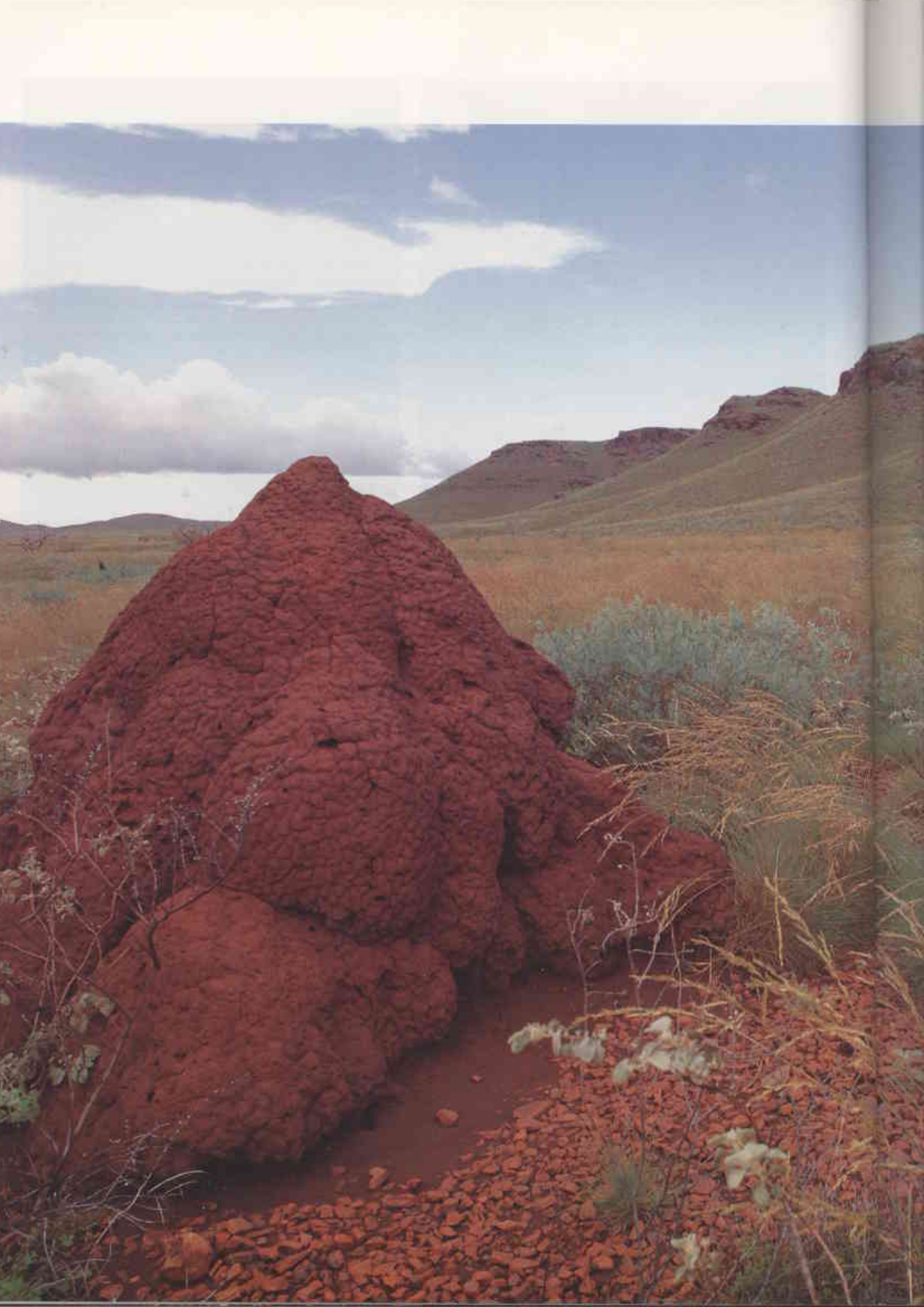
