

Filling the Gaps

Building a reserve system in the Gascoyne-Murchison region

The area of conservation reserves in Western Australia's Gascoyne-Murchison region is set to treble following the purchase of 1.9 million hectares for new reserves in the last two years.

This is the result of a partnership between the State and Commonwealth governments through the National Reserve System Program of the Natural Heritage Trust, and a group of pastoralists.

By Keiran McNamara, Tony Brandis
and Angus Hopkins

A multi-million dollar program is under way to fill the gaps in the conservation reserve system in the Gascoyne-Murchison region of Western Australia. This program will not only help protect the region's unique ecosystems and their associated biota, but will also bring economic benefits. These include cash injections for pastoralists who sell leases but remain on the land as contract managers or pursuing other interests, and earnings from a rapidly growing nature-based tourism industry.

Muggon Station, 216 kilometres north of Mullewa, is an example of the results already achieved. Isolated sections of Muggon were selected as leases in the 1870s and 1880s, and although development was slow because of poor water supplies, the station was running around 9,500 sheep by 1973. However, the 183,000-hectare station also supports 10 land systems, a chain of wetlands and 15 vegetation types. In 1999, the Department of Conservation and Land

Management (CALM) purchased the lease and engaged the former lessee to stay on to manage the property. Later this year, the Department will run the first *LANDSCOPE* Expedition to Muggon. A team of expeditioners will pay to visit Muggon and help CALM scientists to gather botanical information. The Western Australian group of Birds Australia is also planning a bird survey of Muggon in September.

Ecotourism is already being promoted on other leases where accommodation and other services are provided, particularly on properties adjoining Kennedy Range National Park. The park is being extended through the land acquisition program.

