

#### Australian Government

National Land & Water Resources Audit

Extract from Rangelands 2008 — Taking the Pulse 5. Emerging information needs

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# **5** Emerging information needs

Over the past decade, three groups have become increasingly significant stakeholders in the management of large areas of the rangelands:

- Indigenous land managers the land area under control or management of Indigenous landholders has increased in recent years
- regional natural resource management (NRM) groups — the regional groups are responsible for implementing Australian Government investments to improve land management and biodiversity conservation
- the non-government environment sector significant areas of land have been acquired for biodiversity conservation purposes by the sector in recent years.

These three groups require information on natural resource conditions and trends to manage their land. Information is often required at a finer scale than that provided by Australian Collaborative Rangeland

#### Figure 5.1 Indigenous management of significant areas of the rangelands



Indigenous people now have responsibility for managing significant areas of the rangelands. This includes fire management in northern Australia.

Photo: Department of the Environment, Water, Heritage and the Arts

Information System (ACRIS) reporting (ie at the property and subregional scale, rather than at the bioregional, state or national scale). In some cases, investors require information to demonstrate the effectiveness of management actions at a particular location in meeting wider, long-term resource condition goals.

In compiling this report, the ACRIS Management Committee (ACRIS-MC) has investigated the information needs of the three groups and examined ways in which ACRIS can better deliver the required information.

# Information needs of Indigenous land managers

# Indigenous landholdings in the rangelands

The return of direct responsibility for management of large areas of the rangelands to Indigenous communities is one of the most significant changes in land ownership over the past 30 years (Figure 5.1). Although some land was allocated to Indigenous habitation in the past, the active acquisition of pastoral leasehold land and other traditional lands began only in the 1970s through a range of Australian Government and state/territory government legislation and programs. The Indigenous Land Corporation at the national level and some state and territory agencies are empowered to acquire land for Indigenous people and to support them in the management of that land.

By October 2005, Indigenous people had regained full ownership of, or responsibility for, almost 1.675 million km<sup>2</sup> (27%) of the rangelands. When areas of jointly managed national parks and land covered by Indigenous land use agreements and native title determinations are taken into account,



#### Figure 5.2 The rangelands Indigenous estate

Source: Department of the Environment, Water, Heritage and the Arts

Aboriginal people have some level of responsibility for and rights to 2.292 million km<sup>2</sup> or nearly 37% of the Australian rangelands. The distribution of those lands is shown in Figure 5.2, and the areas in each category are listed in Table 5.1. An additional category not listed is Indigenous protected areas (IPAs), which are areas where traditional owners have entered into voluntary agreements for the purposes of biodiversity and cultural resource conservation. Further acquisitions of pastoral leasehold land, joint management arrangements over areas of the conservation reserve system, declaration of more IPAs and commitments through Indigenous land use agreements can be expected in the future.

Statutory land councils support Indigenous land use and management, and a number of Indigenous land management organisations (ILMOs) of diverse natures and capacities have been formed to assist Indigenous custodians with information and advice.

Category		Area (km <sup>2</sup> )	Percentage of rangeland area
Total area of the rangelands	3	6 234 400	100.00
Total area with some level o in, management	f Indigenous responsibility for, or interest	2 292 100	36.76
Primary responsibility for management	Indigenous owned and leasehold lands	1 675 000	26.87
Shared responsibility for management	Jointly managed conservation lands	100 300	1.61
Varying levels of interest in land management	Indigenous land use agreements — not included in the above categories	516 800	8.29

Source: ERIN, 2007

# Indigenous land use and management in the rangelands

The values that Indigenous people hold about rangelands and their relationship with their lands lie at the centre of different and distinctive ways of knowing, using and managing country. Grounded in those values, Indigenous people hold land to achieve a wide range of economic, social, cultural and environmental outcomes, such that there is no singular 'Indigenous land use' or a simple set of 'Indigenous information needs'. For example, the values, aspirations and opportunities of a coastal community in the wet tropics are very different from those of a desert community in central Australia.