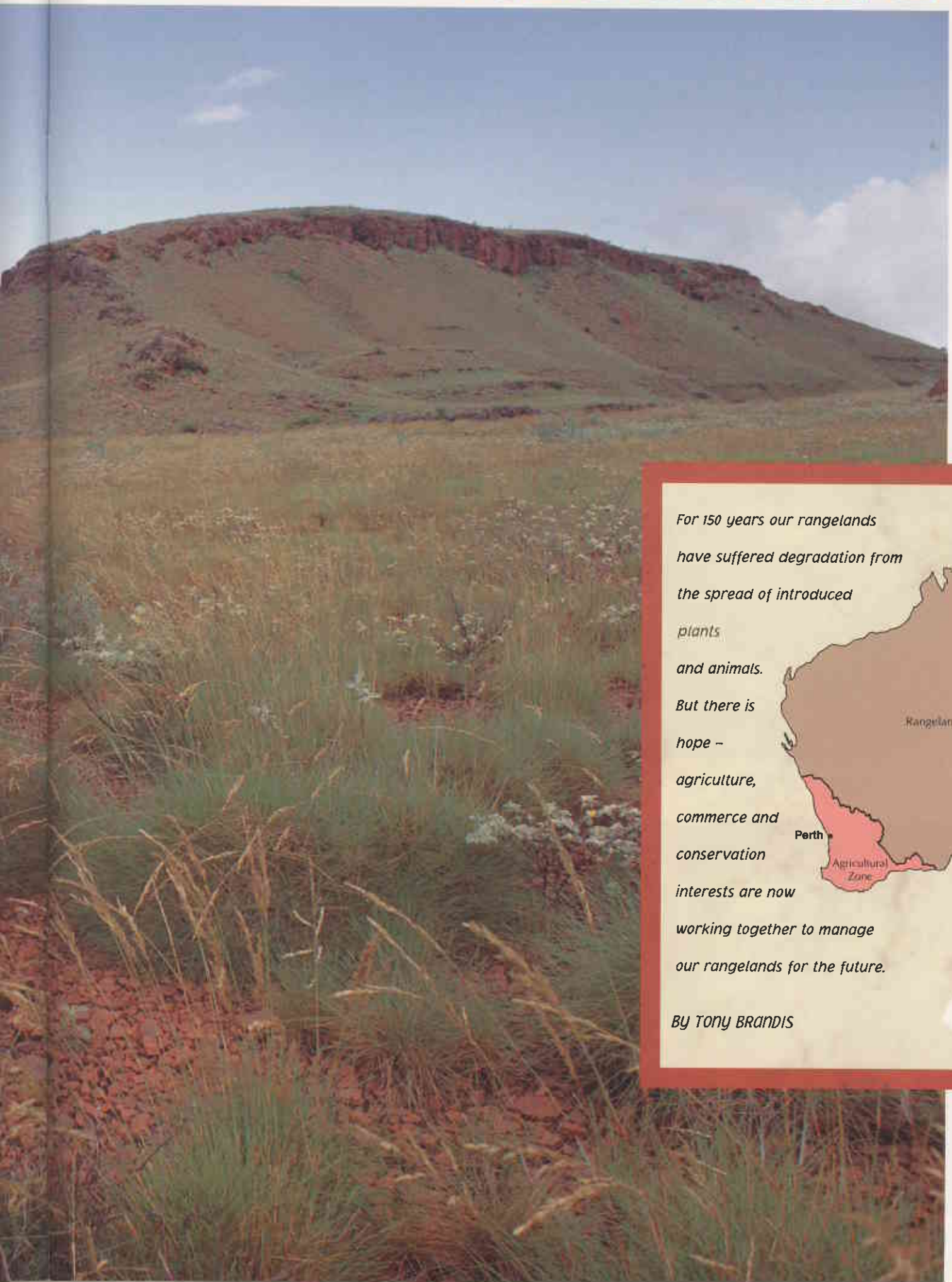


