pursuant to the CALM Act. To date, a number of

pastoralists who have sold their leases to CALM have expressed a strong interest to remain in the homestead. This is accommodated wherever possible. Some pastoralists are engaged on a part-time basis in control of feral animals, fencing and other activities.

### Re-evaluation

The acquisition of a given lease (or part of a lease) for addition to the conservation reserve system will alter the priority for further acquisitions. The contribution of each acquisition to the comprehensiveness, adequacy and representativeness of the conservation reserve system will be assessed at the IBRA bioregion and vegetational association scales, leading to reworking of the data. Proposed further acquisitions will be re-evaluated in the light of these assessments, and priorities adjusted accordingly.

### Management off reserves

The conservation estate is not evenly distributed spatially and most vegetational types are either poorly represented (34%) or not represented (47%) in formal reserves (Hopkins et al., 1996). Particular gaps are obvious in the wheatbelt, in the pastoral areas, in the highly prospective greenstone areas, as well as in more fertile ecosystems such as river frontages and run-on areas. Most reserve boundaries are based on cadastral, not ecological, criteria. Many reserves are under threat from processes (such as fire or salinity) that originate from outside the reserve boundary.

CALM is encouraging cooperative development of nature conservation practices on lands which are not formally vested for conservation. Several mechanisms are already available in legislation, but non-statutory means have also been encouraged. The management goal is to establish a system of core conservation reserves where ecological communities and processes are sustained and managed. This reserve system will be established according to nationally recognised criteria, with viable size, manageable boundaries and be reasonably well distributed in the landscape.

CALM would expect that small areas within existing pastoral leases would be managed for conservation of biodiversity under arrangements between the lessee and CALM (eg CALM Act Section 16A agreements, memoranda of understanding etc). This network of areas would be contained within a rangeland landscape that is being managed sympathetically by existing lessees (eg pastoralists, aborigines, mining companies etc) in accordance with ecologically sustainable development objectives.

## Memoranda of understanding (mou) with mining companies

To date CALM has signed three MOUs with mining companies holding five pastoral leases. These are:

Hamersley Iron	Rocklea,
	Hamersley
	Juna Downs
WMC Resources Mt Keith	
North Pty Ltd	Yakabindie

CALM is currently continuing discussions with two other mining companies that hold leases.

In late 1994, when negotiations began, there were few demonstrated models that fitted the particular circumstances being sought. The closest was the model of a Biosphere reserve, developed under UNESCO's Man and the Biosphere Programme and launched in 1971, which encouraged the role of local people in conservation. However, that scheme was essentially with a major player (generally a government agency) and a large number of minor players (landholders and the local community), while the planned arrangement in W.A. was between two players of essentially equal size.

The path chosen was to proceed through an MOU which picked out the most relevant components of the Biosphere reserve program and adapted them to the goals and structures of the two parties. In reflecting the importance of shared mutual goals, the MOU contains no provisions for penalties or to restrict either party from withdrawing at any time.

A more detailed account of the Hamersley Iron MOU is given in Stoddart and Batini *"Integrated management of core and buffer areas for the Karijini National Park" 1996.*

## Pastoral lessees

In a number of cases, purchase or reservation of smaller areas within an operating pastoral lease may be unachievable, inappropriate or undesirable. Voluntary agreements for the management of land with high conservation values are available as a complementary measure to reservation. These agreements can be established through Section 16A of the CALM Act or less formally by MOUs.

Three Section 16A agreements have been negotiated with pastoral lessees, though only one only has been signed to date. One covers an area of vegetation that has been seldom grazed as it contains native poison (*Gastrolobium sp*) and two cover important wetland areas that require

protection. In agreement with the pastoralist, these areas will be fenced, destocked and appropriate feral animal control undertaken.

## Aboriginal interests

The potential for CALM and Aboriginal interests to complement each other in the rangeland and interior of the State is enormous. Aboriginal Land Trust (ALT) covers most of the desert ecosystems and large sections of the Kimberley. In addition, Aboriginal groups currently hold 50 pastoral leases, many in the Kimberley.

CALM is currently negotiating with three main groups:

- the Kimberley Land Council (KLC) particularly in relation to the Mitchell Plateau and the Nimbi Caves;
- the Ngaanyatjarra Land Council (Warburton) in relation to the Gibson Desert Nature Reserve and to ALT lands in the Western Desert;
- the Indigenous Land Corporation (ILC) regarding conservation management opportunities on lands that the ILC purchases for Aboriginal people.

These mechanisms could provide training and employment opportunities as well as utilising Aboriginal knowledge and skills such as fire management, wildlife management and cultural interpretation.

## Management of unallocated crown land (ucl)

Opportunities exist under the CALM Act Section 33(2) for CALM to manage areas of ucl, with the approval of the Minister for Lands. In practice this opportunity has been restricted by the future Act provisions of the Native Title Act.

Recently, the Mitchell Plateau Joint Venture (MPJV), which has rights of occupancy to a Temporary Reserve for the purposes of development of the bauxite resources in the Mitchell Plateau area, was required to develop a management plan by the State. This plan was developed in liaison with stakeholders, which included CALM which has proposals for reservation of two National Parks and three reserves in the general area.

Development of the bauxite resource is some decades away but the area is degrading as a result of lack of management. Feral animals (cattle), frequent hot fire and uncontrolled tourism are cause for concern.

CALM has now signed an MOU with MPJV's and is managing the area on their behalf, in accordance with the management plan. CALM is also liaising with interested stakeholders including traditional owners on behalf of the Management Advisory Group. The Joint Venturers and Department of Resources Development funded two thirds of CALM's establishment costs and the Joint Venturers fund half the annual operations costs to CALM.

## Resource projects

Western Australia is a resource-rich state. Projects calculated to cost upward of \$20 billion to develop are currently being evaluated. Under the Wildlife Conservation Act (1950) CALM is responsible for the protection of wildlife (flora and fauna) on all tenures of land. All wildlife is protected but some is given particular protection: eg threatened and priority species.

The many resource projects that already exist or that may be developed have potential to impact adversely on conservation values. These include direct effects, such as clearing, and also indirect effects attributable to mine-dewatering, pumping of aquifers and drainage shadow effects.

In these areas CALM staff provide expert advice to developers, to Government and to the Environmental Protection Authority, particularly through the formal Environmental Impact Assessment process for proposals.

## Conclusion

The rangelands of Western Australia are an exciting region where foresters and other professionals can practice their skills for the conservation, management and enhancement of biodiversity. The skills learnt in our youth in the "high forests" of Australia – inventory, fire management, planning and land management (to name a few) have been most usefully adapted to these more recent "additions" to the forest estate.

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