Indigenous peoples' interests in land and their associated information needs include:

- pastoral enterprise development: rangeland inventory, condition and trend; management guides
- coastal environment management: coastal stability, information on coastal flora and fauna
- tourism enterprise development: the risk that preferred areas of visitation may be damaged by high visitor pressure, including risks of site-based impacts on flora and fauna
- cultural aspirations: spatial description of resources as recognised by Indigenous peoples for their cultural values and threats (fire, weeds, climate change) to special locations and areas

- part-subsistence living: resources (fuel, bush foods, fauna); climatic information as it affects availability of resources for subsistence; feral animals, pests and weeds; fire history and patterns
- nature conservation management: spatial description of resources as recognised by Indigenous peoples; biodiversity status and trends; climatic information as it affects fire and drought frequency; feral animals, pests and weeds; fire history and patterns
- building capacity to adjust to climate change impacts: predicted cyclone frequency and intensity; predicted changes in fire regimes; predicted sea-level changes; predicted changes in flora and fauna availability; human health-related factors (eg mosquitoes, disease incidence).

### Information for Indigenous land use and management

In 2007, the ACRIS partners and ILMOs are better placed than previously to work together in addressing Indigenous information needs. Recent research has provided a clearer picture of the distinct and different Indigenous values and aspirations that could be matched with new information products. Collaborative arrangements could be developed between ILMOs and ACRIS partners to build greater understanding of each other's resources, capacities and development needs, for example as shown by the Balkanu Organisation (Box 5.1).

Table 5.2 External land information/data	accessed by th	he larger	rangeland	Indigenous
land management organisations	3			

Data	Providers	Commonly available scales
Vegetation	State/territory government agencies 1:500 000 and finer. Finer res preferred	
Geology	State/territory government agencies	1:250 000. Suitable, although finer resolution preferred
Digital elevation models	State/territory government agencies National coverage by 9-seco elevation models. Finer for s (preferred)	
Roads, drainage, community locations etc	Geoscience Australia	1:250 000 and finer. Finer scale maps more useful
Fire history	State/territory government agencies	Various
Ramsar or other important wetlands	ERIN, state/territory government agencies	Inadequate
Bore locations	State/territory government agencies	1:250 000 and finer. Finer scale maps more useful
Bioregions	Environment Australia	Poor resolution for ILMOs operating in different boundaries
Land use (eg agriculture, forestry, mining)	State/territory government agencies, NLWRA, DAFF (national scale land use mapping); state and territory finer scale mapping developed under ACLUMP.	National scale land use mapping, and regional scale land use mapping at various scales. Finer scale mapping more useful
Land tenure	State/territory government agencies	Good resolution
Satellite imagery	ACRES	Good resolution
Quick Look mosaics	Geoscience Australia; state/territory government agencies	Poor resolution
Topographic maps	State/territory government agencies	1:250 000 and finer (finer more useful)
Aboriginal heritage sites registers	State/territory government agencies	Good resolution

ACLUMP = Australian Collaborative Land Use Mapping Program; ACRES = Australian Centre for Remote Sensing; DAFF = Department of Agriculture, Fisheries and Forestry; ERIN = Environmental Resources Information Network; NLWRA = National Land & Water Resources Audit

#### Box 5.1 The Balkanu Organisation

Balkanu is a Cairns-based community and business development organisation set up by the Aboriginal people of Cape York. It works collaboratively with traditional owners and their locally focused organisations (such as the Chuulangun Aboriginal Corporation), as well as with other local, regional and national organisations. One project managed by Balkanu is the development of an ethnoecology database for the Kaanju people. The Kaanju people gave permission for the data to be collected, and the data are already available to local communities at the Chuulangun Aboriginal Corporation.

A GIS system has been built, although further development work is required. The data stored in the GIS are used primarily for land management planning, including weed and feral animal control, and to support planning for sustainable economic development.