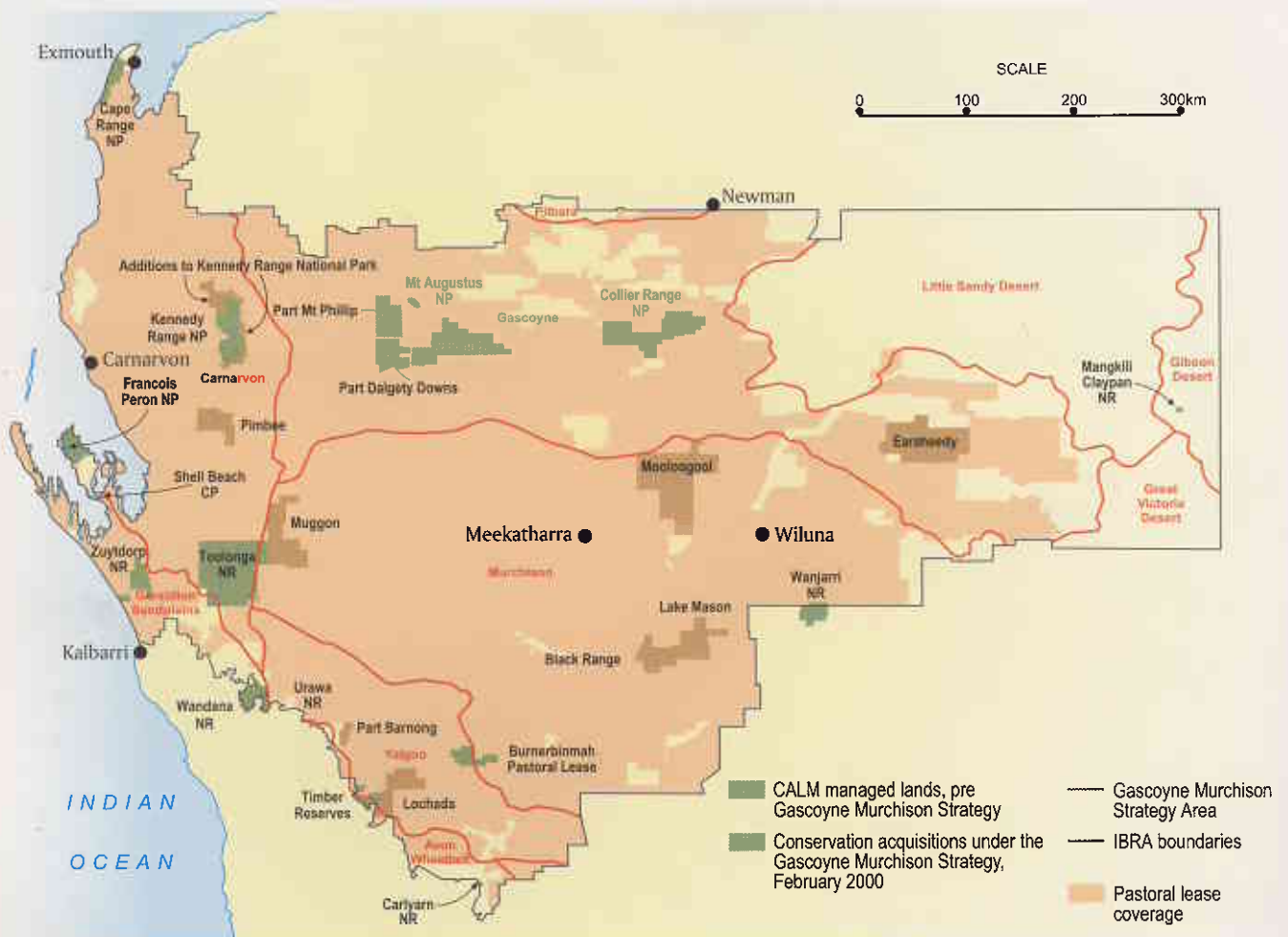


Previous page:
Typical colours of the Gascoyne-Murchison region in mulga scrub near Mt Augustus.
Photo – Bill Bachman

Below: The Gascoyne Murchison Strategy area stretches inland from the coast for a thousand kilometres. The map highlights the recent conservation acquisitions as well as land managed by CALM before 1998.

THE REGION

The Gascoyne-Murchison region covers an area of about 34 million hectares, which includes 253 pastoral leases and unallocated Crown land in the arid interior. The region covers some of the most arid land in Western Australia, but is known to have high biological diversity. A survey of the Southern Carnarvon Basin, for example, has recorded 144 species of indigenous reptiles, 500 species of aquatic invertebrates and more than 2,000 vascular plant species in an area covering only 15 per cent of the Gascoyne-



Right: Siltstone breakaway on Muggon station, one of the pastoral leases recently acquired.

Photo – Sue Patrick/CALM

Centre right: Billabong Mulga Well on Muggon is one of several wells established when the area was a working station. The billabong was flooded as a result of heavy rain earlier in the year.

Photo – Sue Patrick/CALM

Below right: The eastern cliffs of Kennedy Range—the national park in which the range is located is to be extended as a result of further acquisitions.

Photo – Marie Lochman

Murchison region. Research into the original mammal fauna of the survey area revealed that 59 species were present at the time of European settlement.

Despite the diversity of species and ecosystems known to occur there, only three per cent of the region was in conservation reserves when the Gascoyne-Murchison Rangeland Strategy was endorsed by the State Government in 1998. CALM also managed one pastoral lease in the region which it had purchased for reservation.

The Strategy was developed by the regional community and government agencies in response to the declining economic and environmental conditions facing the region's pastoral industry. It set out new approaches to land management to address both issues and ensure the long-term viability of the industry.

The Strategy recognised that some lessees might want to leave the industry, and the need to improve the reserve system through land acquisition. It was envisaged that some 10 to 15 per cent of the Gascoyne-Murchison region would be needed in the reserve system to meet national criteria.

Since December 1998, CALM has purchased eight leases and parts of nine other properties, a total of 1.9 million hectares. Further negotiations with pastoralists over land acquisition are continuing. As leases are acquired, information about each lease is added to a database so that further purchases do not unnecessarily duplicate vegetation units or land systems—each new acquisition will add different





ecosystems to the reserve system. The land acquired to date contains 37 vegetation types that were not previously within the reserve system, and many more vegetation types now have an improved level of representation.

At the same time as the conservation estate is growing, CALM is working with leaseholders to introduce voluntary arrangements to conserve and manage valuable areas on leases, to complement the reserve system. This can be done through formal arrangements under the Conservation and Land Management Act and memoranda of understanding, or through a variety of less formal voluntary arrangements (see 'Rescuing the Rangelands', *LANDSCOPE*, Spring 1997).

Western Australia's rangelands have undergone extensive changes as a result

of more than 150 years of pastoral management combined with the introduction of feral animals and plants and altered fire regimes. There are now significant land conservation and range deterioration problems—in the Murchison region, for example, about 42 per cent of the vegetation is considered to be in poor or very poor condition.

