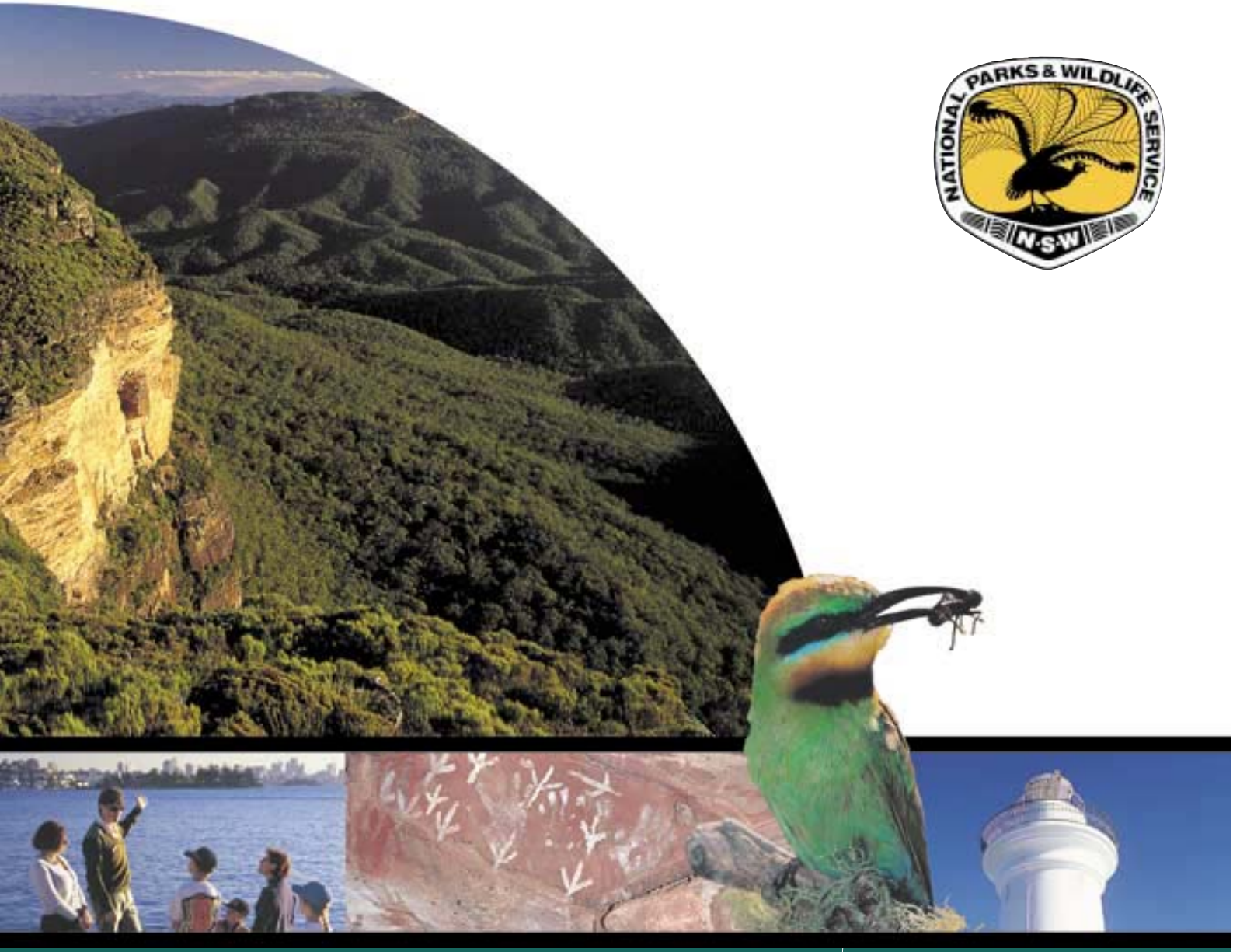


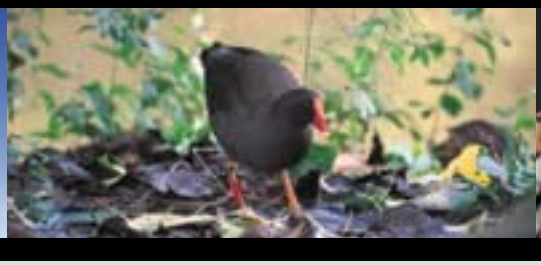
State of the Parks

2001

NSW NATIONAL PARKS & WILDLIFE SERVICE

State of the Parks
2001

An overview of the conservation values of NSW and their management within the parks system


Front cover: Blue Mountains National Park (J Little); *Discovery* Ranger and children on Sydney Harbour National Park (NPWS); Mount Grenfell Historic Site (NPWS); rainbow bee-eater (J Cooper); South Solitary Island Lighthouse (J Winter/NPWS).

This page: Scheyville National Park (M Cufer/NPWS); purple swamphen, Lane Cove National Park (M Cufer/NPWS); Cocoparra National Park (NPWS).

Illustrations: Eastern grey kangaroo, yellow-bellied glider (A Bowman); green and golden bell frog, water rat, bogong moth, playtpus, Caleys grevillea, short-beaked echidna (A Bowman/NPWS); Wollemi pine (Royal Botanic Gardens, Sydney); regent bowerbird, laughing kookaburra, chocolate lily, superb lyrebird, lace monitor, Cumberland Plain land snail, painted dragon, large tongue orchid (W Jennings/NPWS).

Published by the NSW National Parks and Wildlife Service
PO Box 1967 Hurstville 2220.

ISBN 0 7313 6377 9

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Foreword


P Green

Bald Rock National Park

The Carr Government is committed to conserving natural and cultural heritage values for and on behalf of current and future generations. To this end, the Government has set about creating here in New South Wales one of the world's best systems of protected areas. As part of this process the Government, since first elected in 1995, has created more than 1.4 million hectares of new national parks and reserves and more than doubled the area of declared wilderness in NSW from some 650,000 hectares to more than 1.5 million hectares.

Conservation is not simply a matter of setting aside areas for special protection, nor is it solely the responsibility of government. The conservation of our natural and cultural heritage requires that we all protect and preserve this heritage right across the landscape – on private or public lands, whether those lands are set aside for conservation or used for other purposes. The formal protected areas system – the parks system – is, however, the centrepiece and the foundation of natural and cultural heritage conservation across the state.

The NSW State of the Parks reporting system is being developed by the National Parks and Wildlife Service to improve the quality and quantity of the information available to people about natural and cultural heritage values, the pressures upon these values, and the role our parks system is playing in their conservation. The inaugural *State of the Parks* report represents the first stage in the development of this system.

This report provides an overview of the conservation values within NSW, and of the means by which they are being protected. It also provides profiles of a key set of parks across the state.

Future reports will build on this first initiative. They will progressively increase the number of parks about which detailed information is provided. Importantly, they will also enable comparison over time of the conservation outcomes being achieved across our parks system in NSW.

Success in conservation of our natural and cultural heritage is built on partnership and cooperation – with all tiers of government, the community, industry representatives, and key community groups such as Aboriginal communities and the rural sector. This inaugural *State of the Parks* report will provide useful information to assist us all in our conservation efforts, and I commend it to you.

Bob Debus
Minister for the Environment

Introduction

P Green

Flame tree in Mount Warning National Park

New South Wales has a long and proud history in the conservation of natural and cultural heritage. The Royal National Park, just south of Sydney, was established in 1879. It was the first national park in Australia, and only the second in the world. Since then, the parks system has been expanded so that now some 6.7 per cent of the state is reserved, and managed principally for conservation of natural and cultural values.

In terms of our natural heritage, reservation of land within the parks system is based on the principle that this system should be:

- *comprehensive*, encompassing the full range of biological and biophysical diversity and other values
- *adequate*, in that it is capable of maintaining biodiversity and ecological patterns and processes and other values, given both natural and human influence disturbances, and
- *representative*, comprehensively sampling the known biological and biophysical diversity and other values.

This objective has been largely achieved in the coast and ranges areas of NSW, and is now being actively pursued in the west of the state.

The parks system also aims to conserve those places in the landscape of high cultural value to the community. Many of the places included in the parks system reflect the history of land use in NSW, representing the pastoral, mining, defence and maritime industries, among others.

Areas are also included in the parks system in order to conserve sites and places of cultural significance to Aboriginal people, at the same time enhancing our understanding of the continuing attachment of Aboriginal people to the land and waterways of NSW.

Not surprisingly, many of the areas conserved primarily for their natural heritage values are also of great cultural significance, particularly to the Aboriginal community. The parks system, incorporating both natural and cultural heritage values, provides opportunities to better understand the way people have moved through and shaped the NSW landscape since the beginning of human occupation through to the present.

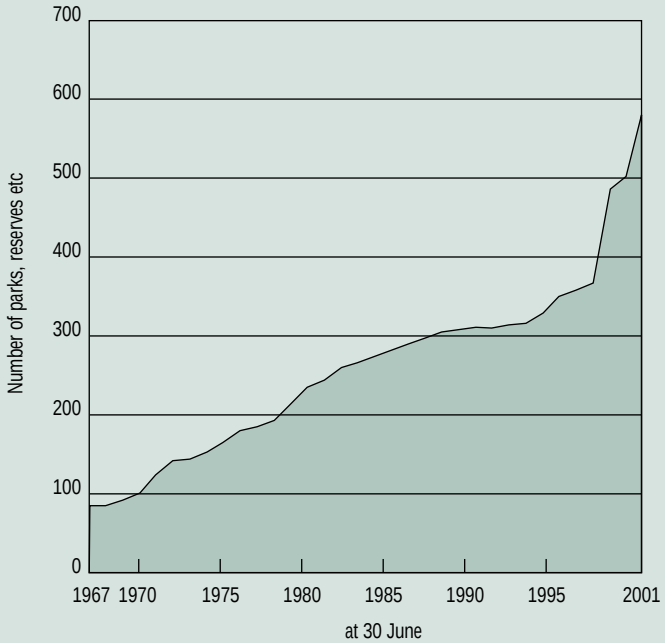
Our national parks and reserves provide important recreational and educational opportunities. They also contribute to rural and regional economic development, directly through expenditure of funds on park management as well as indirectly by attracting visitors to local areas.

This inaugural *State of the Parks* report represents the first stage in the establishment of a comprehensive State of the Parks reporting system, which will systematically monitor over time the status of conservation values in NSW at both state and park level. Such a system is internationally regarded as best practice, and its establishment is supported by the World Conservation Union (IUCN).

The NSW State of the Parks reporting system will link with State of the Environment and other government reporting mechanisms. It will also help meet commitments in the Forest Agreements established in NSW to ensure a comprehensive, adequate and representative protected areas system while providing for a sustainable timber industry.

The State of the Parks reporting system focuses on the lands managed by the National Parks and Wildlife Service – the NSW 'parks system'. It does not specifically address conservation efforts and achievements on private and other public lands.

Protected areas in the NSW parks system



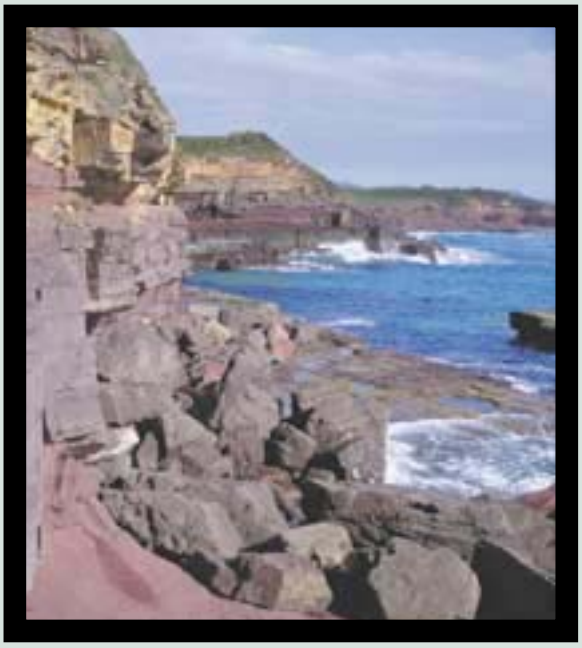
Introduction – *continued*

This initial report provides a ‘snapshot’ of conservation values at state level, and profiles a selected set of reserved areas (which for convenience are referred to collectively as ‘parks’ in the report, although they comprise a number of different categories of reserved areas). Importantly, the report also describes the approach to, and basis for, monitoring the state of the parks, and provides an explanation of how performance will be measured. Future reports will progressively incorporate performance data and analysis, to enable comparison over time.

The National Parks and Wildlife Service would welcome comments on this first report, and suggestions for improvement. These can be provided by email to info@npws.nsw.gov.au or by writing to:

Director, Education and Community Programs
National Parks and Wildlife Service
PO Box 1967
Hurstville NSW 2220

Overview



M Van Ewijk

Nadgee Nature Reserve

New South Wales was an early leader in nature conservation, commencing with the declaration of 7284 hectares of land as The National Park (later Royal National Park) in 1879. This was followed by the declaration of Ku-ring-gai Chase in 1894. Kosciuszko National Park, established in 1944, was however the first park to be permanently reserved.[1] Today there are 580 protected areas – all permanently reserved – within the NSW parks system, covering more than 5 million hectares.

There have been, however, shifts in thinking about the purpose of the parks system over time. Early parks were established close to urban areas, and the prime motivation for their declaration was public health, recreation and enjoyment. As such, early park management often involved 'improving upon' nature. Later, the motivation for establishment of parks shifted to nature conservation, although providing for outdoor recreation remained important.[2]

More recently, nature conservation has focused not only on conserving natural values for current and future generations, but also on conserving these values for and of themselves. The parks system in NSW has also become an important element in the conservation of cultural heritage.

Footnotes

1. *Australia's 100 Years of National Parks*, NPWS, 1979, pp.96-97.
2. Kevin Frawley, 'Evolving vision: environmental management and nature conservation in Australia', in Stephen Dovers (ed), *Australian Environmental History*, 1994, OUP, pp.55-78 (particularly pp.69-76).

The modern parks system in NSW is now managed to provide a comprehensive, adequate and representative reserve system that also conserves areas of cultural heritage for the appreciation and enjoyment of current and future generations.

Legislative basis for the parks system

All categories of land in the parks system managed by the NSW National Parks and Wildlife Service (NPWS) are formally protected under the *National Parks and Wildlife Act 1974* (NPW Act), with the exception of wilderness, which is formally declared under the *Wilderness Act 1987.*

The basis for the powers, duties and functions of NPWS is the NPW Act, the *Wilderness Act 1987* and the *Threatened Species Conservation Act 1995*.

Under the NPW Act the Director-General of NPWS is responsible for the care, control and management of all areas reserved or dedicated as national parks, historic sites, nature reserves, Aboriginal areas and state game reserves. State recreation areas, regional parks and karst conservation reserves are also administered under the Act (though karst conservation reserves are not administered by NPWS and as such are not covered in this report). The Director-General is also responsible, under this Act and certain provisions of the *Threatened Species Conservation Act 1995*, for the protection of Aboriginal places and relics and the care of native fauna and flora throughout NSW.

Under the *Wilderness Act 1987* NPWS is responsible for the investigation, protection and management of wilderness in NSW.

Lands managed for conservation

The parks system

Under the NPW Act there are eight categories of land managed for conservation – national parks, nature reserves, historic sites, Aboriginal areas, state game reserves, karst conservation areas, state recreation areas and regional parks. These make up the 'parks system'.

National parks are relatively large areas of land set aside for their predominantly unspoiled natural landscape, flora and fauna. They are permanently reserved for conservation and for public education and recreation and, apart from essential management, are preserved in their natural state.

Nature reserves are areas of special scientific interest, containing wildlife or natural features. Management practices aim to maximise the value of the area for scientific investigation and educational purposes.