Landscape feature	Data types	Availability from ACRIS data
Ethnobotanical (eg bush foods and medicines)	Oral history (audio, CD or documented); photos	No, but available for specific regions through the relevant ILMO
Ethnozoological (eg hunting species, totem species)	Oral history (audio, CD or documented); photos	No, but available for specific regions through the relevant ILMO
Weeds (woody, aquatic etc)	GPS coordinates; aerial photos; photos of vigour; management zones; distribution and relative abundance	No, but available from NLWRA mapping for a selected suite of weeds
Introduced animals	Photos; scats; distribution and relative abundance	No, but available from NLWRA mapping for selected feral animals
Fire history	Photos; aerial photos; management zones (ACRIS information is about area burned, from which fire extent, intensity and frequency can be estimated and reported)	Available from ACRIS or directly from Landgate (Land Information Authority) in WA
Waterways	Aerial photos; photos; topographic maps	Not available from ACRIS but from Geoscience Australia mapping and jurisdictional agencies
Wetlands	Aerial photos; photos; topographic maps	No, but available from ERIN. Some additional information has been compiled for NLWRA.
Waterway flows	GPS coordinates; flow history	Flows are not in the ACRIS datasets but are available from jurisdictional agencies
Water quality	GPS coordinates; photos (turbidity)	Not in the ACRIS datasets but available from jurisdictional agencies
Stocking rates (pastoral areas)	Stocking histories; management zones	Relative change in stocking density is in the ACRIS datasets, and is sourced from ABS Agricultural Census and survey data
Stock forage productivity	Aerial photos; photos; management zones	Information on change in 'critical stock forage' for pastoral lands (ie density, frequency and composition of decreaser species) is available at IBRA scale
Erosion	Aerial photos; photos	Erosion potential is available from jurisdictional agencies that contribute to ACRIS datasets

Table 5.3 Landscape data types available for monitoring landscape change in the rangelands

ABS = Australian Bureau of Statistics; ERIN = Environmental Resources Information Network; GPS = global positioning system; ILMO = Indigenous land management organisation; NLWRA = National Land & Water Resources Audit

#### Availability of existing information

Land information is available for many regional and subregional ILMOs (Table 5.2). Assisting ILMOs to access these data would help to meet a range of information needs at regional, and sometimes subregional, scale.

As well as requiring access to available map data, Indigenous land managers seek to record and preserve information at subregional and local scales about a range of cultural values, including sites of significance, hunting areas, story places, birth places, rock art sites and camping sites. ILMOs often need further resources for local collection and management of such sensitive data for local purposes, rather than simply for regionalscale or performance reporting purposes.

ILMOs need additional data types and scales at the regional level (Table 5.3). A number of such products can be supplied from the ACRIS datasets, with boundary realignments as required to meet particular organisational needs. While the list of landscape features presented is not exhaustive, those identified are generic to most rangeland areas.

The scale of information needs for ILMOs and pastoralists are largely congruent (ie property to subregional scale), though usually at a finer scale than ACRIS currently requires or delivers. It is worth exploring whether there are specific additional needs of Indigenous land managers that ACRIS could satisfy.

There is a long history of scientific rangeland management in Australia; most has occurred with limited Indigenous involvement. Providing Indigenous land users and managers with access to this management information and the physical legacy of ground-based monitoring sites will be valuable for Indigenous land managers. Data collected at groundbased sites that are no longer used or maintained because of resource constraints in government but that have ongoing value at a local level could be provided to Indigenous people where they have responsibility for the land involved.

### Traditional information needs

Many new systems for preserving traditional knowledge are being developed for traditional owners across the rangelands. The enthusiasm and commitment among Indigenous peoples for the capture and use of traditional ecological knowledge is driving projects that record that knowledge in spatial and non-spatial dimensions in many locations (Brown and Creaser 2006).

There is potential to support the development of a nationally applicable platform for the storage and presentation of suitable material (after considering what is culturally sensitive and should not be made available) in a format that provides an overall Indigenous view of rangeland resources. This would involve seeking the views of key Indigenous organisations about the usefulness of such a national platform.

Those working with Indigenous land managers could work to develop a dual system of rangeland environmental knowledge that adds value both to Indigenous and to scientific traditions for understanding and managing the rangelands. The resulting synergies would enhance all stakeholders' capacity to manage the rangelands.