RESCUING the Rangelands



For 150 years our rangelands have suffered degradation from the spread of introduced plants and animals. But there is hope – agriculture, commerce and conservation interests are now working together to manage our rangelands for the future.

BY TONY BRANDIS

The rangelands—those areas to the north and east of the south-west agricultural lands—cover 85 per cent of Western Australia and experience sporadic rainfall of only 150–250 mm per year. Although they include the wetter sub-tropical savannah of the Kimberley, these are mostly arid and semi-arid lands in the Pilbara and Goldfields where rainfall is generally low and highly variable. This is a big, dry country.

Since European settlement, the rangelands have been subjected to a variety of land uses. Less than half the area is under pastoral lease, with the rest a mosaic of vacant Crown land, conservation reserves, national parks and Aboriginal reserves. But whatever use has been imposed upon them, the rangelands have languished under the pressure of change. It is, however, becoming clearer that the key to their recovery lies in a united effort from all those whose purposes and needs tie them to the land.

Previous page
For many Australians, these spinifex plains and rugged hills form part of the vision of the great outback. Even here, dramatic changes to native plants and animals have occurred.
Photo – John Kleczowski/Lochman Transparencies

This overgrazed pasture has lost most of its vegetative cover and may take hundreds of years to regenerate.
Photo – Jiri Lochman

A REMARKABLE ENVIRONMENT

Plants and animals living in this environment thrive on the sort of heat and drought that would push many of us to the limit of our endurance. Some plants have developed large root systems, which tap into the meagre soil moisture not utilised by other plants in unvegetated areas. Others, such as mulga (*Acacia aneura*), have foliage shaped in a way that channels rain water down the trunk into the root zone. Some are just plain tough. The berry saltbush (*Rhagodia baccata*), for example, has a heat resistance limit of 59°C with an optimum temperature for photosynthesis around 37°C.

Likewise, native animals cope well in this environment. For example, hopping-mice carry seeds into their cool, humid, underground burrows to be used as a food source. They also produce highly concentrated urine, which allows them to survive without drinking. These adaptations indicate further the power and apparent invincibility of nature.

But all is not as it appears. Native plants are the main source of feed for stock, which are scattered widely over pastoral leases. Travellers through this country may see very little evidence of the presence of stock or people, save the occasional windmill, fence or track. To the untrained eye this may represent a superficial addition to an unspoiled landscape. But an expert can see many areas where grazing pressure has led to severe land degradation. Water points and enclosed areas, for example, are often denuded of vegetation, leaving bare and trampled ground exposed to the elements. Introduced domestic animals, such as goats, donkeys, camels and horses, have been known to escape to the wild and breed up to plague numbers. They cause land, soil and habitat degradation well beyond the 45 per cent of the rangeland area pastoral leases take up. It is, in fact, unlikely that any land on mainland Western Australia has remained completely unaffected by the grazing pressure of domestic stock or the damage wrought by feral animals. The concept of untouched wilderness rings false.

It is perhaps ironic that many of us would consider the natural order of the rangelands completely inhospitable—yet plants and animals have quite specific requirements for survival. They are often restricted to particular places where the right combination of soil, vegetation and climate occurs. This limitation makes them particularly vulnerable to the threat of extinction as grazing pressure, predation or competition from feral animals, together with natural phenomena such as drought or fire, combine to shrink their population and their habitat. Some of the highest rates of mammal extinction in Western Australia, and indeed the world, occur in the rangelands as a result of these effects. Nearly half of the original native mammal species no longer occur there, while some, such as the pig-footed bandicoot and the djooyalpi or lesser stick-nest rat, have become extinct. Others, including the night parrot, numbat and malleefowl, are at risk. The rangelands are under threat.