Historic sites are preserved areas of national importance, and include buildings, objects, monuments or landscapes.

Aboriginal areas are places of significance to Aboriginal people or sites containing relics of Aboriginal culture.

State game reserves are areas set aside for propagating game species.

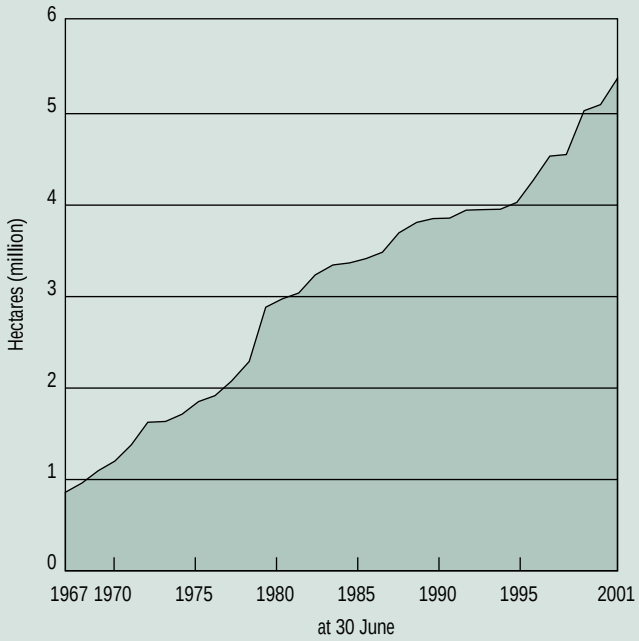
Karst conservation reserves are areas managed to protect significant surface and underground land formations in karst regions.

State recreation areas are permanently reserved large regional parks for outdoor recreation.

Regional parks are areas substantially modified since European occupation that offer open space and recreational opportunities within major regional population centres.

National parks and historic sites are managed in such a way that their natural and cultural features are conserved while still allowing visitors to use and enjoy them. State recreation areas and regional parks are managed to maximise their recreational potential while preserving and protecting their natural features. Because nature reserves and Aboriginal sites are conserved for scientific and cultural values and are small in area, public access is often limited.

Total area of NSW parks system



Other protected areas

Six other types of areas are identified for protection under the provisions of the NPW Act or, in the case of wilderness, under the *Wilderness Act 1987.* These areas are not managed by NPWS:

Aboriginal places are areas of significance to Aboriginal culture that, after gazettal, have the full protection of the NPW Act.

Protected archaeological areas contain significant Aboriginal relics and are declared with the consent of the owner or occupier of the land on which they occur. They may be opened for public inspection with the owner's consent, under conditions designed to protect the Aboriginal relics they contain.

Wildlife refuges are declared over privately owned rural land with the owner's consent to preserve, conserve, propagate and study wildlife and to conserve, study and simulate natural environments.

Wildlife management areas (formerly game reserves) are declared over private or Crown land for game conservation in its broadest sense, including game hunting for recreation during a proclaimed period.

Conservation areas may cover privately or publicly owned land with the consent of the owner and, in accord with the conservation agreement for the area, may protect natural or cultural features, wilderness or areas of special scientific interest. Conservation agreements are registered and run with the title of the land.

Wilderness protection agreement areas under the *Wilderness Act 1987* may cover land owned or controlled by a statutory authority or government department to protect and provide for management of wilderness outside the parks system.

Size and distribution of the parks system

At 30 June 2001, a total of 5,387,102 hectares was reserved under the NPW Act – approximately 6.7 per cent of the total land area of NSW.

Summary of land reserved at 30 June 2001

Category	How many	Area (hectares)
National parks	161	4,442,200
Nature reserves	359	794,877
Historic sites	13	2,635
Aboriginal areas	11	11,643
State recreation areas	22	126,368
Regional parks	10	4,970
Karst conservation reserves	4	4,409
Total	**580**	**5,387,102**

A full list of lands managed for conservation is provided in the appendix to this report.

NSW National Parks and Wildlife Service

The role of NPWS is to facilitate the development of a system of ecologically sustainable and integrated landscape management that conserves natural and cultural heritage and has as its centrepiece the parks system. This role is reflected in the NPWS mission: 'Working with people and communities to protect and conserve natural and cultural heritage in the NSW landscape.'

M Sharp/NPWS

Norfolk Falls Walking Track, Coolah Tops National Park

The functions of NPWS are:

- to ensure the conservation of protected native animals and plants throughout NSW
- to protect and manage Aboriginal relics and places
- to promote community awareness, understanding and appreciation of the conservation of natural and cultural heritage
- to investigate and acquire land for inclusion in a system of national parks and nature reserves to conserve a complete range of the natural environments of the state
- to manage historic places within the parks system and to acquire historic places of significance
- to manage these areas and culturally significant features for enjoyment and conservation, and
- to identify, protect and manage wilderness throughout NSW.

NPWS therefore has conservation responsibilities across the NSW landscape, on and beyond the protected areas system. This report, however, focuses on the parks system managed by NPWS.

Organisational structure

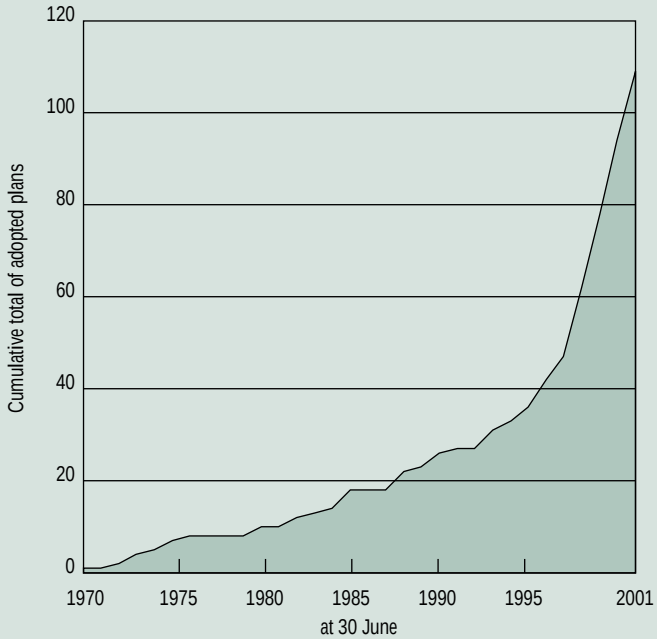
NPWS is a highly decentralised organisation, with some 75 per cent of staff based in the field. The NPWS structure comprises four field directorates, which have their main centres in Grafton, Queanbeyan, Parramatta and Dubbo, and four corporate directorates, based at Hurstville.

The field directorates incorporate 19 regions, made up of more than 50 areas, with offices located in local towns. There are also a number of visitor information centres and works depots strategically located to meet the needs of the community and park managers.

The field directorates are responsible for achieving the conservation of natural and cultural heritage at a local and regional level, not only with respect to park planning and management, but across their geographic area of operation. To do this, field directorates develop partnerships with the community and other governments and agencies, and provide leadership and direction through conservation programs in accord with government initiatives and NPWS priorities.

The corporate directorates coordinate the development and review of statewide priorities, policies, standards, systems and procedures; provide policy advice to the executive and the Minister for the Environment; advise and support field directorates on policy, technical, educational, communication, marketing and administrative matters; and provide legal advice.

Adopted plans of management for NSW protected areas



Note: Ten of the 109 adopted plans are replacement plans. The 99 current plans cover 140 protected areas.

Key management challenges

NPWS faces many challenges in carrying out its role. These include:

- effectively integrating the full range of its conservation responsibilities, on and off park
- working in effective partnerships with Aboriginal people and communities to support Aboriginal aspirations for greater control over Aboriginal cultural heritage and land ownership
- achieving an appropriate balance between, and integration of, natural, cultural and social values in decision-making and resource allocation
- dealing with diverse and often conflicting community expectations, particularly regarding access to and use of protected areas
- working in effective partnerships with neighbouring landholders, particularly with respect to fencing, fire management, and weed and feral animal control
- facilitating people's enjoyment of the parks system, while at the same time managing the environmental impacts of high levels of use
- supporting and facilitating diverse and geographically dispersed community conservation activities, and
- delivering a growing range of conservation planning activities, including Plans of Management for parks, and those relating to catchment management, native vegetation and threatened species.

Conservation of natural and cultural heritage across NSW

M Cufer/NPWS

Sulphur-crested cockatoo at Cape Solander in Botany Bay National Park

NSW has diverse natural and cultural landscapes under various ownership and management regimes.

Natural heritage

There are four major categories of land ownership and control in NSW:

- leasehold and freehold lands ('private' land)
- state forests
- Crown lands (lands vested in the Crown), and
- protected areas (the 'parks system').

Leasehold and freehold lands, which make up the majority of the land area of NSW, are controlled by individual landowners and other land managers, such as local governments. The State Government, through NSW Forests, manages state forests for conservation and sustainable timber production. Crown lands are managed by various government agencies, trusts or other public authorities.

The natural landscapes of NSW and the context in which they function are best understood from a bioregional perspective.

A bioregional framework

It became apparent in the early 1990s that administrative regions were not a satisfactory basis for conservation assessment and planning. Consequently, the mapping of the biogeographic regions (bioregions) of Australia was undertaken by the Federal Government, in cooperation with state and territory conservation agencies, to provide a consistent framework for biodiversity assessment and planning.

The result of this national mapping exercise was the Interim Biogeographic Regionalisation of Australia (IBRA), a system that divides Australia into 80 bioregions, based on the dominant landscape attributes of the physical environment: climate, geology, landforms and vegetation. Two of these bioregions are wholly within NSW, and a further 15 are partly within state boundaries.

IBRA was established as a framework primarily for the purpose of identifying deficiencies in the Australian network of protected areas and for setting priorities for further enhancing the parks system. The IBRA framework of bioregions also provided a tool for assessing and planning for conservation of areas that were small enough to be practically managed, yet large enough to encompass a characteristic suite of habitats and ecological processes that support those habitats.

A number of bioregions transverse the borders with other states (8 Qld/NSW, 3 SA/NSW, 6 Vic/NSW). NPWS is currently generating descriptions of the characteristics of each bioregion, and delineating and describing the subregions and ecosystems within NSW. Table 1 lists the bioregions of NSW and shows the diversity of landscape, vegetation, geology and other features within them. Four bioregions are well represented in reserves and off-park conservation areas. These include the fertile, high-rainfall coastal areas of the Sydney Basin, the Australian Alps, and the arid zone desert landscapes in the Tibooburra Downs region. The landscapes that are not well reserved and do not adequately conserve biodiversity include the ranges, tablelands, slopes and plains. These bioregions have, for the most part, been highly altered by threatening processes, including vegetation clearing, intensive agriculture, irrigation and mining. The twelve least protected bioregions are noted with an asterisk in Table 1.

Table 1: NSW bioregions and their characteristics

Bioregion	Characteristics
Australian Alps	High-elevation plateaus capping the South Eastern Highlands and southern tablelands, granite and basaltic geology, alpine herbfield and other treeless communities, snow gum woodlands and montane forest dominated by alpine ash.
Brigalow Belt South	Undulating hills and plains, subhumid climate, woodlands and open forest, vine-thicket, fertile, fragile soils.
Broken Hill Complex*	Hills and fans, includes the Barrier Ranges, semi-arid climate, ancient eroded landscape, vegetation dominated by perennial shrublands, open mulga and annual species, rich Aboriginal heritage.
Channel Country	Low hills, floodplain and intervening river systems, Mitchell grass downs, forbfield, woodlands, shrublands and lignum, includes some small areas of sand plain, predominantly pastoral land use.
Cobar Peneplain*	Plains and low hills, lithosols and earths, woodlands, semi-arid, ephemeral species, forbs and annuals, native woody shrub species.
Darling Riverine Plains*	Alluvial fans and plains, summer/winter rainfall in catchments with occasional cyclonic influences, grey clays, woodlands and open woodlands.
Mulga Lands*	Undulating plains and low hills, red earths and lithosols, shrublands and low woodlands, semi-arid.
Murray-Darling Depression	Extensive gently undulating sand and clay plains, often overlain by aeolian dunes, semi-arid woodlands, shrublands, heathlands and savanna woodlands, includes Lake Mungo, Willandra ancient river systems, previously an ancient inland sea, rich in Aboriginal and non-indigenous cultural heritage.
NSW North Coast	Humid, coastal hills, plains and sand dunes, east of the Great Dividing Range, tall open forest, open forest and woodlands, rainforest including vine forest, wetlands, heaths and other coastal vegetation communities.
NSW South Western Slopes*	Foothills and isolated ranges, including the lower slopes of the Great Dividing Range, wet/damp schlerophyll forests and woodlands.
Nandewar*	Hills, lithosols and earths, woodlands, summer dominated rainfall.
New England Tableland*	Elevated plateau of hills and plains, granites and basalts, open and closed woodlands.
Riverina*	Ancient riverine plain and alluvial fans, composed on unconsolidated sediments, evidence of former stream channels, river red gum and black box forests, box woodlands, saltbush shrublands, extensive grasslands an swamp communities, primarily agricultural land used for cropping and grazing enterprises.
Simpson-Strzelecki Dunefields	Arid dunefields and sandplains with sparse shrubland, spinifex grassland and cane grass on deep sands along dune crests.
South East Corner	A series of dissected near-coastal ranges, inland series of gently undulating terraces, coastal plains, dunefields and inlets, close to Great Dividing Range, woodlands, wet and damp schlerophyll forests, dry schlerophyll forests, some rain shadow areas, woodlands, rainforest and coastal communities.
South Eastern Highlands*	Steep dissected and rugged ranges, vegetation predominantly wet and dry schlerophyll forests, woodland, some temperate rainforest and grasslands, herbaceous communities.
Sydney Basin	Sandstones and shales, dissected plateaus, forests, woodlands and heaths, skeletal soils and sands.

A comprehensive, adequate and representative reserve system

Nationally agreed criteria for developing a comprehensive, representative and adequate ('CAR') reserve system have been developed as a core principle in both the National and NSW State Biodiversity Strategies. A CAR reserve system has also been one of the key components of the comprehensive regional assessments undertaken for the joint Commonwealth/ State Regional Forest Agreements (RFAs), which arose from the National Forest Policy Statement. The CAR criteria state that a CAR reserve system is achieved when the reserve system conserves:

- 15 per cent of the total extent of each pre-European vegetation community
- 60 per cent of the total existing cover of old-growth forest communities, and
- 90 per cent of wilderness areas.

The bioregional perspective provided by IBRA can be used to broadly assess the level of protection required to ensure that distinctive NSW landscapes are represented and conserved in the parks system.

SWNP/J Winter

Ku-ring-gai Chase National Park

The bioregional character of NSW

The diversity of NSW landscapes can be seen in a brief glance at the state's bioregions. Those bioregions in the west of NSW represent:

- sandy deserts (Simpson-Strzelecki Dunefields, Channel Country, Murray-Darling Depression)
- riverine plains (Riverina, Darling Riverine Plains)
- rocky ranges (Mulga Lands, Broken Hill Complex), and
- rolling downs (Cobar Peneplain).

Towards the east of the state there are:

- lush rainforests (NSW North Coast, South East Corner)
- rugged mountains (Sydney Basin, New England Tablelands, Australian Alps, South Eastern Highlands)
- undulating ranges (Brigalow Belt South, Nandewar), and
- fragile, wooded grasslands (NSW South Western Slopes).

The 17 IBRA bioregions in NSW vary considerably in the types of natural values they contain and, although they all have some representation in protected areas, there is great contrast in the extent to which each is reserved. The Australian Alps bioregion has the highest proportion of protection, with almost 90 per cent reserved due to the prevalence of the alpine environs of Kosciuszko National Park, which dominate this bioregion. This provides a major contrast to bioregions such as the Riverina and Darling Riverine Plains, where less than 1 per cent of each lie within protected areas.