# Information needs of regional NRM groups

Over the period 2000–2007, the Australian Government, through the Natural heritage Trust (NHT) and in partnership with state and territory governments and communities, invested considerable funds in NRM programs (Table 5.4). Much of that funding was directed through the regional NRM groups, including those located across Australia's rangelands (Figure 2.3, Chapter 2). The NHT program ceased in June 2008.

The National NRM Monitoring and Evaluation Framework (National M&E Framework) has been established by the Australian Government and state and territory governments to help assess the health of the nation's land, water and biodiversity, and the performance of government programs. The framework sets out broad thematic areas or 'matters for target', which are available for the regional groups to use and to be reported against using a range of associated environmental indicators. The thematic areas are:

- Iand salinity
- soil condition
- inland aquatic ecosystems integrity (rivers and wetlands)
- nutrients
- turbidity
- surface water salinity
- condition of estuarine, coastal and marine environments
- native vegetation
- significant native species and ecological communities
- invasive species (weeds and vertebrate pests).

A set of community and socioeconomic indicators is being developed and tested with the states and territories through the National Land & Water Resources Audit (the Audit).

Regional NRM groups throughout Australia are developing or refining strategies and investment plans to improve the condition of their assets. Each NRM group establishes a set of 'resource condition

State	NRM region	2002-03	2003-04	2004–05	2005-06	Total
NSW	Lower Murray-Darling	251 045	3 534 431	8 564 220	3 331 847	15 681 543
	Western	44 706	3 931 686	2 148 975	6 276 863	12 402 230
NT	Northern Territory	3 600 000	6 734 547	9 278 830	8 822 877	28 436 254
Qld	Burdekin	603 433	2 794 556	2 157 374	4 411 030	9 966 393
	Cape York		2 304 118	2 376 983	642 465	5 323 566
	Desert Channels		3 122 833	1 880 692	496 860	5 500 385
	Northern Gulf		1 648 750	1 905 357	1 675 163	5 229 270
	South West		2 084 615	896 887	2 386 995	5 368 497
	Southern Gulf		1 791 375	2 416 835	241 595	4 449 805
SA	Alinytjara Wilurara	1 937 352	687 415	2 684 286	2 700 000	8 009 053
	SA Arid Lands	677 704	1 103 396	1 762 363	2 363 000	5 906 463
WA	Rangelands	4 910 393	2 248 186	2 773 543	7 401 868	17 333 990
Total		12 024 633	31 985 908	38 846 345	40 750 563	123 607 449

Table 5.4 Australian Government expenditure in rangelands NRM regions, 2002–03 to 2005–06 (\$)

NRM = natural resource management

Note: Includes the 12 regional NRM groups that are entirely or predominantly within the rangelands. An additional 15 NRM regions have a smaller proportion of their area within the rangelands, but information on expenditure is not included, given the difficulty of separating expenditure on rangeland and non-rangeland areas.

targets' (RCTs) and 'management action targets' (MATs) that articulate the management activities and desired condition of the region's resources. Under the government programs, the regions are required to show progress towards those targets.

### Rangeland NRM pilot regions

The management of rangeland environments, including monitoring, evaluation and reporting on the status and change in resource condition, often requires integrated knowledge of the environmental and socioeconomic factors influencing sustainability. Suitable indicators for monitoring the condition of natural resources should reflect the relationship that exists between the environment and the people who live and work in the rangelands. The selected indicators must also cope with the high variability of biophysical resources over space and time in rangeland landscapes.

#### Trials of ACRIS information products

The Audit conducted trials in a number of pilot rangeland regions to assess how relevant and useful ACRIS products are to regional NRM groups, and also to assess the potential for the groups to provide input to ACRIS (Richards 2007). This included assessing the relevance of the National M&E Framework and the capacity of ACRIS information types to fulfil the information and monitoring needs of the National M&E Framework.

The pilot rangeland regions were:

- Northern Gulf (Queensland)
- Burdekin Dry Tropics (Queensland)
- Lower Murray-Darling (NSW)
- Alinytjara Wilurara (SA)
- Arid lands of the Northern Territory (NT).