DEFINING THE PROBLEM

Just as the survival of any ecosystem depends on the ability of plants to regenerate, the pastoral industry depends on the viability of the natural environment to continue its productivity. Native plants are the primary producers of the ecosystem, picking up energy from the sun and metabolising nutrients from the soil. Green plants provide the energy and nutrient needs of herbivores. In nature, there is a balance in the production and consumption of plant material, which has been upset by the introduction of cattle and sheep,

Above: A typical rangelands scene after rain. Though much of the rangelands can appear dry and inhospitable, a carpet of wildflowers can spring up in a very short time.
Photo – Bill Bachman

Part of the ironstone Teano Range in Western Australia's Pilbara region.
Photo – Marie Lochman

changing forever the grazing demands placed on the native plants. The pattern of consumption and regeneration has been interrupted, breaking down the ecosystem supporting it and resulting in the industry facing increased uncertainty.

For at least 100 years, there has been some recognition of the loss of vegetation and increased erosion caused by constant heavy grazing on arid pastoral land, although the mechanisms were not well understood. By the 1930s, evidence was being gathered in eastern Australia that pointed to stock numbers, grazing pressure and slow rates of regeneration as factors in the degradation of rangelands. It was becoming clear that there was a need for a thorough understanding of the ecology of the arid rangelands and the impact of introduced grazing animals on it.

Agriculture WA has been assessing the condition of Western Australian rangelands since 1970 using aerial photography, field investigations and, more recently, satellite imaging. The results show that large areas are now in poor condition. For example, in the Murchison District about 42 per cent of the assessed area has been judged to be in poor to very poor condition, while 37 per cent is in fair condition; only 21 per cent is in good condition. The worst-affected areas are ones that have already lost most of their vegetation, so their soil is bare and eroded by wind and water. In the most severe cases it is likely that very long periods, perhaps hundreds of years, will be required for the vegetation to re-establish.

The patterns of stock management that have led to areas of severe degradation are evident. The pressure to maintain economic viability in a lean marketplace often leads to overstocking in preferential grazing areas. Stock, like all herbivores, have a preference for the more palatable plants. Only when these plants have all been consumed will they move on to the less palatable vegetation, and only in desperation will they eat unpalatable plants. The highest grazing pressure, then, occurs within areas where there is a predominance of palatable plants and where water is nearby. Agriculture WA's assessment shows the degraded land to be clearly those areas most suitable for stock, while stony, upland sites, which are greater distances from water, are often in much better condition.

FINDING SOLUTIONS

Many pastoralists are conservationists. They clearly appreciate the need to look after native pasture for their own survival as an industry. Nowadays they take a progressive view of the management of the natural resource on which their livelihood depends by adopting conservative stocking rates, 'resting'

paddocks for long periods and developing more water points to spread stock more evenly over the land.

The Department of Conservation and Land Management has responsibility for nature conservation and ecosystem management in Western Australia. This means that CALM is in the unique position of being able to coordinate the manifold land use models of the rangelands in overall conservation strategies. It is able to take a number of approaches to achieving conservation objectives in the rangelands, by setting up comprehensive representative reserve systems, drawing up formal conservation agreements with landholders, and offering support and advice to pastoral lease holders to encourage multiple land use and sustainable management practices.

Stakeholders in the rangelands are coming to understand, as never before, the unity of their purpose. Nature conservation, pastoralism, traditional and other commercial use of the land, such as mining and tourism, cannot exist separately from one another. The rangelands are a precious resource to all and must be managed accordingly.

Within the broader community, there is growing concern about rangeland management. A number of recent public surveys indicate that most people consider conservation in these areas to be of paramount importance, over and above pastoral production. But this is not a question of either/or. Conservation is an imperative principle in all rangeland uses.

Above right: Animals such as this tarrkawarra, or spinifex hopping-mouse (*Notomys alexis*), have adapted to live in this hot, dry environment by digging burrows.
Photo – Jiri Lochman

Tony Brandis is a senior environmental officer in CALM's Environmental Protection Branch. He has had a lifelong interest in the rangelands and their management and at one time worked as a stockman. He can be contacted on (08) 9729 1505.