State forests are present in all but the four bioregions in the north-west corner of NSW. These four – the Broken Hill Complex, Channel Country, Mulga Lands and Simpson-Strzelecki Dunefields bioregions – also have relatively low proportions of NPWS-managed protected areas, with most areas being under private management. Most of the remaining bioregions have only small areas of state forest, except for the South East Corner bioregion, of which almost one-third is state forest.

The full range of biodiversity in NSW is not yet known. Less than 15 per cent of the one million species estimated to live in Australia have been formally described, while human activities continue to have adverse impacts on the environments that support this biodiversity. Information available on individual species, such as larger mammals and vascular plants, is often comprehensive, but relatively little is known of the ecological relationships and processes that are at the core of biodiversity in NSW.

Threats and threatening processes

A range of threats to biodiversity and the natural values of NSW impact on the landscapes of NSW bioregions.

Urbanisation and development pose significant threats in NSW coastal landscapes through increased development of lands for housing, industry and tourism. Regional environmental planning and urban bushland projects are, to some degree, beginning to ameliorate and redress some of these impacts. Community education, with an emphasis on the importance of off-park conservation, and community participation in conservation activities are arguably the most potent forces in protection of natural heritage and biodiversity in urban areas.

Conservation of natural and cultural heritage across NSW – *continued*

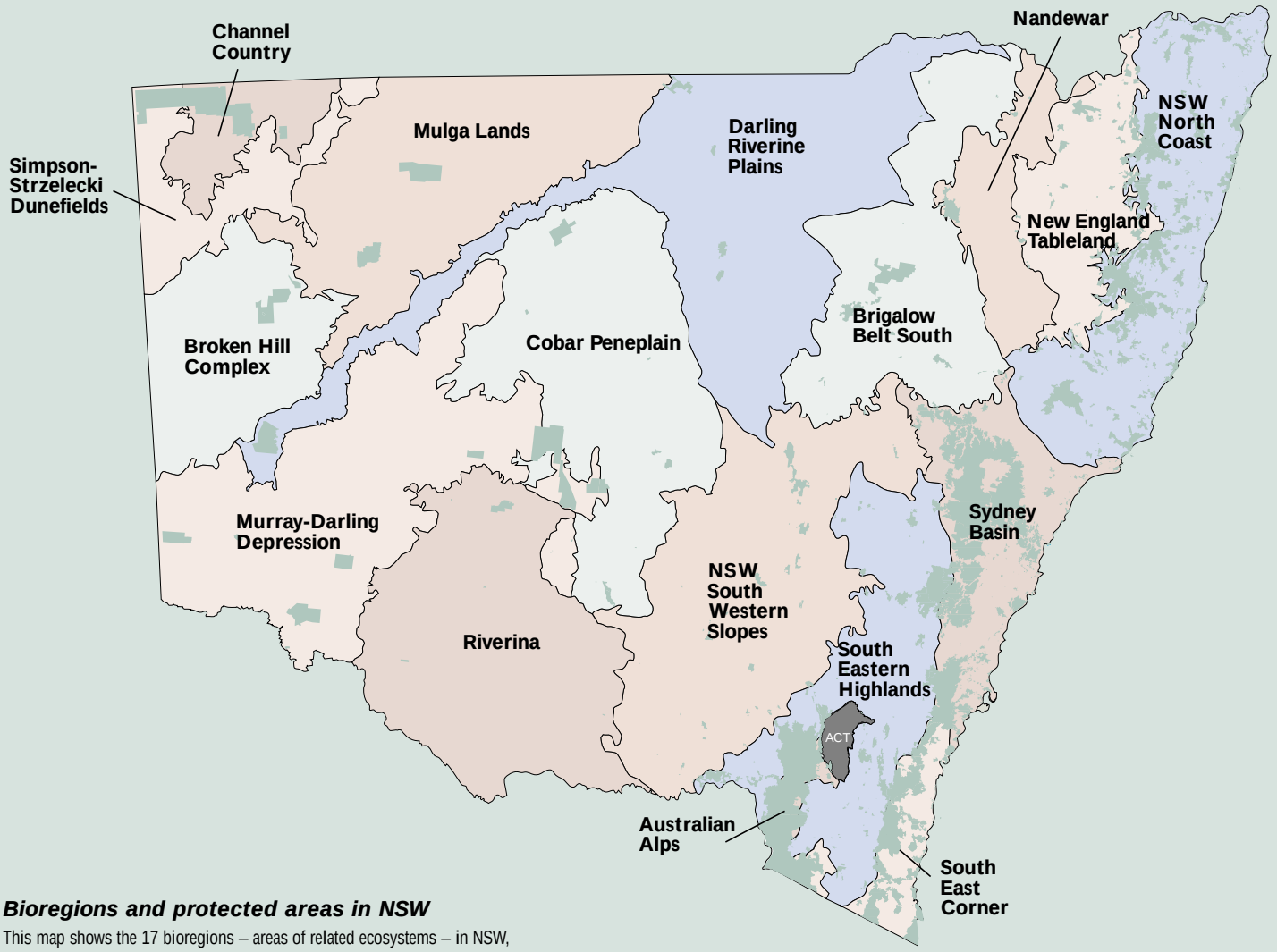
Land degradation is most extensively associated with agricultural practices that are not ecologically sustainable. Agriculture has changed the natural landscapes in most of NSW, and in some bioregions, such as the Riverina, Murray-Darling Depression and Cobar Peneplain, biodiversity is under severe threat from clearing, cropping and grazing practices.

Conservation mechanisms such as Voluntary Conservation Agreements are especially important for those bioregions with little representation in protected areas. Conservation programs help to promote sustainable farming practices that will reduce the impacts of agriculture on the environment and help to conserve the natural values of the land while allowing livelihoods to be maintained.

Erosion and salinity are common problems in catchments where large-scale clearing and irrigation have occurred. NPWS is working with other government agencies implementing the NSW Salinity Strategy to help eliminate the causes and combat the effects of salinity in NSW landscapes.

Pest animals and weeds adversely affect native plants and animals that are preyed upon or are in direct competition with these pests. Foxes, rabbits and goats are problems in much of NSW, as are privet, scotch broom, blackberry and bitou bush.

The role of the parks system in controlling the threatening processes within the NSW landscape is to manage and protect those areas of land that have been largely unaffected by land degradation and to restore those areas within parks that have been damaged. In addition, parks act as buffers and recharge areas for ecological cycles, such as for water and nutrients, that are vital to life outside the parks system.



Bioregions and protected areas in NSW

This map shows the 17 bioregions – areas of related ecosystems – in NSW, and the parks and reserves managed by NPWS (shown in green). There is a clear imbalance between the eastern and western areas of the state in the proportion of each region that is reserved for conservation. NPWS aims to redress the balance by focusing on western regions in its land acquisition program.

Cultural heritage

Cultural heritage is the value people have given to items (as defined under the *Heritage Act 1977*), including places and whole landscapes, through their associations with those items. Manifestations of cultural value may be non-physical and/or physical and include, but are not limited to, cultural practices, knowledge, songs, stories, art, buildings, paths and human remains. When natural elements of the landscape acquire meaning for a particular group, they become cultural heritage. These may include landforms, flora, fauna and minerals.

Legislative framework

Aboriginal heritage is primarily managed under the *National Parks and Wildlife Act 1974* (NPW Act). It may also be subject to the provisions of the *Heritage Act 1977* if the item is listed on the State Heritage Register, or is subject to an Interim Heritage Order (IHO) which protects the item until its significance is assessed. Non-Aboriginal heritage is managed through the provisions of the Heritage Act. However, as heritage is a component of the environment, the *Environmental Planning and Assessment Act 1997* (EP&A Act) is a trigger for both pieces of legislation. That is, under the EP&A Act, developers are required to assess the likely impacts of their activities on a range of environmental factors, and these include cultural heritage values.

Cultural heritage items of state significance are managed through the provisions of the Heritage Act. However, many cultural heritage items are of local significance and their management relies on the actions of local government or state government agencies.

Under the provisions of the EP&A Act, local government has a central role in land planning. Cultural heritage management outside the parks system relies heavily on local government authorities to identify items of cultural heritage and list them in a Local Environment Plan (LEP). It also relies on local government to assess the impact of development proposals on cultural heritage items and, if required under the EP&A Act, to refer the development proposal to NPWS or the NSW Heritage Council for concurrence. State government agencies have a similar role to local government in assessing the impact of development proposals on land owned by them or under their management.

In addition to requiring local government to list items of cultural heritage on their LEPs, the Heritage Act requires local and state government authorities to establish and maintain a Heritage and Conservation Register. This register lists the heritage items each authority owns or occupies that are subject to an IHO, listed on the State Heritage Register or listed as an item of heritage in an environmental planning instrument. A copy of the register must be provided to the NSW Heritage Council.

Assessing cultural heritage values

The NPW Act and the Heritage Act mainly focus on cultural heritage of a physical nature, such as buildings, relics and art. Other than the Aboriginal Places provisions under the NPW Act, which require only that places be of significance to Aboriginal culture, there is no explicit provision in either Act for managing non-physical cultural heritage items such as stories, practices, songs or knowledge.

The focus on the physical fabric of cultural heritage means that the non-physical aspects of cultural heritage may remain relatively unidentified, unassessed and unprotected. This is especially true of cultural heritage of Aboriginal origin. Until recently, the importance of dreaming places, meeting places, cemeteries, missions, massacre sites and other areas of significance to Aboriginal culture was not recognised and therefore not included on LEP lists, Heritage and Conservation Registers or the State Heritage Register.

The assessment of cultural heritage should include an assessment of the significance of historic, scientific, aesthetic and social values. The inclusion of the social significance of an item or place has been undervalued in the significance assessment. As a result, items of significance to communities that do not contain significant historic, scientific and/or aesthetic values may be damaged or destroyed.

Management of cultural heritage

If regular maintenance and repairs are needed, such as those required by historic buildings, they are more easily undertaken if the building is in use and a maintenance plan has been established. An owner or manager of a cultural heritage item may therefore seek opportunities for the item to be adapted for uses that allow maintenance and protection without detracting from its cultural significance.

The benefits of natural and cultural heritage protection are sometimes difficult to measure, although they contribute positively to a community by providing social wellbeing, cohesion and a sense of place.

Conserving our natural and cultural heritage

The conservation of our natural and cultural heritage across NSW involves many players, and a wide diversity of activity. The parks system plays a central role in the achievement of conservation outcomes and provides opportunities for people to access, understand and appreciate these values.

Outcomes of the parks system

M Van Ewijk

Davidson Whaling Station Historic Site

This *State of the Parks* report represents the first stage of a comprehensive State of the Parks reporting system that will systematically monitor over time the status of natural and cultural heritage values in NSW at both state and park levels. The system will measure and report on conservation performance in NSW.

This report lays the foundations for future performance measurement by describing the environment within which parks exist and by articulating the desired outcomes for the parks system. From this basis it will be possible to develop performance indicators, gather data, analyse results, and report on progress and achievements. These elements will be integrated into the next *State of the Parks* report.

Structure for performance measurement

Performance reporting is most meaningful when there is a logical hierarchy and a link between the desired outcomes, the indicators and the data collected. The State of the Parks reporting system has a five-part structure:

- purpose
- functions
- outcomes
- indicators, and
- data.

Purpose

The purpose of the parks system is just that – the 'reason for being' of the parks system in NSW.

Functions

In some of its functions NPWS has an enforcement role as well as a compliance role (e.g. conserving biodiversity and conserving cultural heritage). In other instances a function is essentially limited to a compliance role (e.g. financial performance).

Some functions derive directly from the provisions of the NPW Act:

- conserving nature
- conserving cultural heritage
- enabling the ecologically sustainable and culturally appropriate use and enjoyment of parks, and
- advancing education, appreciation and understanding of the natural and cultural values in our parks and of conservation generally.

Other functions are implicit or indirectly derived from the legislation:

- contributing to community economic wellbeing
- environmental management, and
- financial management and business development.

Outcomes

All functions give rise to outcomes. A set of agreed outcomes for parks establishes the strategic and overarching goals for key areas of responsibility, and provides greater clarity of purpose and direction and a basis for decision making. *Broad outcomes* set out the ultimate goals for parks, while *specific outcomes* provide a more detailed breakdown.

Indicators

Indicators that are used to measure performance must be anchored in agreed outcomes. Indicators are not included in this inaugural *State of the Parks* report. However, it is anticipated that a small number of indicators will be developed for each specific outcome. Baseline data will be gathered to establish a point of reference for measuring progress, and performance indicators will be incorporated into the next report.

Data

Data will be gathered for each indicator. Depending on the nature of the indicator, data may or may not be readily available and fresh research may be required. Data have not been gathered for this inaugural *State of the Parks* report, but will be included in the next report.

P Green/NPWS

Crowdy Bay National Park

Definitions

The descriptions of the purpose, functions and outcomes of the parks system include a number of words and phrases used in quite specific ways. These are explained below.

Cultural heritage

Cultural heritage includes both Aboriginal and non-Aboriginal cultural heritage and refers to structures, buildings, works, relics, places, moveable objects, knowledge, stories, traditions, landscapes and associations (for example, buildings, sites associated with Aboriginal cultural activities, paths and gardens) connected with human activity on the Australian continent. The definition does not include Aboriginal handicrafts made for sale and does not include non-Aboriginal heritage less than 25 years old.

Environment

Environment can sometimes be taken to include all those things that surround us. In this document, however, the word 'environment' refers only to those aspects of our surrounds that derive from natural and cultural contexts.

Nature

The word 'nature' encompasses all aspects of the natural environment, including geomorphology, geographic features, soil, water, air, plants and animals, as well as the interaction and interdependency of all these aspects.

Parks

The word 'parks' is used as a generic label for all protected areas reserved or dedicated under the NPW Act. As such it includes national parks, nature reserves, karst conservation reserves, Aboriginal areas, historic sites, regional parks, state recreation areas and state game reserves. The term does not include marine parks.

Sustainability

Sustainability means that actions do not result in the loss of natural and cultural values.

The purpose of the parks system

The parks system has three main purposes:

1. To conserve, protect and present places that have significant natural and cultural values. Conservation is undertaken on the principle that there is fundamental value in ensuring the survival of natural systems, the presence of landscapes and the recognition of cultural connections, for and of themselves, and for and on behalf of current and future generations. It is also recognised that people, culture and the environment are inseparable.
2. To provide appropriate and sustainable opportunities for people to enjoy, appreciate and learn about our natural and cultural values. This includes the full range of natural settings, from wilderness to regionally significant open space such as regional parks.
3. To represent part of the global network of protected areas and be integrated with national and international agreements and policies.

The NSW parks system makes a vitally important contribution to the conservation of natural and cultural heritage and it is a major foundation from which conservation outcomes can be achieved. However, conservation is not, and cannot be, restricted to the creation of a system of protected areas alone. The success of our conservation effort as a society is made more complete when the commitment and the rewards are shared throughout the community. While this document focuses on the NSW parks system, the importance of the many other contributors to the conservation of our natural and cultural heritage is readily acknowledged.

In addition to managing the parks system, the role of NPWS extends to wildlife conservation and the conservation of Aboriginal cultural heritage across the landscape. NPWS is also a major participant in many government environmental initiatives. The *State of the Parks* report recognises the links between park management and the role of NPWS in the wider landscape, but is focused on the parks system.

More information about the roles and responsibilities of NPWS is available in the NPWS *Corporate Plan*, *Annual Report* and website (www.npws.nsw.gov.au).

G Robertson/NPWS

Sturt National Park

Functions of the parks system

Conserving nature

Broad outcomes

- Conserve the natural values (including biodiversity and landscape) within the parks system.
- Manage the natural environment within NPWS parks to make a positive contribution to local, state, national and global environmental and conservation initiatives.