#### Findings from the trials

The trials revealed a number of important findings for improved future alignment of the National M&E Framework and ACRIS. Although both frameworks are useful for higher level reporting on themes of national importance, they have been developed for quite different purposes. Rangeland management is an integrated enterprise, including natural resource assets, their use and the communities that they sustain (Indigenous or non-Indigenous). The indicators that are used should be representative of this integrated management.

- Rangelands have unique biophysical environments, requiring indicators that reflect an understanding of their dynamics and spatial and temporal scales of change.
- There is a very low awareness of the products and information available from ACRIS and the National M&E Framework. Many regions are now developing indicators and programs for monitoring the condition of their natural resource assets, making now an opportune time to increase awareness of National M&E Framework and the ACRIS products and information.
- Regional monitoring and reporting activities are directed by the regional NRM plan and the RCTs and MATs. In particular, MATs direct investment in the landscape and require information at pointof-investment or local levels (paddock or property).
- Many of the National M&E Framework indicators are considered 'state' indicators.
  Functionally, regional NRM groups are more focused on pressures and threats.
- NRM regions are moving towards using MAT indicators to measure intermediate natural resource condition outcomes, such as land management practice change. The NM&EF is developing the capacity for regional use through the inclusion of socioeconomic indicators.

### Alignment of ACRIS and NRM regional reporting: a case study for the Northern Gulf NRM region, Queensland

The Northern Gulf NRM region in northern Queensland was selected to test the capacity of ACRIS to integrate with regional NRM information and reporting needs. This included assessing:

- the usefulness of current ACRIS information types at the regional scale
- the potential to provide information to ACRIS.

The Northern Gulf NRM region covers about 194 000 km<sup>2</sup>, including the catchments of the Mitchell, Norman, Gilbert and Staaten rivers. The region is characterised by tropical savanna: grassy woodlands are the dominant landscape, with wet rainforest in the northern part of the region.

# Figure 5.3 Northern Gulf NRM region and IBRA bioregional boundaries



Four bioregions are represented: Gulf Plains, Einasleigh Uplands, Wet Tropics and Cape York Peninsula; the first two account for approximately 90% of the region (Figure 5.3).

ACRIS currently produces a range of information types at a bioregional level under reporting themes with relevance to the Northern Gulf:

- indices of seasonal quality derived from rainfall and pasture growth data as context for interpreting change in biophysical reporting themes
- landscape function a measure of the landscape's capacity to capture and retain rainfall and nutrients (based on agency monitoring data)
- sustainable management change in forage value (from agency monitoring data); domestic grazing pressure; fire extent, intensity and frequency; and dust
- biodiversity partly based on changes in woody cover due to clearing.

Pastoralism is the predominant land use, with 215 large grazing properties comprising most of the region. The Northern Gulf Resource Management Group, which strives to develop strong relationships with land managers, has a philosophy that effective NRM does not separate biophysical, socioeconomic and cultural environments. This is reflected in the Northern Gulf logo, 'Caring for Country, Caring for

# Figure 5.4 NRM investments for management action targets are made at the local (paddock to property) scale



NRM investments should contribute to improved regional resource condition. By reporting to NRM regional boundaries, ACRIS can potentially provide additional context for reporting against resource condition targets.

Photo: Northern Gulf Resource Management Group

Sea and Caring for Community'. This philosophy is carried into the Northern Gulf's regional planning, activities and management objectives for the region.

The Grazing Land Management (GLM) Program is currently operating in the Northern Gulf and other regions throughout Queensland. In the Northern Gulf, the program uses 14 separate land types. For each land type, land condition is assessed according to four criteria:

- perennial, palatable and productive grass abundance
- weed infestation
- soil erosion
- woodland thickening.

The GLM Program is a core monitoring program central to the implementation of the regional plan and forms the basis for the integration of future biodiversity, landscape function, and social and sustainable management programs in the region.

