



Goal 2 Conserving natural integrity on protected areas and forests

Manage protected areas and forests to sustain the natural and cultural values for future generations.

Why is this important?

Declaring an area of land or sea as a protected area is an important step for conservation and offers protection against large-scale habitat modification. However, careful management is also needed, as protected areas and forests can still be affected by many threats¹ such as invasive plants and animals, habitat fragmentation, infrastructure development, unsustainable use of natural resources, pollution and climate change. Extreme weather events such as cyclones, floods, droughts, or human induced disasters such as oil spills can also take a toll on biodiversity within protected areas. Tourism and recreation need to be well managed to prevent significant impacts in localised areas.

Effective planning and active management helps to ensure that the values or natural integrity of protected areas and forests are maintained or enhanced in spite

of these threats. QPWS needs to clearly identify values (such as the ecosystems, plants and animals that make the area special) and management goals; understand the threats to these values; and develop and implement strategies to maintain or enhance these values into the future.

Natural integrity is defined as the condition of an ecosystem where biological diversity and ecosystem processes are optimal and are likely to persist.

‘In plain words, ecosystems have integrity when they have their native components (plants, animals and other organisms) and processes (such as growth and reproduction) intact’.

Panel on the Ecological Integrity of Canada’s National Parks 2000.

¹ Threats to Queensland’s ecosystems are described in Queensland’s draft biodiversity strategy Building Nature’s Resilience.



Adam Creed, DERM

Rangers, planners, managers and partners in the protected area system undertake many natural resource management activities on land and sea including:

- conducting wildlife surveys and monitoring to build a better understanding of values, threats and ecosystem functioning.
- rehabilitating natural values after climatic events such as flooding and cyclones and after past activities such as logging, mining or intensive grazing.
- managing tourism and visitor activities so they do not damage values, for example, by limiting boat speed to minimise boat strikes that kill or injure turtles and dugong.
- managing fire for life and property and to maintain biodiversity values.
- controlling, and where possible removing, invasive species.

The whole of the landscape and seascape is connected by ecological processes such as animal movement, seed dispersal and water flows, and by human activities. Factors both inside and outside protected areas and forests can influence how an area should be managed to maintain natural integrity. Protected areas and forests cannot be considered in isolation—they need to be managed as part of a broader landscape or seascape.

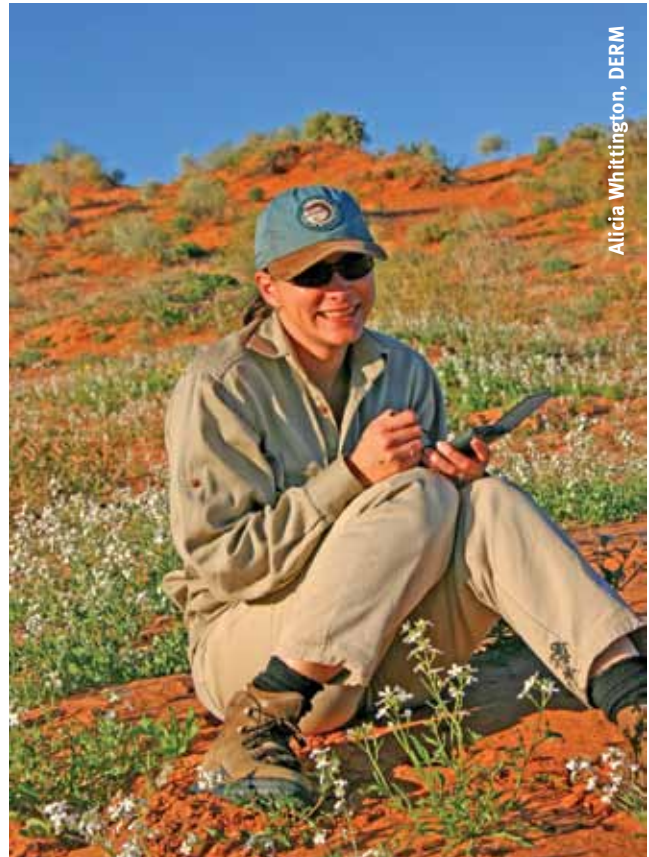
Local communities, Traditional Owner groups, natural resource management (NRM) groups, local governments and other government agencies all play an important role in developing and sharing experience and knowledge, and can help manage threats both inside and outside the protected area system. These groups can also form partnerships and establish new initiatives to protect habitat in adjacent areas and to help promote and deliver sustainable land and sea management practices. Community partnerships are addressed in greater detail in Goal 8.