Specific outcomes

1. Improve the extent to which the parks system is comprehensive, adequate and representative in terms of natural heritage.
2. Increase the wealth of knowledge and understanding, and the quality and utility of information, about the natural environment within parks.
3. Manage natural values within parks as an integral part of the NSW landscape and broader conservation efforts.
4. Maintain the presence and abundance of endemic species within parks at appropriate levels over time (allowing for natural evolution, change and successional processes).
5. Maintain or improve the status and survival prospects of threatened plant species, animal species, ecosystems and communities within parks.
6. Identify and manage threatening processes within parks, such as weeds and pest animals, in an effective way, and rehabilitate degraded lands.
7. Ensure park fire management is ecologically sustainable and unplanned fires are suppressed effectively (allowing for non-suppression or limited suppression where appropriate within adopted management planning provisions).
8. Ensure parks, and the way in which parks are managed, deliver environmental benefits (including ecological services) to local and regional communities and contribute in a positive way to national and international initiatives in nature conservation.

Conserving cultural heritage

Broad outcomes

- Manage cultural heritage within the parks system in accordance with the identified or assessed values of the cultural heritage items.
- Manage cultural values within the parks system to make a positive contribution to local, state, national and global cultural heritage and conservation initiatives.

Specific outcomes

1. Increase the wealth of knowledge and understanding, and the quality and utility of information, about cultural heritage in NPWS parks.
2. Manage cultural heritage values within parks as an integral part of the NSW landscape and broader conservation efforts.
3. Manage cultural heritage places within parks in a way that achieves an effective and efficient use of conservation efforts to maintain the relevant cultural values.
4. Ensure the methods for conservation of cultural heritage items within parks are culturally appropriate and accord with the significance of those items.
5. Ensure parks provide appropriate opportunities for maintaining cultural continuity through access and use.
6. Identify and manage threatening processes within parks in an effective way.

P Green/NPWS

Trial Bay Gaol in Arakoon State Recreation Area

7. Ensure Aboriginal people are recognised as the rightful owners of their cultural heritage, and that relevant communities participate in decision making and management of parks.

Enabling the ecologically sustainable and culturally appropriate use and enjoyment of parks

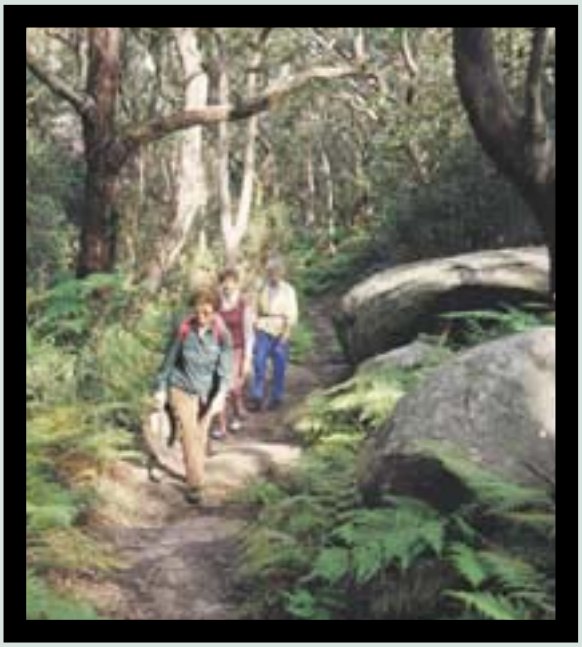
Broad outcomes

- Ensure that use of the NPWS parks system is ecologically sustainable and culturally appropriate.
- Provide a high-quality experience for park visitors.
- Ensure the benefits of use and enjoyment of parks accrue without detriment to the natural and cultural values of the parks and at a level consistent with the conservation imperatives of the park category (national park, nature reserve, Aboriginal area, etc).

Specific outcomes

1. Increase the level of knowledge and understanding, and the quality and utility of information, about the natural and cultural assets of parks, park infrastructure and services.
2. Increase the level of NPWS knowledge about who visits parks – their needs, attitudes and expectations, and how and when they use parks.
3. Undertake the development, removal, renewal or replacement of park assets (e.g. facilities, buildings and structures) in a way that is: ecologically sustainable; in accordance with the heritage significance of the asset; at a level consistent with the park category and values of the individual park; sensitive to the beliefs and customs of local Aboriginal people; and cognisant of visitor and stakeholder expectations.
4. Increase visitor satisfaction with facilities and services, and provide opportunities for visitors to use parks that have a tourism or recreation capability.
5. Assess and minimise risk to public safety.
6. Ensure the parks system provides facilities for an appropriate mix and range of visitor access needs (including access by people with a disability) and that this information is easily accessible to the public.
7. Ensure the parks system provides a spectrum of possible visitor experiences (from remote self-reliant adventure to guided interpretive tours).
8. Ensure visits to parks are an enjoyable experience, and interaction between park visitors maintains an appropriate level of harmony and mutual satisfaction with the park experience.

Advancing education, appreciation and understanding of the natural and cultural values in our parks and of conservation generally



SMeN

Sydney Harbour National Park

Broad outcomes

- Enhance and increase learning, appreciation and understanding of the conservation and management of natural and cultural heritage within the community through on-park and park outreach initiatives.
- Generate greater community participation and responsibility for the conservation of natural and cultural heritage in NSW through on-park and park outreach initiatives.

Specific outcomes

1. Increase community awareness of the conservation of natural and cultural heritage values, park management issues and the parks system.
2. Enhance community knowledge and understanding of natural and cultural heritage values, park management issues and the parks system.
3. Generate positive values and attitudes towards parks and the conservation of natural and cultural heritage in the community.
4. Increase community consultation and enhance community participation in activities related to the conservation of natural and cultural heritage.
5. Ensure the management of parks assists in the promotion of best-practice natural and cultural heritage management on other tenures.

Contributing to community benefits and economic wellbeing

Broad outcomes

- Ensure the parks system and park operations make a positive contribution to the social, cultural and economic wellbeing of local communities and the broader public.
- Ensure community benefits accrue without detriment to the natural and cultural values of the parks.
- Ensure the management of NPWS-endorsed business activities within parks makes a positive contribution to local and state economies.

Specific outcomes

1. Ensure the parks system and the way in which parks are managed provide social benefits (including opportunities for outdoor activities; learning and discovery; improved air and water quality; etc).
2. Ensure the parks system and the way in which parks are managed provide cultural benefits (including interpretive services, and opportunities to maintain historic and cultural links).
3. Ensure that parks and park operations are better integrated with social and economic drivers within communities, such as tourism and agriculture, for mutual benefit.
4. Ensure the management and operation of NPWS business activity contributes in a positive way to local and state economies.
5. Form partnerships with individuals and organisations within the community to promote mutual benefit through conservation.
6. Improve data about the social and economic aspects of NPWS parks and park operations in terms of quality, utility and availability.

Environmental performance

Broad outcome

- Ensure continual improvement in the environmental aspects of NPWS operations.

Outcomes of the parks system – *continued*

Specific outcomes

1. Ensure NPWS parks and park operations comply with all applicable environmental laws, regulations and standards.
2. Reduce the direct and indirect environmental impact of NPWS operations and day-to-day business within parks (including waste and energy management).
3. Ensure NPWS develops expertise and achieves exemplary performance in environmental care for selected aspects of its operations.
4. Improve data about NPWS environmental performance in terms of quality, utility and availability.
5. Foster best-practice environmental management in parties with whom NPWS has a business relationship, such as contractors, lessees and concessionaires.

Financial and business development performance

Broad outcomes

- Ensure a continuing emphasis is placed on the role of successful business activity in supporting key conservation outcomes.
- Achieve continual improvement in the business performance of NPWS operations.
- Ensure financial and business development benefits accrue without detriment to the natural and cultural values of the parks.

Specific outcomes

1. Ensure NPWS parks and park operations comply with all applicable financial laws, regulations and standards.
2. Optimise the cost-effectiveness of parks, park assets and park operations.
3. Optimise agency-generated revenue through responsible and ecologically sustainable and culturally appropriate initiatives.
4. Improve data about NPWS financial and business activity performance in terms of quality, utility and availability.
5. Manage any park-based business operations as an integral part of the natural and cultural heritage conservation framework of the park and the broader NSW landscape.
6. Ensure NPWS develops expertise and achieves exemplary performance in business activity management and operations.
7. Continually and consistently apply best-practice business management in concession and lease management.

Park profiles

A word about the park profiles

The National Parks and Wildlife Service administers more than 550 parks in New South Wales. This report looks in detail at a representative sample of these (see the appendix for a complete list), covering all regions in the state and including the following park types:

- national parks
- nature reserves
- state recreation areas
- regional parks
- historic sites
- Aboriginal areas.

The profiles do not include karst conservation reserves, which are not managed by NPWS.

Each entry follows the same basic structure: details on size and location; a 'snapshot' of the park; management issues, such as pest plants and animals; and a listing of relevant plans and agreements.

Size, creation and location

The size of each park is given in hectares (ha), and the perimeter in kilometres (km). It should be noted that these figures are approximate only, particularly for perimeter as this can change considerably depending on the scale of the map used for making the calculations. The perimeters have been calculated using the best information available, which is not always to the same scale. The figures for both size and perimeter have been rounded to the nearest whole number. Distances from cities or towns are also approximate. 'Created' refers to the year in which a park was first set aside for conservation. The exact date is difficult to determine for some of the parks, as parts of them may have been set aside long before the park was named, but in these cases a short mention is made of these parts.

Snapshot of the park

This section of each profile explains why the park was conserved and looks briefly at points of special interest, landforms, ecosystems, native plants and animals, and Aboriginal and historic heritage. For most parks the bioregion is also given; for a map of the bioregions see page 8.

Management issues

This section looks at the areas of focus for park management, such as controlling pest plants and animals, managing fires, and maintaining park facilities.

Plans and agreements

Each profile has a box in which are listed a number of plans and agreements. Not all of these will be relevant to each park – only those ticked in the box. The plans and agreements listed are as follows:

- *Plan of Management.* A plan of management is a statutory document guiding management of the park, generated by NPWS, exhibited for public comment and formally adopted by the government. It covers such matters as objectives, policies and a framework for park management. For more information on plans of management see page 6.
- *Fire Management Plan*. Fire plans include such matters as maintenance of fire trails and joint initiatives with local conservation groups.
- *Ramsar wetland convention.* Refers to the international Ramsar Convention on the protection of wetlands, established at Ramsar, Iran, in 1971.
- *World Heritage listed.* Parks listed under the UNESCO World Heritage Convention as sites of outstanding universal value to be preserved for all humanity.
- *Migratory Bird Agreements.* The Japan-Australia Migratory Bird Agreement (JAMBA) is an agreement between Australia and Japan, established in 1974, that aims to protect migratory birds and birds in danger of extinction, and their environment. The China-Australia Migratory Bird Agreement (CAMBA), established in 1986 between Australia and China, has the same aim.
- *World biosphere reserve.* An area recognised internationally as important for preservation of the biosphere. Objectives in these areas typically include conservation of biodiversity, community involvement in conservation and economic outcomes, and ongoing research and monitoring.
- *Subject to Forest Agreement and/or Regional Forest Agreement.* A Forest Agreement is an agreement made between various state ministers; it provides guidelines on sustainable management of forest areas (including NPWS areas, state forests and private land). A Regional Forest Agreement has similar aims but is made between state ministers and the federal government.
- *Under joint management.* This refers to situations where a park is managed by NPWS in conjunction with another body. For the parks in this report, joint management will be either with the Sydney Catchment Authority or particular Aboriginal communities.

Arakoon State Recreation Area

P Green/NPWS

P Green/NPWS

Arakoon State Recreation Area

Size	114 ha, perimeter approx. 3 km
Created	1974
Location	On the mid-north coast of NSW, approximately midway between Sydney and Brisbane. Adjoins Hat Head National Park.

Main picture: Trial Bay Gaol, completed in the 1880s, was used as an internment camp during World War One.
Top right: *Alyxia ruscifolia.*

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
■	National Estate Register
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the area

Why it is conserved

Arakoon State Recreation Area conserves and protects historic Trial Bay Gaol, which has been described in a major prison study as ‘a resource of unique and unusual social and archaeological significance’.

Points of special interest

This recreation area contains the only example of a 19th-century public works prison in NSW (Trial Bay Gaol). It has popular camping and day visitor areas, and is a focal point for local, national and international tourism. Popular walks provide spectacular views of Trial Bay and the gaol.

Geology, soils and landforms

The recreation area is located on geological formations comprising mainly a type of granite known as Smoky Cape adamellite (from which Trial Bay Gaol and the Breakwater were constructed), the only coastal granite outcrop between Bundaberg and Moruya. Soils are typically poorly nourished Quaternary beach sands and decomposed granitic podsoils, soil types that erode easily.

Ecosystems

The recreation area contains:

■ wetlands ■ coastal rainforest ■ coastal heath ■ dune vegetation ■ wet sclerophyll forests and woodlands.

Native plants

The recreation area protects over 100 species of native plants, and provides dramatic evidence of a succession of plant communities in a very small area.

Native animals

Despite the small size of this recreation area, it provides habitat for over 40 native animal species. Threatened species include:

■ brush-tailed phascogale ■ osprey ■ glossy black cockatoo ■ squirrel glider ■ land mullet.

Numerous other species of terrestrial and arboreal mammals, birds and reptiles are found, including:

- kangaroos and wallabies
- possums
- bats
- owls
- lorikeets
- honeyeaters
- kingfishers
- waders and waterbirds.

There are excellent, easily accessible vantage points for observing marine mammals, including the humpback whale on its annual migration.

Aboriginal cultural heritage

There are numerous Aboriginal sites of great cultural significance to the local communities. These include middens, stone arrangements and spiritual sites.

Historic heritage

Trial Bay Gaol, the Powder Magazines, the Overshot Dam and the Breakwater provide evidence of colonial prison reform and attempts at improving maritime safety. The museum on the site provides an extensive photographic record of the area's use as a concentration camp for German citizens and prisoners of war during World War One – a unique and valuable insight into this period of Australia's history.

Management issues

Pest plants

Over 65 species of introduced plants have been recorded in the recreation area. The main problem weeds include:

- bitou bush
- lantana
- gloriosa lily.

Control programs are regularly undertaken in conjunction with local landholders and the Rural Lands Protection Board. Local volunteers, including the South West Rocks Dune Care group, regularly participate in weed control programs, providing invaluable assistance to staff. The spread of bitou bush has now been substantially reduced through a combination of staff and volunteer efforts.

Pest animals

The main pest animals found in the recreation area are:

- foxes
- dogs
- rats
- cats.

Foxes, dogs and rats pose a major problem for native animals, particularly the threatened species. Control programs are being undertaken for all four pest animal species; community involvement is a key factor, given that much of the recreation area touches urban areas.

Fire management

There are frequent wildfires, many caused by arson. These fires affect the distribution of flora and fauna in the area. Fire management is primarily limited to wildfire suppression, with hazard reduction works maximised where the recreation area touches urban areas.

Usage and facilities

There are over 800,000 visitors each year, with peak use occurring over the summer months and all school holiday periods. The most common visitor activities are swimming, surfing, fishing, sailing, sailboarding, picnicking, bushwalking and camping.

Facilities include:

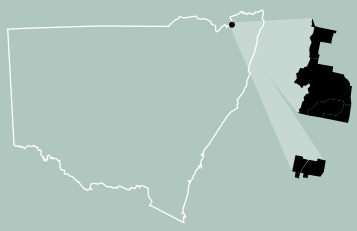
- electric barbecues in designated shelter sheds
- self-guided tours of Trial Bay Gaol, with *Discovery* activities available in school holiday periods
- powered and unpowered camping sites.

Camping fees apply. An entry fee applies for Trial Bay Gaol.