# Using ACRIS products for NRM in the Northern Gulf

ACRIS information types in their current form are useful contextual information for the region, but their current bioregional scale of application is too coarse for the Northern Gulf NRM group to use in meeting specified RCTs. In the Northern Gulf, the NRM plan has RCTs and MATs that address several theme areas consistent with the ACRIS themes, including

# Table 5.5 Alignment of the ACRIS themes and information types with Northern Gulfresource condition targets and management action targets

ACRIS theme	ACRIS information type	Northern Gulf resource condition targets	Northern Gulf management action targets
Landscape Function	Currently no product directly relevant to Northern Gulf	Soil condition of the Northern Gulf NRM region. 50% of the Georgetown granites to be in A and B condition	By 2010, 50% of graziers to adopt a number of land use management practices consistent with the processes outlined in the current or future drafts of the Leasehold Land Strategy
Sustainable Management	Grazing pressure	70% of the grazed landscape of the Northern Gulf to be in either 'A' or 'B' condition by 2017	15 additional landholders managing stock numbers according to soil and climatic constraints, setting sustainable stocking rates and maintaining an average groundcover greater than 50% at break of season 15 additional landholders engaging in GLM+ and using a satellite image or air photo and property planning kit to map paddocks, infrastructure, land types and land condition.
	Fire extent	Fire regimes in the Northern Gulf NRM region are managed to minimise damage to the ecosystems.	15 additional landholders participating in GLM+ to map paddocks, land types and land condition to plan and implement a burning program depending on land types, timber thickening and patch grazing in each paddock By 2006, 50% of landholders in the region were expected to be computer literate and trained in the interpretation and use of satellite imagery in association with GIS to monitor and respond to fire management issues in the Northern Gulf.
Biodiversity	Woody cover	Maintain and/or improve the long-term viability and stability of 100% of ecosystems and habitats in the Northern Gulf NRM region by 2015	By 2015, 75% of land managers understand which habitats and ecosystems within their properties and catchments are of high conservation value and require special management to enhance and protect their biodiversity values

GLM = Grazing Land Management Program; NRM = natural resource management

landscape function, sustainable management and biodiversity.

RCTs articulate the desired state or condition of a resource at a specified point in the future. Those targets are usually region-wide, as would be the application of the ACRIS information types. However, regional investment and activity are focused on the MAT level. Under the current reporting arrangements, this is also the level of greatest regional accountability. MATs, unlike the RCTs, are generally statements of response involving capacity building of land managers, the community or the regional group. In the Northern Gulf, many of the MATs use the property as the functional unit for implementation (Figure 5.4). MATs relevant to the ACRIS themes in the Northern Gulf include those relating to:

- property grazing management practices
- landholders' capacity to record change in resource abundance and condition
- Iandholders' capacity to maintain groundcover levels
- use of appropriate fire regimes
- increasing the information technology skills of landholders.

The alignment of the Northern Gulf RCTs and MATs with the ACRIS themes and information types is shown in Table 5.5. While scale alignment of the ACRIS products may be feasible at the RCT level, there is an obvious need for property-scale information at the MAT level.

Figure 5.5 Recording NRM information



NRM information recorded by individuals within regional groups can potentially increase the richness and relevance of ACRIS reporting.

Photo: Ron Archer

It is possible that ACRIS information types can be used to validate regional data and to provide an 'across the boundary' comparison with neighbouring regions. For example, the distribution of rainfall and pasture growth over several regions can assist with grazing management through agistment.

#### Transferring regional knowledge to ACRIS

The Northern Gulf is currently investing in a range of activities to provide high-resolution data for the region under a number of the ACRIS themes, including:

- climate enlargement of the rainfall-reporting network, including the subsidising of automatic recording stations on properties
- fire extent funding to support Northern Australian Fire Information products. Provision of GIS software (ARCMAP) to graziers to view near real-time fire extent online for management purposes
- stock density GLM Program property planning and access to cattle barcode data for each paddock under the PHOENIX software system
- landscape function investing in a range of activities with research partners, including remotely sensed erosion mapping (Griffith University), BioTools (CSIRO), Patchkey (CSIRO) and Land Cover Change (Queensland Government).