CHOOSING NEW RESERVES

Western Australia has been a leader in establishing its conservation reserve system based on the results of detailed biological surveys (see 'Patterns in Nature', *LANDSCOPE*, Summer 1995–96). At the same time, however, there are regions of the State that have not yet been adequately surveyed, and most of these are seriously under-conserved. Most of the Gascoyne-Murchison region is in this category.

In 1996, a vegetation map database of Western Australia was developed and used to assess the State's conservation reserve system, under a joint project between CALM and Agriculture Western Australia, with financial assistance from the Commonwealth under the National Reserve System Program. The analysis showed the existing reserve system to be inadequate, and highlighted ecosystems and vegetation types that should have priority for acquisition for inclusion in the reserve system. For example, about 90 per cent of the vegetation types had less than 10 per cent of their original area in the reserve system, and about half were not represented at all. Vegetation mapping units are a valuable biodiversity planning tool as they most readily define ecosystems.

This database is being used to design the reserve system for the Gascoyne-Murchison region. The region contains 221 vegetation associations, or 25 per cent of all the associations recorded for the whole State.

Above left: When allowed to reach high population numbers, feral goats can remove virtually all palatable shrub foliage within their reach and suppress the regeneration of these plants.
Photo – Jiri Lochman

Above right: Botanists surveying a population of a poorly known plant on Muggon.
Photo – Daphne Edinger/CALM

Left: An undescribed wattle found recently on Muggon.
Photo – Sue Patrick/CALM



Right: Wreath lechenaultia (*Leschenaultia macrantha*) bears its flowers at the end of ground-hugging branches that radiate from the central rootstock.

Photo – Neville Passmore

Below right: Drummond's everlasting or pompom head (*Cephalopterum drummondii*).

Photo – Greg Harold

Below far right: Hunchbacked mistletoe (*Amyema gibberula* var. *gibberula*) growing at Muggon on the stems of a *Grevillea* species.

Photo – Sue Patrick/CALM

At the beginning of the acquisition program, fewer than half of these associations were in the region's reserve system and only 19 of those could be considered to be adequately reserved, having 15 per cent or more of their original area in conservation reserves.

Under the 1996 National Strategy for the Conservation of Australia's Biological Diversity and the National Reserve System Program of the Natural Heritage Trust, the Western Australian and Commonwealth Governments have committed themselves to working together to establish a comprehensive, adequate and representative (CAR) conservation reserve system.

The Interim Biogeographic Regionalisation of Australia (IBRA) study was completed to give a framework for establishing a national reserve system. The study identified and described 80 bioregions throughout Australia that help to plan the national reserve system and identify gaps in the existing reserve system. Twenty-six bioregions occur in Western Australia and 11 occur wholly or partially within the Gascoyne-Murchison region. The four main bioregions that make up the Gascoyne-Murchison region (namely Carnarvon, Gascoyne, Murchison and Yalgoo—see map) are all considered to be a high priority for increasing the reserve system.

The vegetation map database can be used to evaluate the comprehensiveness of the reserve system and elements of representativeness. For example, an additional 36 vegetation types have already been acquired for addition to the reserve system, and the number that will be reserved at the level of 15 per cent or more has grown to 29.



CRITERIA FOR A RESERVE SYSTEM

Conservation reserve systems are assessed in terms of meeting the attributes of comprehensiveness, adequacy and representativeness. These terms are defined in the Australian and New Zealand Environment and Conservation Council (ANZECC) 1999 Guidelines for Establishing the National Reserve System as:

- comprehensiveness—the inclusion of the full range of ecosystems recognised at an appropriate scale within and across each bioregion;
- adequacy—the maintenance of the ecological viability and integrity of populations, species and communities; and
- representativeness—the principle that those areas that are selected for inclusion in reserves reasonably reflect the biotic diversity of the ecosystems from which they derive.

The terms comprehensive, adequate and representative together capture the desired concept of the ideal conservation reserve system.

In other words, the reserve system is well on the way towards meeting comprehensiveness criteria.

Work to identify high priority ecosystems and environments for acquisition or other types of

conservation management continues. A biological survey of the southern Carnarvon bioregion and into the northern Geraldton Sandplains bioregion has just been completed. In addition, a conservation assessment

of the whole of the Gascoyne-Murchison region, drawing together information on geology, soils, topography, vegetation health, and existing biological data is under way. Biodiversity hotspots identified through the survey, and through the conservation assessment, will be targeted for acquisition or other conservation measures, and wetlands listed in *A Directory of Important Wetlands in Australia* will be acquired or managed to protect those special values.