What is our approach?

Maintaining natural integrity, cultural values and natural landscapes and seascapes across time is the highest priority of protected area management. The natural values of protected areas and forests will be maintained and presented, in conjunction with good management across the landscape and seascape. QPWS will:

- follow the cardinal principle of national park management—to ‘provide, to the greatest possible extent, for the permanent preservation of the area’s natural condition and the protection of the area’s cultural resources and values’ (*Nature Conservation Act 1992*).
- manage the different zones in marine parks according to the appropriate principles, whether that be for natural integrity or conservation values of an area (see page 16 for zone definitions).
- conserve the natural values of Queensland’s protected areas¹³ and forests by using scientific information, staff and community knowledge, through adaptive learning to:
 - maintain the full range of natural biological diversity in the protected area system.
 - maintain natural ecological processes in the landscape and seascape such as nutrient cycling and water flows.
 - maintain the dynamic nature of landscapes and seascapes.
- prioritise natural resource management efforts at a statewide level based on values, threats to those values and likely success of mitigating or removing those threats (see Goal 12).

13 Natural integrity is the aim across all national parks. However, in the ‘multi-use’ classes of parks such as marine parks and nature refuges declared over private properties, the defined values of the area are protected. Natural integrity may not be protected to the same extent across the entire area, especially where it is also used for production purposes.



Alicia Whittington, DERM

- understand potential impacts of climate change and boost resilience of all protected areas and forests where possible.
- set and maintain a high standard by avoiding where possible, or if not, minimising environmental impacts of all protected area and forest operations, including fire management, pest management, and development and maintenance of recreational and management facilities, infrastructure and resource use.
- minimise the effects of natural and human-made disasters through effective planning.
- recognise and incorporate Indigenous and community experience, expertise and responsibilities in managing ecosystems, and cooperate with neighbours, local governments and other land and sea managers in looking after protected areas as part of the broader landscape and seascape.
- actively engage with the Commonwealth and State to ensure that policy, legislation and development approvals, as far as possible, are compatible with protection of natural integrity on protected areas.
- recognise the importance of connectivity across the entire landscape and seascape when managing protected areas and forests.

↳ Monitoring is important for understanding the seasonal fluctuations and complex ecosystems of Queensland’s arid environments such as the Simpson Desert National Park.

↳ Thorny devil *Moloch horridus*



Robert Ashdown

Diamantina National Park— ecological recovery in the semi-arid zone

Diamantina National Park is a ‘jewel in the crown’ of Queensland’s protected area system. It conserves a large area (507 000 hectares) on the border of the Mitchell Grass Downs and Channel Country bioregions. The park has a high diversity of ecosystems and a range of landscapes not represented elsewhere in the protected area system. Diamantina provides habitat for threatened mammals including the iconic bilby *Macrotis lagotis*, kowari *Dasyuroides byrnei* and fawn hopping-mouse *Notomys cervinus*. The park also conserves key habitat for other threatened species including eight birds, two reptiles and five plants.

Diamantina is rich in Indigenous cultural heritage, and is the traditional home to the Maiawali and Karuwali people. During the 1870s Diamantina became a grazing enterprise and many reminders of this period can be seen. The property was gazetted as a national park in 1992, and grazing was phased out by 1998.

At the time of gazettal, the park was known to contain bilbies in a 600-hectare area of ashy downs country on the southern boundary. This area was fenced in 1994 to keep stock out. Monitoring of the extent of bilby populations commenced in 1993, and by 2001 active burrow systems were also recorded on the western side of the park in sand dune country.