There is currently little state government NRM monitoring of the grazing lands, so the region is independently developing monitoring activities that integrate with reporting needs. This 'grassroots' approach, integrating the needs of reporting at different levels with the needs of land managers, can provide a long-term, sustainable and accurate base for the collection, collation and reporting of regionally specific resource condition data by ACRIS. The use of the GLM Program to bring land managers on board in capturing resource condition information at the paddock scale is the key to reporting at aggregated levels, such as for the ACRIS-MC.

The Northern Gulf Resource Management Group is moving towards a community-driven NRM information capture system (Figure 5.5). Information such as infrastructure, land types, waterpoints, weed infestations, pasture condition and species abundance is captured in the field by landholders using GPS equipment and downloaded to a central database at the resource management group. Data can be aggregated, sieved, cleaned and uploaded to a state or national framework, such as ACRIS. For example, waterpoint locations and stock density data can be captured at the paddock level using software distributed to private landholders by the Northern Gulf Resource Management Group. These data could be aggregated to a bioregional level for use by ACRIS.

These trials show that ACRIS currently has limited capacity to provide relevant data to assist regional NRM groups with their reporting requirements under the NM&EF. Impediments include scale and regionalisation issues, and lack of clarity in some regions about the data required to report progress towards RCTs specified in regional plans. ACRIS reports at the bioregion scale, while NRM groups require finer-scale (paddock to property) information. These limitations may reduce as ACRIS develops a more flexible information delivery system and regional groups gain competence and confidence in collecting and accessing data to meet their monitoring and evaluation requirements.

## Information needs of the non-government environment sector

The non-government environment sector is rapidly becoming a significant land manager in the rangelands. Indigenous communities and organisations are entering into conservation agreements with government as a means of obtaining financial assistance for the management of recently acquired land (IPAs), and non-Indigenous individuals, organisations and charitable trusts are investing in the establishment of private reserves ('private protected areas'), encouraging covenants on existing properties to protect biodiversity values, and assisting in the management of land for biodiversity conservation.

### Indigenous protected areas

The Australian Government's IPA program was established in 1995 to support Indigenous landowners in managing their land for biodiversity conservation and for cultural purposes. Since then, 24 IPAs covering some 200 000 km<sup>2</sup> of land have been declared.

Significant rangelands IPAs (Figure 5.6) include:

- Nantawarrina 580 km<sup>2</sup> in the northern Flinders Ranges (SA)
- Yalata 4563 km<sup>2</sup> at the head of the Great Australian Bight (SA)
- Watarru and Walalkara 20 000 km<sup>2</sup> in the Great Victorian Desert (SA)
- Dhimurru 1000 km<sup>2</sup> in northeastern Arnhem Land (NT)
- Ngaanyatjarra 98 129 km<sup>2</sup> in the Central Ranges bioregion, plus parts of the Gibson Desert and Great Victoria Desert bioregions (WA)
- Paraku 2700 km<sup>2</sup> in the Great Sandy Desert (WA)
- Mount Willoughby 3865 km<sup>2</sup> in the Great Victoria Desert and Stony Plains bioregions (SA)
- Northern Tanami 40 000 km<sup>2</sup> in the Tanami Desert (NT)
- Warlu Jilajaa Jumu 16 000 km<sup>2</sup> in the Great Sandy Desert (WA).

### Private protected areas

Non-government organisations (NGOs), such as the Australian Wildlife Conservancy, Bush Heritage Australia and Birds Australia, are major players in the acquisition and management of land for biodiversity conservation in the rangelands. Their purchases, assisted by and in partnership with governments, represent a growing land use (Figure 5.7).

The Australian Government, for example through the National Reserve System Program, has provided financial assistance to private conservation organisations for many purchases. Twenty-five properties covering almost 18 000 km<sup>2</sup> were acquired from 1997 to 2007 across Australia (Figure 5.6). For the rangelands, these include:

- Mornington Nature Reserve, 3120 km<sup>2</sup> (WA)
- Newhaven Station, 2620 km<sup>2</sup> (NT)
- Craven's Peak, 2336 km<sup>2</sup> (Queensland)
- Ethubuka, 2140 km<sup>2</sup> (Queensland)
- Wongalara, 1910 km<sup>2</sup> (NT).