Bald Rock National Park

P Green/NPWS

P Green/NPWS



Bald Rock National Park

Size	7453 ha, perimeter approx. 107 km
Created	1971
Location	29 km north-east of Tenterfield in northern NSW. Adjoins Queensland's Girraween National Park.

Main picture: Balancing rocks on the top of Bald Rock, a solid granite dome rising 250 metres from the surrounding bushland.
Top right: Most of the park comprises open eucalypt forest, with patches of rainforest, heath and wetland.

Plans and agreements

■	Plan of Management – draft
■	Fire Management Plan – draft
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Bald Rock National Park protects a diverse range of plant and animal communities, including a native plant community, in the granite belt region of northern NSW.

Points of special interest

The key feature is its large granite batholith, believed to be the largest granite dome in the southern hemisphere. The summit of Bald Rock has expansive views of the surrounding forested landscape.

Geology, soils and landforms

The park is situated on the New England Batholith. Frequent outcropping along the granite belt has created a landscape of granite domes and tors, and balancing rocks. Bald Rock itself is a solid granite dome 750 metres long and 500 metres wide, rising 250 metres above surrounding bushland.

Ecosystems

Seven vegetation communities occur in the park:
■ tall moist forest with a well-developed shrub layer ■ tall open forest ■ open forest ■ open woodland
■ grasslands ■ sedgelands ■ heath.

Native plants

The species *Muehlenbeckia costata* and *Acacia latisepala* occur on high-altitude rocky outcrops in the park. The endangered *Tylophora woollsii* has recently been recorded in two locations.

Native animals

A total of 170 native species are known in the park, including several threatened species, such as:
■ glossy-black cockatoo ■ yellow-bellied glider ■ brush-tailed rock-wallaby ■ spotted-tailed quoll
■ greater broad-nosed bat ■ koala ■ border thick-tailed gecko.

Several species at the limit of their geographical range have also been recorded, including the common wombat, satin bowerbird and the superb lyrebird.

Aboriginal cultural heritage

The park is within the boundaries of the Moombahlene and Muli Muli Aboriginal Land Councils. Bald Rock forms a boundary marker between three nations, and was thus an important neutral meeting place.

Historic heritage

NPWS holds no information on the historic heritage of the park. The Draft Plan of Management recommends that a comprehensive historic heritage survey be conducted.

Management issues

Pest plants

Introduced plants in the park are the result of disturbance to natural ecosystems from past agricultural land uses. Problem weed species known to occur in the park include:

- blackberry
- whisky grass
- African lovegrass.

Although information on the distribution and abundance of introduced plant species is limited, control programs are regularly undertaken in conjunction with local landholders and the Tenterfield Rural Lands Protection Board.

Pest animals

The main pest animals found in the park are:

- feral pigs
- foxes
- wild dogs
- cattle.

Of these, the first three pose a particular problem for native animals, especially for the threatened animal species in the park. Integrated pest control programs are undertaken with neighbours and the Tenterfield Rural Lands Protection Board.

Fire management

The park has been subject to frequent wildfires, as well as hazard reduction burning, over the last century. Many recent fires have been caused by arson or hazard reduction burns escaping from neighbouring land, predominantly Girraween National Park in Queensland. NPWS maintains a cooperative fire management arrangement with the Queensland Park Service. A draft Fire Management Plan has been prepared and will be placed on public exhibition later this year.

Usage and facilities

The park is readily accessible from Brisbane and north-east NSW. Its popularity is increasing, attracting more than 70,000 visitors each year. Walking tracks and picnic and camping facilities are provided. Three commercial tour operators use the park, and nature-based recreation in the park makes a significant contribution to the regional economy.

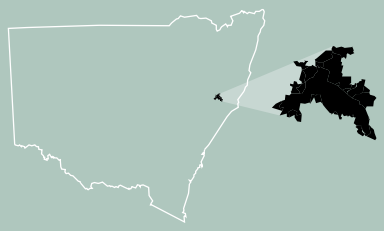
Picnic and camping facilities are located at the base of Bald Rock. Wood barbecues, pit toilets, tables and water are provided. Bungoona walk, to the summit of Bald Rock, is being upgraded to provide easier access. Vehicle entry and camping fees apply. Fees are collected via a self-registration pay station.

Yellow-bellied glider

Barrington Tops National Park

W Lacey

B Collier



Barrington Tops National Park

Size	73,884 ha, perimeter approx. 643 km
Created	1969
Location	At the head of the Hunter Valley, 320 km north of Sydney and 30 km west of Gloucester. Adjoins Mount Royal National Park and Polblue Crown Reserve.

Main picture: About 85 per cent of the park is declared wilderness.
Top right: The wild and scenic rivers in the park are popular with hikers, and are an important source of clean water for the Hunter region.

Plans and agreements

■	Plan of Management – draft
■	Fire Management Plan – draft
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Barrington Tops National Park protects one of the major stands of rainforest existing at the time of European settlement.

Points of special interest

The park supports one of the largest cool temperate rainforests in mainland Australia, consisting mainly of well-developed Antarctic beech forests. It is internationally recognised as the southern-most section of the World Heritage-listed Central Eastern Rainforest Reserves (Australia) (CERRA).

Geology, soils and landforms

Barrington Tops is a plateau separating the upper Hunter River and its tributaries from the Manning catchment. The plateau is linked to the Great Escarpment by the Mount Royal Range. The main plateau reaches 1500 metres above sea level, with steep slopes on all sides. The park has fertile basaltic soils as well as less fertile, sandy granitic soils.

Ecosystems

Vegetation types in the park include:
■ cool temperate, warm temperate and subtropical rainforest ■ escarpment tall open forest ■ tableland tall open forest
■ subalpine woodland ■ plateau swamps ■ plateau grasslands.

Native plants

The park protects several threatened plants, as well as species at their geographic limits of distribution and regionally native species. These include:

■ veined donkey orchid (*Diurus venosa*) ■ greenhood orchid (*Pterostylis* sp. 'D', aff. *cuculata*)
■ fragrant pepperbush (*Tasmannia glaucifolia*) ■ broad-leaved pepperbush (*Tasmannia purpurascens*)
■ *Acacia barrintonensis* ■ *Chionogentias barringtonensis* ■ craven grey box (*Eucalyptus largeana*).

Annual plant surveys have been conducted since 1998.

Native animals

Due to its size and diverse range of habitats, the park supports more than 40 threatened animal species, including:

- broad-toothed rat
- red-legged pademelon
- rufous scrub bird
- masked owl
- powerful owl
- yellow-bellied glider
- spotted-tailed quoll
- koala.

Aboriginal cultural heritage

No detailed assessment has been undertaken, but the area has cultural values for local Aboriginal communities. The Tops formed a buffer between territories, including those of the Worrimi, the Geawegal, the Birpai and the Daingatti. After European invasion the Tops became a refuge for a displaced Aboriginal population. Mount McKenzie is a confirmed massacre site where a large group of camped Aboriginal people was murdered by white settlers.

Historic heritage

Little historic heritage has been identified within the park, reflecting the difficulty of access. Early uses included timber extraction and seasonal grazing. Some early bushwalking huts remain intact, while others exist as ruins or have been removed. A study of the huts is proposed to support the Plan of Management.

Management issues

Pest plants

The main problem weeds in the park are European broom, blackberry and mist flower. An extensive long-term control program is underway to contain the spread of European broom on the plateau. Due to the extent of the existing infestation and difficult nature of the terrain, it is unlikely that control will be achieved by existing physical methods. Accordingly, the greatest hope lies with biological control. Several biological agents have been trialled in cooperation with the NSW Department of Agriculture and the CSIRO.

Pest animals

The main pest animals found in the park are:

- foxes
- feral cats
- wild dogs
- feral pigs
- wild horses.

Foxes, cats, dogs and pigs pose a problem for native animals, particularly several threatened species. Predation by foxes is a major factor in the decline of the broad-toothed rat. Control programs are underway for foxes, dogs and pigs.

Fire management

The park, being essentially moist and cool, is not subject to frequent natural fires. However there is a history of fires escaping from adjacent grazing properties in dry periods. Fire management in the park has been primarily limited to wildfire suppression, although strategic hazard reduction burning is proposed in some areas in the near future.

Usage and facilities

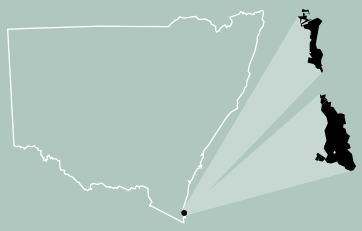
The park attracts over 100,000 visitors each year, with peaks during the Easter and Christmas holidays. Winter snowfalls also attract large numbers of visitors, particularly from Newcastle and the Sydney area. The most popular activities are picnicking, bushwalking and camping.

The park provides an extensive network of long-distance walking trails, many of which pass through wilderness. There are also lookouts and picnic and camping areas, with gas barbecues in camping areas. Wheelchair- accessible facilities include lookout platforms. Camping fees apply.

Ben Boyd National Park

A Mostead/NPWS

S Cohen/NPWS



Ben Boyd National Park

Size	10,260 ha, perimeter approx. 152 km
Created	1971
Location	500 km south of Sydney on the far south coast of NSW. Has three sections: large areas north and south of Eden and a recent addition north of the Pambula River.

Main picture: Hegartys Bay, along the nine-kilometre coastal walk in the park.
Top right: Boyds Tower, built by whaler Ben Boyd in the 1840s as a whale-spotting tower and lighthouse.

Snapshot of the park

Why it is conserved

Ben Boyd National Park provides protection for important coastal and hinterland plant and animal species as well as a number of significant historic and cultural sites, including Boyds Tower, Green Cape Lighthouse and a number of Aboriginal sites.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
■	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The park has been listed on the Register of the National Estate for its important coastal plant and animal communities, including old-growth forest, extensive heathland, estuarine and freshwater wetlands, dune ecosystems, many threatened native animal species and significant plant species.

Geology, soils and landforms

Most of the park lies on shales, sandstones, siltstones, conglomerates and quartzites of the Devonian Merimbula Group. The park rises gradually from the coast to a ridgeline along the western boundary. Most of the southern section of the park is below 160 metres above sea level, while the northern and central sections are below 100 metres. Most of the park's soils are shallow and sandy, and contain large amounts of humus. They are relatively unstable and inclined to erode when disturbed.

Ecosystems

The park provides a diverse array of coastal habitats, including:

■ forest ■ woodland ■ heathland ■ sandy and rocky coastline ■ estuaries.

The dune dry scrub forest and estuarine and floodplain wetlands in the northern section of the park are recognised as significant.

Native plants

A large number of lowland swamp and heath plant species are found in the park, many of them at Green Cape. The leafless tongue orchid (*Cryptostylis hunteriana*) is listed as vulnerable in the *Threatened Species Conservation Act*.

Native animals

The park's varied habitat currently supports approximately 150 bird species, 50 native mammal species, 15 reptile and two frog species. A total of 25 vulnerable animal species have been found in the park, with a further three species identified as endangered, namely:

- hooded plover
- green and golden bell frog
- regent honeyeater.

To conserve these species a variety of pest animal control programs are currently being conducted.

Aboriginal cultural heritage

The park was part of the home of the Murring people. More than 50 Aboriginal sites have been recorded and there are likely to be many more. Most known sites are middens but surface campsites/artefact scatters, rock shelters, scarred trees and a stone arrangement occur.

Historic heritage

The first European occupation of the park was around 1840, when early settlers undertook grazing and whaling operations in the area. A number of historic sites and structures remain in the park, including Boyds Tower, built in the 1840s and located on the southern shore of Twofold Bay. The tower was originally built as a lighthouse but was used mainly for spotting whales. Green Cape Lighthouse, built in 1883, is still used as a lighthouse.

Management issues

Pest plants

Weeds in the park mostly occur in areas previously used for grazing. Species present include:

- blackberry
- sweet briar
- arum lily
- century plant
- nightshade
- spear thistle
- *Pinus* spp.
- bitou bush.

Control programs on these species have been successful. Abandoned pine plantations in several locations are being eradicated through a ten-year plan. A control program for bitou bush, undertaken with the assistance of local landcare groups, is keeping the infestations to small areas in the park.

Pest animals

Pest animals present in the park include:

- rabbits
- foxes
- cats
- wild dogs.

Rabbit control is undertaken in the most densely infested areas, with additional revegetation works in previously grazed areas of the park. Fox and wild dog baiting is undertaken throughout the park.

Fire management

Graziers previously burned the woodland and heathland areas of the park. In recent times a number of fires have occurred, caused by arson, lightning strikes and escaped campfires, though some areas of the park have not been burnt for a considerable time. Hazard reduction burning is undertaken in some areas, as is fire trail maintenance.

Usage and facilities

Peak visitor times are over the summer months and at Easter. Recreational use of the area is mainly centred on the coastal fringe, suitable for beach activities, viewing scenery, fishing, camping, picnicking and walking.

Facilities include:

- lookout platforms over a number of coastal sites
- barbecues in some day-use areas
- access for people with a disability
- camping areas and day-use areas.

A vehicle entry fee applies, and is collected through self-registration stations at five locations. Camping fees apply at the Bittangabee Bay and Saltwater Creek camping areas.

Berowra Valley Regional Park

G Limberg

G Limberg

Berowra Valley Regional Park

Size	3870 ha, perimeter approx. 155 km
Created	1998
Location	20 km north-west of Sydney on the central coast of NSW.

Main picture: A glossy black cockatoo feeding on *Allocasuarina distyla* in the park.
Top right: *Isopogon anethifolius*.

Plans and agreements

■	Plan of Management (prepared by Hornsby Council)
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Berowra Valley Regional Park was reserved for the protection of native plants and animals and natural ecosystems of the Hornsby Plateau and the catchment of the Hawkesbury. It contains a number of regionally significant vegetation communities, including sandstone/shale transition forest, Sydney coastal river flat and blue gum high forest endangered ecological communities.

Points of special interest

The Great North Walk from Sydney to the Hunter River Valley passes along Berowra Creek through the park. Barnetts Road Lookout provides views across the Berowra Valley and camping is available in the nearby Crosslands Reserve.

Geology, soils and landforms

The Hornsby Plateau, on which the park sits, is dominated by Hawkesbury sandstone. The park is part of the Sydney Basin geological province. Other restricted but important geological features include Quartenary alluvium deposits, Wianamatta shales, and Wianamatta shale/Hawkesbury sandstone.

Ecosystems

The park is within the Hawkesbury Nepean River catchment and the Sydney Basin Bioregion. It supports 17 floral communities, the most dominant being Hawkesbury sandstone open forest. These communities range from mangrove, woodland and tall open forest to warm temperate rainforest and closed (casuarina) forest.

Native plants

The reserve contains populations of at least 13 endangered or threatened species, of which three endangered species are local native plants:

■ *Acacia gordoni* ■ *Persoonia hirsuta* ■ *Persoonia mollis* spp. *maxima*.

Native animals

Eleven animal species that are considered endangered or vulnerable occur within the park. The most significant of these are the endangered regent honeyeater and the southern brown bandicoot. Koalas have been previously recorded within the area.

Aboriginal cultural heritage

The park contains at least 24 significant Aboriginal heritage sites, including artwork, artefacts, signs of habitation, middens and campfire sites.

Historic heritage

Several items of historical interest are contained within the park, including Thornleigh Zig Zag Railway and historic quarry and steps, the single lane bridge spanning Tunks Creek, and a guest house at Crosslands.

Management issues

Pest plants

Crofton weed, privet and various grasses and lilies are the main species of pest plant in the park. These weeds are primarily associated with poor water quality at the edges of catchments that drain urban areas. Volunteer bush regenerators assist NPWS with its control programs.

Pest animals

Cats near urban areas are a problem for native animals and small birds. Foxes are likely to occur throughout the park. Control programs are in place for both feral cats and foxes.