As part of protecting and restoring the natural integrity of Diamantina, rangers focus their efforts on habitat recovery. A major goal for management is to maintain a stock-free area, where incursions by stray stock rarely occur and are rapidly controlled. All these efforts help protect and restore habitat for fauna, particularly bilbies and kowaris.

In an effort to understand the effects of park management on native fauna, a project team has monitored bilbies and kowaris more closely. This research has found that they have extended into many suitable habitats across the park. In 2006, an assessment of the extent of bilby populations in the south of the park found they occupied

more than 4000 hectares, a more than six-fold increase since the stock-proof fence was installed in 1994. Monitoring from 2006 to 2011 indicates that bilby and kowari populations are stable throughout this area.

A vegetation monitoring program has revealed very good habitat recovery across the park. Since 1993, the ecosystems that the bilbies and kowaris rely on have seen a significant increase in ground cover, changed species composition and an increase in biological soil crusts which stabilise the soil and promote vegetation growth.

Activity levels of small mammals including the fawn hopping mouse and kultarr *Antechinomys laniger* have been steadily increasing since 1998. With the above average rainfall that western Queensland has been experiencing since early 2009, numbers of the short-tailed mouse *Leggadira forresti* and long-haired rat *Rattus villosissimus* have also been increasing.

Only one fox has been recorded on the park since its gazettal. The number of cats seen has declined greatly over this time, while the dingo population appears to be static. The relationships between these predator species and their interaction with smaller mammals remain to be assessed.

Diamantina National Park is one of the few areas in northern Australia where small mammal populations are shown to be increasing rather than declining. This is associated with improving habitat condition and decreased threats. Work still needs to be done before the connections between all elements of Diamantina’s ecosystems are fully understood.



Fiona Leverington

What we will do: priorities for 2020

2.1 Document, assess and monitor conservation of and threats to natural values, and develop innovative management strategies.

- a) Publish the QPWS strategy for maintaining natural integrity on protected areas. This will detail efforts to minimise effects of threatening processes including climate change and to maximise the conservation role of the park in the surrounding landscape.
- b) Undertake a risk analysis of potential natural and human-caused events or disasters and develop or review response strategies to minimise environmental harm.
- c) Complete park folios which assess natural integrity for all protected areas and review these every five years.
- d) When new protected areas are gazetted, develop park folios within six months and implement basic programs of natural resource management within two years.
- e) Based on the information in park folios, conduct targeted monitoring with emphasis on protected areas with very high natural values.
- f) Establish a robust monitoring system to inform an adaptive management approach. Make information from monitoring and research publicly available and integrate it into reporting.
- g) Integrate park folio information about values, threats and status into the management and business planning process, and address major issues as soon as possible.
- h) Develop and apply innovative strategies to maximise the resilience of protected areas and forests to threats such as climate change, with a focus on highest value areas.

Targets

- By 2015, park folios are completed for all iconic, very high and high value national parks (according to natural values).
- By 2015, monitoring plans are completed for all iconic and very high value protected areas.
- At a minimum of five-yearly intervals park folios are reviewed.

2.2 Improve biodiversity information.

- a) Encourage research effort towards priority knowledge gaps and ensure information and results are shared and applied to management.
- b) Improve sharing of knowledge with partners including Traditional Owners, academic institutions, community groups, local governments, land holders, natural resource managers and other interested parties.

2.3 Adapt to or mitigate the effects of climate change.

- a) Work with researchers to understand how the natural values of protected areas and forests might respond to the impacts of climate change (both direct and indirect).
- b) Maximise resilience of protected areas and forests identified as vulnerable to climate change. Develop targeted and strategic management interventions to promote ecosystem health and avoid exacerbating climate change impacts.
- c) Raise awareness of the impacts of climate change among protected area managers and other stakeholders.
- d) Collaborate with researchers to establish a series of monitoring sites throughout Queensland to evaluate ecosystem changes arising from climate change and to inform an adaptive management response.