The acquisition program will continue to be implemented progressively over a number of years, with funds from the Commonwealth Government's National Reserve System Program under the Natural Heritage Trust, and from the State Government as part of the Gascoyne-Murchison Strategy.

FUTURE MANAGEMENT

Leases or parts of leases purchased for the reserve system will be managed for conservation, allowing the land to



Left: The wopilkara (or greater stick-nest rat *Leporillus conditor*) is one of the rare native animals that may be reintroduced to the Gascoyne-Murchison once habitats recover and feral animals are controlled.

Photo – Jiri Lochman

Below left: Wildflowers along the Gascoyne River.

Photo – Bill Bachman

return to its natural state. Depending on previous impacts, some areas may take considerable time to recover. All domestic stock will be removed from acquired areas and stock from neighbouring properties kept from straying onto reserves. Feral animals, such as goats, camels, donkeys, foxes and cats, will be controlled through trapping, shooting or poisoning programs, which CALM will run in collaboration with lessees of neighbouring properties. Once habitats recover and feral animals are controlled, it should be possible to reintroduce locally extinct or rare native animals such as malleefowl, boodies, bilbies, stick-nest rats and hare wallabies.

Artificial water sources, such as bores and dams, have led to increased numbers of feral animals and kangaroos, which in turn have affected plant communities. Watering points will be closed down once all domestic stock has been removed, in a way that is sensitive to the animal populations that now rely on them for survival. During this adjustment period, it will be important to monitor numbers to ensure that unreasonable grazing pressure does not occur on adjoining leases.

CALM wants to retain people with an interest in conservation and nature-based tourism on the leases

purchased. It is generally in the best interests of the community and CALM to have people stay on to maintain homesteads and surrounds, and to help manage the land and control feral animals. By keeping people in the rangelands it is anticipated that services such as telecommunications, roads and mail services will be maintained.

A key feature of CALM's approach will be to continue to consult with the wide range of stakeholders as areas are acquired, reserved and managed. These include pastoralists and their representative organisations, the Gascoyne-Murchison Strategy Board, the Pastoral Lands Board, Aboriginal groups, local government, conservation groups, the mining and tourism industries, and other government agencies.

The restoration of the natural ecosystems and reintroduction of native animals to their former habitats would mean the restoration of nature's balance. It may take a little time to achieve this, but we are already making a difference.



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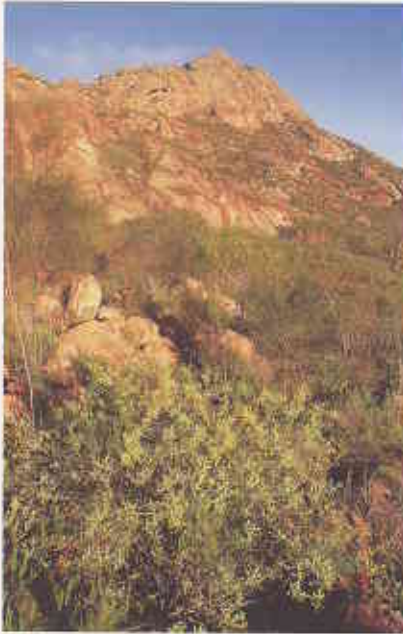
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Winner of the 1998 Alex Harris Medal for excellence in science and environment reporting.

LANDSCOPE

VOLUME FIFTEEN NUMBER 4, WINTER 2000



Peak Charles and Peak Eleanora, protected within Peak Charles National Park, form granite islands in a sea of bush. See page 10.



Butterflies have a short life span, but they bring pleasure to many people who visit Rotttnest Island. See page 23.



The Swan River is a recreation area for humans and a home for migratory birds. See page 16.



A partnership between State and Commonwealth governments, and a group of pastoralists is helping to fill the gaps in the conservation estate. See page 43.



Many marine creatures have evolved ingenious survival methods. See page 49.

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C O V E R

Well-known Australian artist Ken Done captures the colour and turbulence of the horizontal waterfalls on the Kimberley's Wandjina Coast.

Painting by Ken Done
Racing Tide, Kimberley Coast, May 1999
(51 x 36 cm) oil crayon and gouache
on paper.



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Colour Separation by Colourbox Digital

Printed in Western Australia by Lamb Print

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Published by
Department of Conservation and Land Management,
Dick Perry Avenue, Kensington, Western Australia