Fire management

The major fire management issues in the park concern the adjacent urban areas. A hazard reduction burning program is prepared and implemented annually, and trails have been constructed to assist with fire management.

Usage and facilities

The number of people using the park is uncertain. However, given the closeness to urban areas, it is likely to be significant. Bushwalking and picnicking are popular activities in the park. Benowie Track (part of the Great North Walk) is a popular bushwalking route.

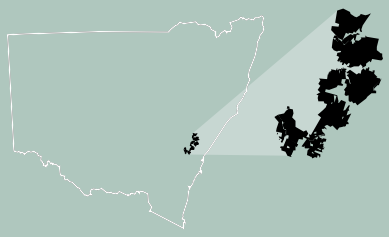
Picnic facilities are provided at Crosslands Reserve, The Jungo and Berowra Waters.

Laughing kookaburra

Blue Mountains National Park

I Brown/NPWS

J Little



Blue Mountains National Park

Size	248,148 ha, perimeter approx. 1447 km
Created	1958
Location	On the Blue Mountains Plateau, 50 km west of Sydney and extending from Glenbrook in the east to Mount Victoria, and from Mount Wilson in the north to Wombeyan Caves.

Main picture: Looking across Kings Tableland to Mount Solitary.
Top right: NSW waratahs bloom around September in the lower Blue Mountains, and around October at higher altitudes.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
■	World Heritage listed
	Japan-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
■	Under joint management

Snapshot of the park

Why it is conserved

Blue Mountains National Park was reserved for the protection of native plants and animals and natural ecosystems of the Blue Mountains Plateau and the Great Escarpment, and the catchment values of the Hawkesbury Nepean River system. Under an agreement with the Sydney Catchment Authority, areas of the park in the Sydney water catchment are jointly managed to preserve water quality and ecological integrity. The area is internationally significant for its outstanding diversity of eucalyptus and acacia species and its high number of rare or threatened plant species. The park forms an integral part of the Greater Blue Mountains World Heritage Area.

Points of special interest

The most popular sections are the complex of lookouts and walking tracks around Echo Point, Govetts Leap and Wentworth Falls, the Grose Valley, and the Euroka camping area at Glenbrook.

Geology, soils and landforms

The park is part of the Sydney Basin geological province and the Blue Mountains Plateau. The major rock outcrops in the park are the Permian and Triassic sandstones that have eroded to form the characteristic deep valleys, cliffs and canyons of the central Blue Mountains. The cliffs of the Grose and Jamison valleys are composed of Triassic sandstones of the Narrabeen Group.

Differing rates of erosion of the softer claystones are responsible for the benched cliffs of the upper Blue Mountains valleys. Erosion of the Grose subgroup sandstones has formed narrow slot canyons and a variety of pagoda rock formations in the Grose, Wollangambe and Bungleboori catchments. Remnants of overlying Wianamatta shale and Tertiary volcanics occur in scattered locations and contribute to the distinctive landforms of the park. The Illawarra Coal Measures of the Permian period are exposed as steep slopes below the cliffs in the Grose and Jamison valleys.

Ecosystems

The park is part of the Sydney Basin and South Eastern Highlands bioregions. The main ecosystem type is dry sclerophyll forest and woodland with shrubland, heathland and hanging swamps. There are small pockets of warm temperate rainforest in sheltered gullies. The park also contains regionally significant vegetation communities, such as warm temperate rainforest.

I Brown/NPWS

A canyon waterfall – the park has many spectacular canyons but exploring them is not for the inexperienced.

Native plants

There is a high concentration of rare and threatened species in the upper Blue Mountains area, with over 65 species recorded, including:

- *Microstrobus fitzgeraldii*
- *Epacris hamiltonii*
- *Derwentia blakelyi*
- *Acacia bakeri*.

Four endangered ecological communities identified under the *Threatened Species Conservation Act* occur in or near the park:

- shale/sandstone transition forest
- Sydney coastal river-flat forest
- Sydney turpentine-ironbark forest
- Blue Mountains shale cap forest.

Native animals

Although the park has not been systematically surveyed, it is known to include a high diversity of animal species, especially birds, reptiles and amphibians. Forty-six mammal species (including 27 marsupials and two monotremes), over 200 birds, 58 reptiles and 32 amphibians have been recorded for the Blue Mountains plateau area. The distribution of invertebrates is very poorly known, but the exceptional diversity of open forest and woodland communities in the park is likely to support a high diversity of invertebrates. Endangered species recorded in the park include:

- broad-headed snake
- regent honeyeater
- southern brown bandicoot
- bush thick-knee.

The Blue Mountains water skink, the only vertebrate species native to the Blue Mountains, also occurs in the park.

Aboriginal cultural heritage

The park is the traditional land of two language groups: the Daruk in the northern and central mountains, and the Gundangarra in the southern areas. Aboriginal people have occupied parts of the park for at least 14,000 years. Their use of the area has left rich and varied evidence, including archaeological deposits in both open sites and rock shelters, engravings, rock paintings and stencils, grinding grooves, stone arrangements and other features. Many natural features are likely to be sites of spiritual or historical significance. Measures to preserve Aboriginal sites include lessening impacts generally, modifying management programs that have potential to adversely affect sites and, where necessary, implementing site-specific conservation programs.

Historic heritage

The Blue Mountains has a unique place in the history of settlement of Australia, with Europeans first attempting to enter the area soon after the establishment of a penal colony at Sydney in 1788. The known range of historic sites within the park represent various historic categories or themes, including exploration, settlement, pastoralism and agriculture, mining, transport, water supply, conservation and recreation. A study of the historic walking tracks and visitor facilities has identified and documented many historic features. The development of conservation policies to guide maintenance and interpretation of these features is presently underway.

Management issues

Pest plants

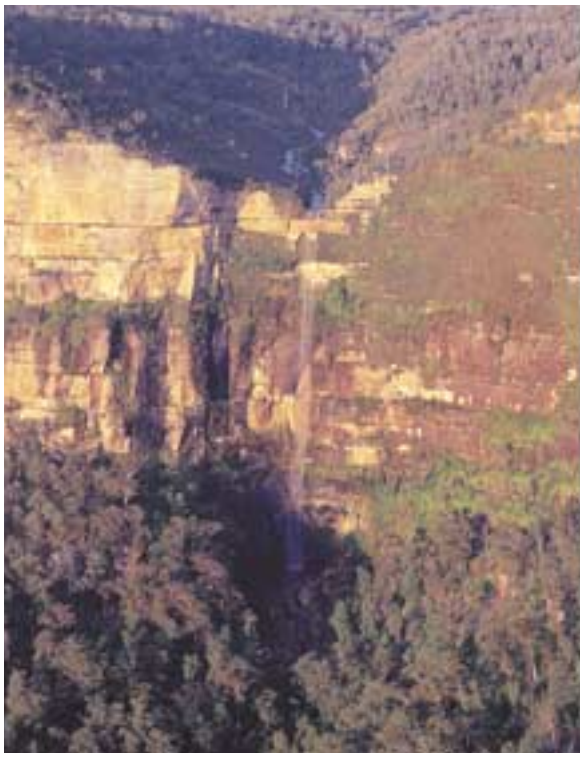
Boundary zones in the south of the park have been badly affected by past land-use practices, feral animals, and widespread growth of serrated tussock, blackberry, prickly pear and tiger pear. The Mount Werong-Banshea and Newnes Plateau areas are affected by Monterey pines that have spread from adjacent plantations. Control programs, including bush regeneration, herbicide application and mechanical treatment, are used to control these weeds.

Pest animals

Thirteen introduced animals of concern are known to occur in the park, including:

- rabbits
- feral pigs
- goats
- cattle
- horses
- cats
- wild dogs
- foxes
- European bees
- European carp.

Major programs have been undertaken targeting introduced grazing animals, as these animals affect the growth and regeneration of native vegetation, accelerate soil erosion, and create environments favourable for colonisation by introduced plants and assist their spread. Small-scale programs have been undertaken in recent years to target rabbits, goats, cats, foxes and introduced fish, mainly aimed at outbreaks rather than systematic control.



J Winter/NPWS

Govetts Leap, near Blackheath. The nearby lookout is one of the most popular vantage points in the park.

Fire management

The Blue Mountains is a region of high fire risk. There have been periodic severe fires resulting in loss of property and life. Having built-up suburban areas immediately adjacent to and often downwind of large tracts of flammable bushland requires well-planned fire control in these zones. Frequent fires, or very long intervals between fires, can be detrimental to the long-term protection of the park's natural biodiversity. A range of cooperative and consultative fire planning processes are a key aspect of fire management. A hazard reductions burning program is prepared and implemented annually, and trails have been constructed to assist with fire management.

Usage by the public

The park receives about 3 million visitors annually, making it one of the most popular national parks in Australia. Domestic and international tourists largely use the park by day only, mostly on the scenic escarpment areas of the Jamison and Grose valleys, from Wentworth Falls to Katoomba, and at Blackheath, although other accessible areas are popular for adventure ecotourism. The Glenbrook precinct is also popular with commercial ecotourism operators and overseas visitors because it is accessible and has highly visible wildlife populations.

Visitor facilities

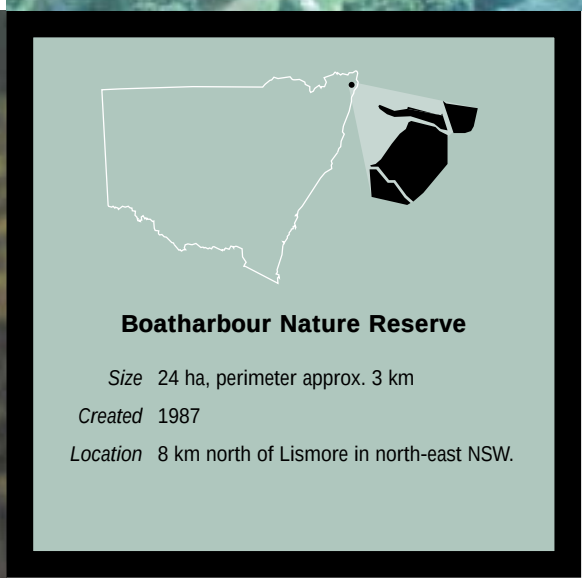
Major park management issues include providing information on the park's natural and cultural features and visitor facilities, as well as maintaining quality visitor facilities that are accessible to tourist vehicles and provide appropriate levels of public safety. Other issues include raising awareness of visitor impacts, monitoring visitor use and, where necessary, regulating visitor numbers, commercial activities and adventure activities.

The park contains a number of very popular visitor facilities, mostly walking tracks, lookouts, picnic grounds and camping grounds in the Katoomba, Blackheath, Wentworth Falls and Glenbrook areas. A visitor centre is located at Govetts Leap at Blackheath. A vehicle entry fee applies.

Boatharbour Nature Reserve

SMaN

F Myers/NPWS



Main picture: Grey-headed flying fox.
Top right: The reserve preserves an important remnant of the Big Scrub rainforests.

Snapshot of the reserve

Why it is conserved

Boatharbour Nature Reserve protects a listed threatened ecological community within the remaining Big Scrub remnants.

Points of special interest

The lowland rainforest ecosystem on floodplains in the NSW North Coast Bioregion was listed as an endangered ecological community in August 1999.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Geology, soils and landforms

The reserve is located on the Wilsons River floodplain. A small tributary creek flows through the reserve in a north-easterly direction. The whole reserve is subject to periodic flooding from the Wilsons River, fed by Coopers Creek, which lies to the north. Water flows over many years have led to mixing of alluvial deposits with the underlying basalt soils.

Ecosystems

The entire reserve supports a threatened ecological community (lowland rainforest on floodplains in the NSW North Coast Bioregion). Other features of note are a small area of subtropical rainforest, and a diversity of species-rich transition areas.

Native plants

The most significant vegetation community found is subtropical rainforest. It contains endangered flora, including *Austromyrtus fragrantissima*, *Ochrosia moorei*, *Rapanea* sp. A, and vulnerable flora, such as *Floydia praealta* and *Desmodium acanthocladum*.

More than 190 flora species have been recorded in the reserve. A concerted regeneration program has operated since 1989.

Native animals

Subtropical rainforest communities in the reserve provide primary habitat for threatened bird species, such as:

■ black bittern ■ red goshawk ■ wompoo fruit-dove ■ rose-crowned fruit-dove.

The reserve also provides essential habitat for birds that stay for the winter at lower altitude. The vulnerable little bentwing bat (*Miniopterus australis*) occurs within the park, as well as a colony of black, grey-headed and little red flying foxes (*Pteropus alecto, P. poliocephalus* and *P. scapulatus*).

Aboriginal cultural heritage

The reserve incorporates several sacred sites that are part of the identity, spirituality, connection and resource base of the Bundjalung nation. NPWS is working with the local Aboriginal community to improve protection of cultural values.

Historic heritage

Wilsons River was used to transport goods to local communities in the late 1800s and early 1900s. The remains of an old wharf exist within the reserve and on Wilsons River.

Management issues

Pest plants

The main weed problems are:

- madeira vine
- wandering Jew
- asparagus fern
- broad-leaved and small-leaved privet
- some camphor laurel around the periphery.

A restoration and rehabilitation plan has been prepared and is being implemented by a qualified group of regenerators.

Pest animals

Domestic roosters have been abandoned in the reserve. NPWS staff are currently removing them.

Fire management

The reserve is subject to a very low natural fire frequency. NPWS is yet to prepare a Fire Management Plan for the reserve.

Usage and facilities

The park receives an estimated 8000 visitors a year. Picnicking and birdwatching are popular activities. There is one day-use area, in the northern section of the park. Car parking, toilets, tables, interpretative displays and a paved walking track are provided. A vehicle entry fee applies.

Visitor facilities are currently being reduced in size to better reflect the primary conservation purpose of the reserve. The existing car park is to be relocated and both the car park and picnic area will become smaller. The need for on-site toilets is under review. These changes will allow the threatened ecological community to expand.

Bogandyera Nature Reserve

D Watts/NPWS

D Hunter/NPWS

Bogandyera Nature Reserve

Size	8752 ha, perimeter approx. 178 km
Created	2001
Location	On the south west slopes of south-eastern NSW, about 5 km south-west of Tumbarumba.

Main picture: Booroolong frog, one of the threatened species in the reserve.
Top right: Swift parrot.

Plans and agreements

	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the reserve

Why it is conserved

Bogandyera Nature Reserve conserves some vegetation areas and habitat for a range of threatened species not previously adequately conserved. The aim is to enhance the reserve's conservation values by active management of environmental issues such as weeds, feral animals and fire.

Native plants

The reserve conserves significant vegetation types, including:

- South West Slopes acacia dry herb/grass forest
- Western Tablelands dry herb/grass forest
- Western Slopes dry grass/shrub/herb forest.

Native animals

The reserve provides suitable habitat for at least 22 threatened fauna species; however, it is unknown which of these species are still present.

Other features

The dominant geology consists of outcropping rocks of granitic origin together with flats of iron-rich clays.

Management issues

Pest plants

The reserve has numerous scattered areas of blackberry. Most of the reserve appears to be infested with St Johns wort in the understorey, at varying levels of abundance. The introduction of weeds and their distribution are likely to be the result of past land use, particularly grazing.

Pest animals

The reserve contains populations of wild horses, rabbits, pigs, hares and wild dogs. It is NPWS policy to respond to substantiated reports by neighbours of feral pig and wild dog activity on nearby lands or in the perimeter area. There will be ongoing liaison with neighbouring land-owners concerning killing of stock by wild dogs, and assistance will be given wherever possible.

Fire management

The reserve was last completely burnt out by wildfire in the early 1950s but there have been very few wildfires and no large wildfires since then. Since that time, however, a number of smaller hazard reduction burns have been carried out in various places.