Robert Ashdown

2.3 Control invasive species.

- a) Strategically control invasive plants where possible, with focus on preventing establishment of new pests, preventing further spread of existing pests, and controlling pests which seriously impact on natural values.
- b) Reduce populations of pest animals where possible, especially in areas where they affect priority species, ecological functioning or cultural values.

Target

- 100 per cent of protected areas and forests have in place an up-to-date pest plan strategy to an appropriate level.

- ▲ Fire is an essential component of many Queensland ecosystems. Some plants, such as these grass trees, are well adapted to regenerate after fire.
- ▲ Queensland's coral reef ecosystems, including those of the Great Barrier Reef, are particularly vulnerable to the effects of climate change such as increasing sea temperatures and ocean acidification.

2.4 Manage fire for biodiversity and protection of life and property.

- a) Manage fire professionally to protect life, property and the values and resilience of protected areas and forests. Implement the QPWS Fire Management System, Bioregional Planned Burn Guidelines, fire strategies for QPWS managed lands and planned burn programs for QPWS managed land.
- b) Continue to implement findings from the QPWS 2009 Fire Review, which evaluated current fire management performance against key risk assessment benchmarks to determine what actions and investments may be required over time.
- c) Manage fire on parks and forests to build resilience of critical ecosystems to climate change.
- d) Support a culture of planned burning as an organisational priority.

Target

- 100 per cent of QPWS managed lands have in place an up-to-date fire strategy to the appropriate level.



John Augusteyn, DERM

2.5 Model excellent practice in environmental management.

- a) Document and implement a system of appropriate environmental impact and audit standards for protected area operations, including fire and pest management and development and maintenance of recreational or management facilities and infrastructure.
- b) Ensure the development of new recreational and management facilities and infrastructure is undertaken in accordance with the Site Planning and Design for Parks and Forests, the QPWS Facilities Manuals and the QPWS Sign Manual.

Targets

- By 2013, QPWS environmental management systems are documented and consistent with ISO Standards for environmental management (the International Organisation for Standardisation standards ISO14000).

2.6 Increase the capacity to manage ecosystems.

- a) Work in partnership with other agencies and people, in particular Traditional Owners and NRM groups to increase capacity to manage protected areas for biodiversity conservation.
- b) Work with Indigenous communities where possible in the management of natural values on their lands.
- c) Train QPWS staff in both field and office to better understand and manage Queensland ecosystems. Ensure information and knowledge is shared and transferred effectively when members of the workforce change.
- d) Ensure QPWS staff are trained in and aware of best practice in the planning and management of facilities and infrastructure including roads, tracks and landings.
- e) Share natural resource management information and knowledge with local communities who manage lands adjacent to protected areas.

2.7 Manage World Heritage areas to an excellent standard.

- a) Manage and present the natural values of World Heritage areas to an excellent standard, in partnership with local governments, Indigenous partners, other key stakeholders and the State*.
- b) Protect values of the whole Great Barrier Reef through effective delivery of joint management with the Great Barrier Reef Marine Park Authority.
- c) Protect values of the Wet Tropics through effective delivery of joint management with the Wet Tropics Management Authority.

2.8 Restore and rehabilitate areas as necessary.

- a) Work with community partners to rehabilitate important degraded or damaged ecosystems on protected areas. Where necessary undertake active restoration activities.

* Action from Queensland's draft biodiversity strategy Building Nature's Resilience.

2.9 Manage the impacts of visitors, tourism and recreation.

- a) Manage tourism and recreation on protected areas and forests to minimise impacts on natural integrity.

2.10 Manage the impacts of any development on protected areas and forests (also see Goal 5).

- a) Ensure impacts of any necessary development on protected areas and forests are avoided in the first instance, or minimised and mitigated where necessary to the greatest possible extent.
- b) Ensure that when there is no alternative that the impact of development delivers a net gain for conservation of natural and cultural values.

▼ Springbrook National Park is part of the Gondwana Rainforests of Australia World Heritage area. Few places on earth contain so many plants and animals which remain relatively unchanged from their ancestors in the fossil record.



Melanie Sinclair