CONSERVATION INITIATIVES IN THE RANGELANDS: A PROGRESS REPORT

In the early 1970s, the Environmental Protection Authority (EPA) developed a series of recommendations for conservation reserves throughout the State, formulated by the Conservation Through Reserves Committee. However, the reserve system is not adequate to ensure nature conservation over the long term, as not all ecosystems needing protection were included. Recent research into the adequacy of the reserve system in pastoral areas of Western Australia indicates that about 80 per cent of the vegetation types in the arid pastoral zone are under-represented.

The Department of Conservation and Land Management (CALM) has been learning ways of managing land effectively for both pastoral production and conservation. Many pastoralists are already taking an active role in developing management practices aimed at conserving the natural resources upon which their industry is based. However, knowledge about conservation values and ecological processes on pastoral land is limited. Joint efforts in seeking this knowledge, through such means as developing inventories of wildlife in sensitive areas, are to the benefit of both CALM and the pastoral industry with such partnerships now being developed.

Similarly, CALM is interested in making formal arrangements for cooperative management on pastoral lands, particularly those areas adjoining conservation reserves. There is great mutual advantage to be gained in sharing research information about the occurrence of threatened species, as there is in the collaboration of managing such cross-boundary issues as feral animal control, fire control and habitat protection, and the alignment of management strategies to achieve common goals.

CALM also assists in rangeland management through participation in land management bodies such as the Soil and Land Conservation Council and Land Conservation District Committees, where it is able to provide information and support for pastoralists to develop sustainable management practices.

In recent years CALM has signed formal management agreements with three mining companies who hold pastoral leases adjoining reserves — Hamersley Iron, Dominion Mining, and Western Mining. Under the agreements the agencies share resources to achieve management goals covering a range of land uses including conservation, pastoral production, recreation, mineral production and cultural activities. A formal Memorandum of Understanding was signed, under which widely representative management advisory committees have been formed to identify management issues and cooperative strategies. Stock have been removed from reserves, existing fencing improved, new fencing established around sensitive vegetation areas, fire management plans developed and feral animal control programs carried out. Comprehensive management plans are currently being developed to encompass a range of issues including recreation and tourism, protection of threatened communities, mining, public awareness and education, pastoral production, rehabilitation of degraded land and the protection of culturally significant sites.

The threat from below . . . How can we defeat our greatest environmental enemy? Read about salinity and what we can do about it on p. 10.

One of the best aids to plant conservation is completely invisible. See our plant DNA story on p. 18.

LANDSCOPE

VOLUME THIRTEEN NUMBER 1, SPRING 1997

Dryandra, one of the last refuges of the native wildlife. Now you can experience this woodland wonderland for yourself. Find out how on p. 36.

Europeans brought alien plants and animals to WA's rangelands, which have since become degraded. What can be done? See p. 42.

How old is the Stirling Range? Read about this stunning area in our story on p. 48.

FEATURES

HALT THE SALT!
CARIS BAILEY, KEIRAN McNAMARA & SYD SHEA.....10

MORE THAN MEETS THE EYE
MARGARET BYRNE & DAVID COATES.....18

GARDEN PLANTS GONE WILD
PATRICK PIGOTT & ROGER ARMSTRONG.....23

FITZGERALD RIVER NATIONAL PARK
ANGELA SANDERS.....28

A WONDERFUL WOODLAND
ANTHONY DESMOND & MICHELLE BOOTHEY.....36

RESCUING THE RANGELANDS
TONY BRANDIS.....42

SEABED TO MOUNTAIN TOP
IAN HERFORD.....48

REGULARS

BUSH TELEGRAPH.....4

ENDANGERED
THREATENED 'ROCKS' IN LAKE RICHMOND.....47

URBAN ANTICS BLACK-SHOULDERED KITE.....54

COVER

The Fitzgerald River National Park boasts a startling array of habitats, mammals, birds and other species. Its wildflowers in spring are often spectacular. Our story on p. 28 is a fascinating tale of variety, beauty, and threat in this aged land.

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