Usage and facilities

Neighbours of the reserve have used the area in the past for recreational pursuits such as horseriding, camping, and fishing in Mannus Creek. Current use patterns are unknown, but there is some evidence that a number of visitors camp at Mannus Creek during the Easter and summer holiday periods. Parts of the reserve have been used for grazing and the small number of existing grazing leases are to be phased out by June 2002.

Large tongue orchid

Border Ranges National Park

S Cohen/NPWS

S Cohen/NPWS

Border Ranges National Park

Size 31,683 ha, perimeter approx. 216 km

Created 1979

Location In the far north-east of NSW, 750 km north of Sydney and 150 km south of Brisbane. Adjoins Queensland's Lamington National Park.

Main picture: Brindle Creek has picnic areas and panoramic views.
Top right: Grass trees dot the landscape of the park.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Border Ranges National Park provides protection for the most extensive tracts of subtropical rainforest in NSW, as well as a complex mosaic of dry and wet sclerophyll forests. The park protects a very high number of species found only in this area.

Points of special interest

The park forms part of the Central Eastern Rainforest Reserves (Australia) (CERRA) World Heritage area. The Warrazambil and Lost World Wilderness areas cover much of the eastern half of the park. The identified Levers Wilderness area covers the western half of the park. The park also protects the headwaters of Gradys, Findon, Warrazambil and Collins creeks, major tributaries of the Richmond River.

Geology, soils and landforms

The park includes part of the erosion caldera of the Mount Warning shield volcano – the largest caldera in the southern hemisphere. Mount Warning volcano in the east and Focal Peak volcano in the west produced flows of rhyolite and basalt, which have eroded at different rates. The more erosion-resistant rhyolite has produced spectacular cliffs, deep gorges and razorback ridges. Countless waterfalls characterise the park.

Ecosystems

The park supports some of Australia's greatest rainforest diversity. Four of the five rainforest types found in NSW are protected within the park, with:

- extensive tracts of subtropical rainforest
- well-developed stands of dry rainforest
- small, isolated patches of cool temperate and warm temperate rainforests at higher altitudes
- the northern limits of Antarctic beech (*Nothofagus moorei*)
- extensive stands of mature hoop pine, now rare in NSW
- 230 native animal species.

Native plants

The park supports 559 native plant species, including six threatened species, several of which are found only in the area. These include:

- *Euphrasia* spp. *Bella*
- orchid (*Bulbophyllum globuliforme*)
- bog onion (*Owenia cepiodoa*).

Native animals

The park's mosaic of vegetation types and extensive rainforests supports a diversity of threatened and endemic fauna. Forty threatened animal species are known, including four endangered species:

- eastern bristlebird
- double-eyed fig-parrot
- black-breasted button-quail
- Hastings River mouse.

Several species recovery programs are being implemented in the park, incorporating population monitoring, habitat assessment and fire management.

Aboriginal cultural heritage

Although the local Aboriginal community has a strong association with the park, little formal research has been undertaken to document the significance of the park in this respect.

Historic heritage

The park was previously used extensively for logging. In 1918 Mr Walter Lever established the Long Creek tramway. The tramway and associated village and sawmill extracted hoop pine and other timbers from the Long Creek valley until the early 1950s. Little physical evidence remains today.

Management issues

Pest plants

The main problem weed species are:

- lantana
- Parramatta grass (very limited extent)
- groundsel bush
- moth vine.

Of these, groundsel bush and Parramatta grass have been largely controlled. Regular control programs are undertaken in conjunction with adjoining landholders and rural lands protection boards.

Pest animals

There are very few pest animals in the park. The main species is the wild dog, and foxes are also a problem on the margins of the park, being a particular danger to threatened fauna. Recently the cane toad has invaded some parts of the park.

Fire management

A successful cooperative fire management approach with neighbours has reduced the frequency of fires entering the park. Fire management in the park is primarily limited to hazard reduction and habitat management burns.

Usage and facilities

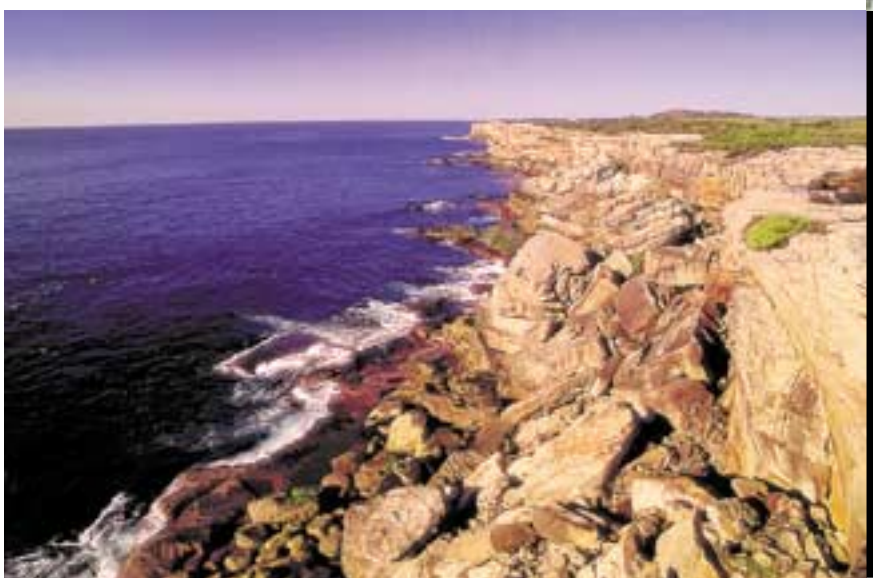
This park is readily accessible via Tweed Range Scenic Drive. Facilities include:

- camping and picnic areas
- numerous scenic lookouts
- a selection of walking tracks, ranging from short walks to full-day walks
- composting toilets.

Visitor access management programs have been implemented to reduce the threat of trampling and damage to the habitats of threatened species. Camping and vehicle entry fees apply.

Botany Bay National Park


M Cufer/NPWS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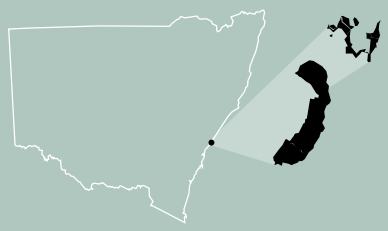


Botany Bay National Park

Size	458 ha, perimeter approx. 31 km
Created	1984 (parts first reserved in 1899)
Location	Within the Sydney metropolitan area, at the northern headland (La Perouse) and southern headland (Kurnell) of the entrance to Botany Bay.

Main picture: Cape Solander, named after Daniel Solander, botanist with the *Endeavour*.
Top right: Cook's landing site at Kurnell.

Snapshot of the park

Why it is conserved

Botany Bay National Park was reserved for the protection of an important sample of the landscapes, ecosystems, vegetation communities and habitats of the Sydney coastline. It also protects the scenic landscapes that define the entrance to Botany Bay. The park is associated with European exploration and settlement, and early contact between indigenous Australians and Europeans.

Plans and agreements

■	Plan of Management – draft
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
■	China-Australia Migratory Bird Agreement
■	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The park includes the site of first contact in 1770 between indigenous Australians and the crew of the *Endeavour*, at Kurnell, and is seen as a symbolic meeting place of cultures. The park also holds the place of the last sighting of the French explorer Comte de Lapérouse in 1788. The park is an important recreational spot for locals and Sydneysiders from further afield.

Geology, soils and landforms

The park is part of the Sydney Basin geological province. Its geology is dominated by Hawkesbury sandstone laid down during the Triassic period. Early Tertiary basalt in the sedimentary rocks has been eroded, leaving narrow gorges in the sandstone cliffs. White Pleistocene aeolian sands and alluvial deposits overlay the sandstone in most of the park, while younger yellow Holocene dunes are found nearer the coastline.

Ecosystems

The park is part of the Sydney Basin Bioregion. There are significant differences in the vegetation found on the park's two headlands. The vegetation of the northern section is very diverse, with over 350 species recorded. Most of this section consists of heath, but it also has thickets of coastal tea tree, open scrub, and low closed forest. Most of the southern section consists of low to medium heath, but it also has swamps and dense thickets of fine-leaved paperbark.

Native plants

The northern section includes a number of sites containing Eastern Suburbs Banksia Scrub that have been declared endangered under the *Threatened Species Conservation Act*. A draft recovery plan has been prepared for this community and several interim actions taken, such as site assessment and weed removal. The southern section contains a number of rare and threatened plants; a nomination has been submitted for an endangered community in this section.

Native animals

Common bentwing bats roost in one of the tunnels at Henry Head in the northern section of the park. The endangered green and golden bell frog and the vulnerable wallum froglet are found in the southern section. Several bird species listed under the Japan-Australia Migratory Bird Agreement (JAMBA) frequent the park. Monitoring of these species is ongoing.

Aboriginal cultural heritage

At the time of the first encounters with Europeans, Aboriginal people of the Dharawal nation occupied the park. Although many Aboriginal sites have been destroyed, over 30 have been recorded. These include rock engravings, rock shelters, middens, burial sites and axe-grinding grooves. The Aboriginal heritage is highly varied and includes elements such as traditional ecological knowledge, documentary history, and the value of the area to contemporary Aboriginal communities.

Historic heritage

The park contains a number of historic places and landscapes of national significance. In the northern section there are the Macquarie Watch Tower, the Cable Station and monuments, and Bare Island. In the south are Captain Cooks Landing Place memorials at Kurnell. Other sites include the Henry Head and Cape Banks fortifications and the Alpha Farm cellar at Kurnell. Both sections mark the arrival of Europeans on the east coast.

Management issues

Pest plants

There are a large number of introduced plants, of which bitou bush is the largest problem. Release of the bitou tip moth and the bitou tortoise beetle appears to be having some success, as has aerial spraying. Other weeds include:

- lantana
- asparagus fern
- pampas grass
- blackberry
- alligator weed
- ludwigia
- buffalo grass
- coral trees.

Extensive weed removal and bush regeneration works have been carried out with the cooperation of local councils and park neighbours.

Pest animals

Non-native animals found in the park include:

- feral cats
- wild dogs
- rabbits
- foxes
- pigs
- domestic cats and dogs.

Trapping of feral cats and baiting and trapping of wild dogs, rabbits and foxes is undertaken periodically. A control plan is currently being produced.

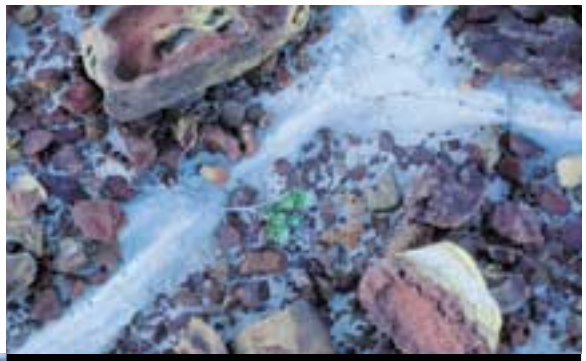
Fire management

The park is subject to periodic wildfires, though generally in small sections. Fires are mostly caused by humans, with arson a common problem. A draft fire plan has been prepared for the northern section, and one is in preparation for the southern section. A hazard reduction burning program is prepared and implemented annually, and fire trails have been constructed.

Usage and facilities

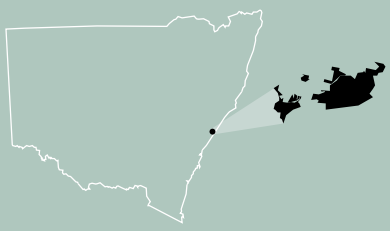
The main visitor area in the northern section is the La Perouse peninsula, which attracts an estimated 400,000 visitors each year. The southern section is used by a similar number of visitors. The main areas for visitors are the Discovery Centre at Kurnell, the Lapérouse Museum and Visitor Centre in the old Cable Station (entry fee applies), the monuments at Captain Cooks Landing Place, and the area between Cape Solander and Potter Point. Picnicking, bushwalking, fishing, surfing and scuba diving are popular activities. A vehicle entry fee applies at Kurnell.

Bouddi National Park



J Winter/NPWS

J Winter/NPWS



Bouddi National Park

Size	1216 ha, perimeter 45 km
Created	1935
Location	On the Central Coast of NSW, 20 km south-east of Gosford and north of the Hawkesbury River.

Main picture: The walking track between Putty Beach and Maitland Bay.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
■	China-Australia Migratory Bird Agreement
■	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Bouddi National Park was reserved for the protection of native plants and animals, natural ecosystems and cultural heritage.

Points of special interest

The park forms part of the northern entrance to Broken Bay. Together with Barrenjoey Headland, Lion Island and Brisbane Water National Park, the park provides an impressive natural foyer for the Hawkesbury River. The marine extension to the park is one of the few marine national park extensions in NSW. The park protects important vegetation remnants and a historical shipwreck, the remains of the *SS Maitland*.

Geology, soils and landforms

Comprised primarily of Triassic Hawkesbury sandstone, the park is part of the Sydney Basin geological province and the Hornsby Plateau. Ancient wind-blown sand dunes are also present.

Ecosystems

The park is part of the Sydney Basin Bioregion. Plant communities within the park include:

■ closed forest ■ tall open forest ■ low open forest ■ heath ■ grassland ■ swamp.

Remnant sand dune plant communities also occur.

Native plants

Many plant species occurring in the park are considered to be important species in the Sydney Basin Bioregion. *Rulingia hermaniifolia*, which occurs at Box Head, is at the northern limit of its distribution. Other important species include:

■ *Diospyros australis* ■ *Gompholobium virgatum* ■ *Acacia filicifolia, quadrilateralis* and *sophorae* ■ *Scolopia braunii* ■ *Amyema pendulum* ■ *Howittia triclocularis* ■ *Malaisia scandens.*

Native animals

Along the coast and foreshores of the park are populations of little tern, sooty oystercatcher, osprey, pied oystercatcher, eastern curlew and bush stone-curlew. Tall eucalyptus forests support populations of masked owl, sooty owl and powerful owl. The glossy black cockatoo favours the casuarina groves in the forests and the heaths within the park.

The differences in age and structure of the heaths provide suitable habitats for a variety of mammals, such as the northern brown bandicoot, the swamp rat and the common bush rat. The tall eucalyptus forests support greater glider, yellow-bellied glider and sugar glider populations. At least five species of microbats are known to occur, including the greater bentwing bat, lesser bentwing bat and the yellow-bellied sheathtail bat. A number of marine mammal sightings have also been recorded along the foreshores and within the marine extension to the park.

Aboriginal cultural heritage

There is a diverse number of site types and a high density of Aboriginal sites within the park. Sites feature rock engravings, cave art, shelter deposits, middens and axe-grinding grooves.

Historic heritage

Important aspects of the park include its association with the history of the conservation movement in NSW, sites of a number of historic shipwrecks, including that of the *SS Maitland*, which ran aground at Maitland Bay in 1898, and military emplacements that were part of the defensive strategies for the perceived military threat to south-eastern Australia during World War Two.

Management issues

Pest plants

Bitou bush is the primary weed affecting dune and hinterland vegetation. Lantana is also a dominant weed.

Pest animals

Cats near urban areas are a problem for native animals and small birds. An education program for neighbours is conducted in conjunction with local government. Foxes occur throughout the park, and deer have also become established.

Fire management

Major concerns of park managers include fuel build-up near urban areas, wildfire control, protection of neighbours and visitors, and the impact of fire on native ecosystems. A draft Fire Management Plan has been prepared. A hazard reduction burning program is prepared and implemented annually, and trails have been constructed to assist with fire management.

Usage and facilities

Visitors to the park are estimated to be in the vicinity of 450,000 annually. Fishing, bushwalking, picnicking, camping, day touring and wildlife photography are the most popular activities.

The park contains a number of very popular visitor facilities at Putty Beach and Little Beach. A volunteer staffed visitor information centre is located above Maitland Bay. The primary walking track in the park is the Bouddi Coastal Walk. A vehicle entry fee applies for the park.