The non-government environment sector recognises the need to be able to report to investors and stakeholders on the benefit and impact of particular acquisitions and resulting management activities. There is scope for this sector to contribute its monitoring data to broader regional knowledge systems.

The 2001 National Forum on Nature Conservation on Private Land listed among the key challenges for the future:

Ensuring that reporting processes are in place to enable scientifically-based monitoring of both the human aspects of our work and the progress towards on-ground conservation ... Beyond the initial act of protection, there is a need to develop a capacity for rating an action (acquisition, stewardship arrangement, management technique in a Reserve) based on cost and increase in viability of target species so there is a rigorous way of rating investments. (Hugh Possingham, University of Queensland, Brisbane, pers comm, 2007)

The continued growth of the non-government environment sector through government partnerships and with new private investors will be partly determined by its capacity to demonstrate effective management and the efficient use of funds in achieving natural resource condition outcomes.



#### Figure 5.6 Indigenous protected areas and private protected areas in the rangelands

Source: Department of the Environment, Water, Heritage and the Arts

# Market-based conservation incentives for private landholders

Several state or territory incentive schemes and programs have been developed to help landholders manage native vegetation on private or leasehold land. In the rangelands of western NSW, the Enterprise Based Conservation Scheme was established to better manage biodiversity and the natural resource base while maintaining the financial viability of landholders. Grants under the scheme provide financial incentives for landholders to actively manage part or all of their property for specific conservation goals.

In Victoria, the Bush Tender process enables landholders to tender competitively for contracts to improve their native vegetation. Similar schemes have been established by the Queensland Murray-Darling Committee and in SA as the Bush Bids program.

#### Figure 5.7 Cravens Peak in western Queensland, a former pastoral lease purchased by Bush Heritage Australia



The non-government environment sector is making a significant contribution to biodiversity conservation in the rangelands.

Photo: Wayne Lawler, Bush Heritage Australia

#### Performance reporting

The non-government environment sector is obligated to report to its investors on the effectiveness of its management programs. The value of that information might be increased if it were interpreted within the broader regional context that ACRIS can provide (eg recent *seasonal quality*, trends in regional stocking density, landscape function).

This sector, in particular, is focused on improved environmental outcomes, including biodiversity. There is potential for ACRIS partners and the managers of private protected areas and IPA partners to communicate and share in the development of monitoring methods.

There is potential both for regional NRM groups and for the non-government environment sector to contribute a range of more accurate regional data to ACRIS, which would improve the value of ACRIS as a reliable information system for the rangelands. This requires the infrastructure and commitment to allow for a two-way exchange of information between regional groups and jurisdictional NRM agencies. These developments are occurring in some jurisdictions (see, for example, the Arid Lands Information System reported as part of the SA Update in Appendix 1).

## Key points

- Indigenous land managers and regional NRM groups are generating requirements for information on the condition and trend of natural resources in the rangelands.
- A number of organisations, such as Aboriginal land councils, assist Indigenous rangeland custodians with information and advice. ACRIS could contribute information to those organisations, for example by:

- presenting available ACRIS data in ways that assist individual ILMOs to place their data into regional context
- assisting Indigenous organisations to assess their NRM performance against the broader state, territory and national perspectives provided by current ACRIS reporting
- potentially acting as a broker for ILMOs to gain better access to jurisdictional datasets.
- ACRIS has potential to assist regional NRM groups in their planning, investment and reporting by providing relevant information (eg change in landscape function) at a suitable scale.
- Information is required by investors, regional NRM groups, environment NGOs and governments to demonstrate the effectiveness of management actions at particular locations in meeting long-term resource condition targets. ACRIS may be able to assist.
- The three key stakeholder groups require data and information at scales (eg the property scale) and regionalisations different from those currently used by ACRIS. ACRIS has used Interim Biogeographic Regionalisation for Australia (IBRA) bioregions as consistent reporting units throughout the rangelands.
- A challenge for ACRIS is how to report at finer or disaggregated levels for local management needs, and also at broader or aggregated levels to help policymakers develop sound policies and investment decisions.