Brindabella National Park

J Briggs/NPWS

J Briggs/NPWS

Brindabella National Park

Size	18,472 ha, perimeter approx. 166 km
Created	1996
Location	On the border of NSW and the ACT, 30 km west of Canberra.

Main picture: Mount Coree, on the border between NSW and the ACT.
Top right: The forest vegetation in the park is typical of the northern Australian Alps.

Snapshot of the park

Why it is conserved

Brindabella National Park is the northernmost park of what are known as the Australian Alps national parks; the Australian Alps straddle the ACT, NSW and Victorian borders. The park contains several plant and animals species at the northern limit of their range.

Plans and agreements

	Plan of Management
■	Fire Management Plan – draft
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

Brindabella is a mountainous park with many forests, and protects a number of threatened species. The park is suitable for visitors seeking experience of the wild, and is popular for bushwalking, orienteering, 4WD touring and birdwatching. The summit of Mount Coree has excellent views of the surrounding area.

Geology, soils and landforms

Most of the park lies on Lower Devonian volcanic rocks of the Black Range Group. Mount Coree dominates the park; the summit area is small, with steep slopes on all approaches. Cliff lines occur on the north-west face of the mountain. The park provides water catchments to the Murrumbidgee and Goodradigbee rivers in NSW and the Cotter River in the ACT. Soil fertility is generally low, and all soils in the park are prone to erosion.

Ecosystems

The majority of the park contains montane or moist open forest vegetation communities typical of higher parts of the northern Australian Alps. There is a variety of vegetation types, from drier lowland forests to montane types.

Native plants

A large number of montane and subalpine plant species occur in the park, including fen and sphagnum bog species and 18 species of eucalypt. There are no known endangered or vulnerable plant species.

Native animals

Fauna surveys have not been comprehensive or systematic within the park, but scientific inventories in the adjacent Cotter catchment have recorded a number of species of interest, including the smoky mouse and corroboree frog. In the park itself 298 species of animals in 96 families have been recorded. Some species listed in the *Threatened Species Conservation Act* may occur, as there is suitable habitat for them.

These may include:

- smoky mouse
- spotted-tailed quoll
- yellow-bellied glider
- squirrel glider
- common bentwing bat.

Aboriginal cultural heritage

The area covered by the park lies within the boundaries of the Ngunawal Aboriginal people's lands. Occupation of the area has been dated to approximately 5000 years before European settlement. Few occupation sites have been recorded because no systematic archaeological survey has been undertaken. The sites recorded are generally small surface scatters of artefacts or campsites associated with bogong moth access routes and waterways.

Historic heritage

Relatively few sites of historic significance are known to occur within the park. The ruins of a fire lookout hut, survey markers, dams and fencelines are located throughout the area. Hume Sawmill is a significant site representative of one of the former land uses of the area. Bag Range Hut lookout is also a site of historic interest

Management issues

Pest plants

Fifty weed species have been found in the park, most of which are small herbs. Blackberry and briar are common, as are softwoods, notably radiata pine and others, that have spread from nearby plantations.

Pest animals

Wild dogs have been reported in the park, and control programs have been undertaken in response to stock loss problems on neighbouring properties. Other introduced animals present include:

- rabbits
- black rats
- pigs
- cats
- foxes.

Unconfirmed reports of deer and goats have also been received.

Fire management

A variety of fire management strategies have been developed to deal with fires in the park, including fuel reduction, fire trails, detection, and cooperative arrangements. Close to boundary areas, fuel reduction programs and fire trail maintenance systems have been designed and implemented in cooperation with neighbours. A Fire Management Plan is being prepared. Bushfire suppression operations may require the construction of temporary trails, helipads and firelines.

Usage and facilities

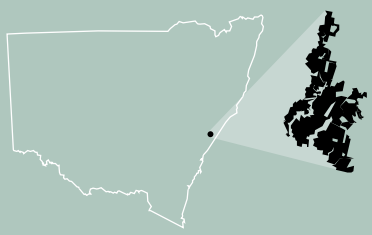
The primary recreation feature of the park is Mount Coree, which can be accessed by 4WD vehicles. The park's system of trails provides opportunities for 4WD and motorcycle enthusiasts, and a number of commercial operators run tours. Horseriding does occur within the park but appears to be associated with an annual endurance event. Camping occurs at an informal campsite at the base of Mount Coree and at the top crossing on Mountain Creek. There are no formal facilities provided in the park, though some areas are good for picnicking.

In April 2001 land was cleared beneath Transgrid powerlines without environmental guidelines being adhered to, resulting in large areas of bare soil being exposed to winter rains. An emergency rehabilitation program has been initiated to avoid a large siltation problem in mountain rivers.

Brisbane Water National Park

J Winter/NPWS

J Winter/NPWS



Brisbane Water National Park

Size	11,497 ha, perimeter approx. 283 km
Created	1959
Location	On the central coast of NSW, 40 km north of Sydney.

Main picture: Somersby Falls, along the Great North Walk.
Top right: Looking to Barrenjoey from the Tony Doyle Lookout.

Plans and agreements

■	Plan of Management
■	Fire Management Plan – draft
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Brisbane Water National Park was reserved for the protection of native plants and animals, natural ecosystems and cultural heritage.

Points of special interest

The most popular sections are Somersby Falls and Girrakool picnic areas, Bulgandry Aboriginal Engraving Site and the Great North Walk.

Geology, soils and landforms

The park is part of the Sydney Basin geological province and the Hornsby Plateau and is comprised primarily of Triassic Hawkesbury sandstone. Tertiary basalt is seen in the sandstone in the Dillons Crater area to the south.

Ecosystems

The park is within the Hawkesbury Nepean River catchment and the Sydney Basin Bioregion. Plant communities include:

- low open forest
- open woodland with a heath-like understorey
- hanging swamps
- remnant subtropical rainforest.

Extensive stands of mangroves cover the estuarine mudflats in Moonee and Mullet creeks and in Brisbane Water. A vegetation map and report have been prepared.

Native plants

Regionally significant populations of the following species occur in the park:

- *Prostanthera junonis*
- *Grevillea shiressii*
- *Darwinia procera*
- *Darwinia glaucophylla*
- *Melaleuca deanei*
- *Grevillea oldei*.

Native animals

In the park there are regionally significant populations of:

- spotted-tailed quoll
- yellow-bellied glider
- koala
- fawn-footed mosaic-tailed rat
- broad-headed snake
- red-crowned toadlet.

Aboriginal cultural heritage

There is a high density of Aboriginal sites of diverse types in the park, including rock engravings, cave art, shelter deposits, middens and axe-grinding grooves. Bulgandry Aboriginal Engraving Site has one of the best collections of rock engravings in the Sydney area.

Historic heritage

A number of historic places are associated with the Sydney-to-Newcastle rail link, which was completed in 1889 and which adjoins the park. Other sites relate to agricultural operations, quarrying for stone and mining for ochre pigments. A small number of cabins are found at Mullett Creek, for which a conservation management plan has been prepared.

Management issues

Pest plants and animals

Weeds are not a significant problem in this park. Foxes occur throughout the park, goats occur in the southern parts, and deer have become established in the north.

Fire management

The major fire concerns in this park are build-up of fuel near urban areas, wildfire control, protection of neighbours and visitors, and the impacts of fire on native ecosystems. There is an annual hazard reduction burning program, and fire management trails have been constructed. A draft Fire Management Plan has been prepared.

Usage and facilities

There are an estimated 250,000 visitors to the park each year. Fishing, bushwalking, picnicking, camping, day touring and wildlife photography are the most popular activities.

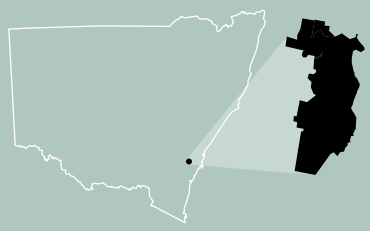
The park has visitor facilities at Somersby Falls and Girrakool. The main walking track is the Great North Walk. A vehicle entry fee applies.

Chocolate lily

Bungonia State Recreation Area

J Taylor/NPWS

M Van Ewijk



Bungonia State Recreation Area

Size	3978 ha, perimeter approx. 40 km
Created	1974
Location	In the southern tablelands of NSW, 190 km south-west of Sydney, 140 km north-east of Canberra and 35 km east of Goulburn. Adjoins Morton National Park.

Main picture and top right: Views of Bungonia Gorge.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the area

Why it is conserved

Bungonia State Recreation Area provides protection for a range of sandstone plateau and limestone-dependent plant and animal communities found in the southern tablelands of NSW, as well as significant geological heritage features, including karst. It provides accessible opportunities for a variety of recreational pursuits.

Points of special interest

Bungonia is arguably the oldest recreation and conservation park in the state, originally gazetted for public recreation in 1872. It is one of the three significant recreational caving areas in the country. The caves are deep compared to most other Australia cave systems, and support a population of the vulnerable large bentwing bat. The park also has the deepest limestone slot canyon in the Southern Hemisphere.

Geology, soils and landforms

The Bungonia area is located on the Lachlan Fold Belt next to the south-western edge of the Permian Sydney Basin. Most of the area consists of Ordovician sandstone, shale, phyllite and siltstone. This is overlain by the late Silurian/early Devonian Bungonia Group, which consists of shallow marine sediments containing limestone, plus volcanic sandstone, siltstone and shales. Bungonia lies on the edge of a plateau which is deeply dissected by the Shoalhaven River and tributaries. The soils of the area are shallow and highly susceptible to erosion when devoid of vegetation cover.

Ecosystems

Most of the vegetation consists of woodland on the ridges and steep slopes, and open forest on the moderate slopes and plateau. Species vary greatly with soil and aspect. Galleries of dry rainforest occur along some creeks in the park, the most westerly occurrence of this in a conservation reserve in southern NSW. The karst environment supports a unique ecosystem and provides bat wintering and nursery sites, as well as a number of rare invertebrate cave species.

Native plants

There is a large number of threatened plants, some of which are protected only in this recreation area. These include:

- *Haloragis exalata*
- *Pterostylis calceolus*
- *Acacia chalkeri*.

A number of other plants are at or near their eastern limit. Some species are restricted to the limestone areas.

Native animals

Mammals, reptiles and diverse bird fauna can be found in this recreation area. Peregrine falcons are known to nest in the limestone canyon, and the presence of koalas has recently been confirmed. Two species of bats frequent the caves, and the caves also support a diverse range of invertebrates, some of which are rare and appear to be unique to the caves. These include a silverfish, two beetles, a pseudoscorpion and a spider.

Aboriginal cultural heritage

Little is known of the traditional significance of the area to Aboriginal people but the presence and extent of stone artefact scatters indicates frequent use for making tools from a number of rock outcrops. At least one cave was used as an Aboriginal burial site.

Historic heritage

Bungonia was one of the first areas in Australia to be reserved for public recreation. It was reserved the same year as the world's first national park, Yellowstone, in the USA. The caves were an attraction to visitors early in its history. Small-scale fossicking and mining occurred during the late 19th and early 20th centuries. Numerous remains of mine shafts, hut sites and water races are scattered mainly throughout the southern section of the park, and there are remnants of a village built by miners, which is one of the few examples remaining in NSW.

Management issues

Pest plants

Several species of introduced plants have been recorded. The main problem weeds are:

- serrated tussock
- blackberry
- tree of heaven
- fireweed.

Control programs are undertaken seasonally in cooperation with local government.

Pest animals

The main pest animals are:

- foxes
- wild dogs
- cats
- pigs
- goats
- rabbits.

Foxes, wild dogs, cats and pigs pose a major problem for native animals, particularly threatened animal species, while goats and rabbits damage the already fragile soils and threaten endangered plant species. Control programs are being undertaken for all pest species, though goat control is currently the highest priority.

Fire management

Bungonia is subject to infrequent but intense wildfires, which play a role in the distribution of flora and fauna in the recreation area. A large proportion of the fires are started by lightning strikes. Three major fires have occurred in the park since 1966. Fire management is primarily limited to suppressing wildfires, though some limited hazard reduction burning is carried out.

Usage and facilities

Bungonia attracts approximately 30,000 visitors each year. The most common activities are bushwalking and camping (all year round), caving (during winter months), and abseiling, rock climbing and canyoning (generally during warmer months).

Facilities include:

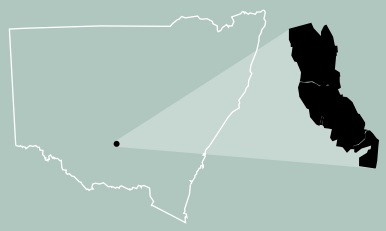
- three lookouts with disabled access
- two car parks with facilities suitable for people with disabilities
- picnic areas with gas barbecues
- a campsite with camp kitchen and amenities block.

Vehicle entry and camping fees apply.

Cocoparra National Park

SWaN

S Garland/NPWS



Cocoparra National Park

Size	8358 ha, perimeter approx. 81 km
Created	1969
Location	In the southern Riverina region of NSW, about 25 km north-east of Griffith. Adjoins Cocopara Nature Reserve.

Main picture: Though described as a desert by explorer John Oxley, the park has a number of spectacular waterfalls after heavy winter rains.

Snapshot of the park

Why it is conserved

Cocoparra National Park provides protection for the dramatic scenery of the southern half of the Cocoparra Range. It also protects a large number of Aboriginal sites, and significant remnant woodland communities in an area that has been largely cleared for agriculture.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The park protects a number of natural, cultural and recreation features. After heavy winter rains there are many spectacular waterfalls, and in spring there are impressive displays of wildflowers.

Geology, soils and landforms

The Cocoparra Range consists of conglomerates and sandstones that were formed 400 million years ago. Local folding and weathering of the rock strata produced a 'hogsback' range, with cliffs and gorges a feature of the landscape. The crest of the range lies close to the eastern side of the park and has a series of peaks; Mount Bingar at 455 metres above sea level is the highest. Soils are shallow on ridges and slopes but form deeper sediments of red and brown clayey sand and loam soils in lower valleys.

Ecosystems

The park provides refuge for a number of plant and animal communities typical of semi-arid ranges of this part of the state. The plains vegetation represented in the park is not typical of the original vegetation, which has long been cleared for agricultural purposes. Types include:

■ hill slope vegetation ■ ridge-top vegetation ■ lower slopes and valley floors vegetation
■ sheltered slopes vegetation.

These vegetation types consist mainly of black and white cypress pine, Dwyers gum and bimble box. Some 500 native plant species and 190 native animal species have been recorded in the park and adjoining nature reserve.

Native plants

The park protects communities typical of south-western slopes, and many plant species such as ferns and orchids are at the western limit of their range. A number of rare, vulnerable and threatened plant species are found, including:

- *Lomandra patens*
- *Pomaderris cocoparrana*
- *Phebalium obcordatum*.

Native animals

Twelve threatened species have been recorded in the park and adjoining nature reserve, including:

- painted honeyeater
- superb parrot
- turquoise parrot
- glossy black cockatoo
- chestnut quail-thrush
- Gilberts whistler
- southern bell frog
- greater long-eared bat.

Aboriginal cultural heritage

Cocoparra Range is part of the traditional lands of the Wiradjuri nation. Aboriginal sites found within the park suggest that Aboriginal occupation of the range occurred during winter and spring. Most sites are unrecorded, and site distribution and density is still poorly known. Surveys currently being conducted in the park will significantly aid in developing a broad understanding of site distribution in the area.

Historic heritage

The first Europeans to visit the area were John Oxley and the members of his 1817 expedition exploring the Lachlan Country. The western boundary of the park and the adjoining nature reserve join the Whitton Travelling Stock Route. Cobb & Co coaches travelling between Melbourne and Queensland in the late 19th century extensively used this route.

Management issues

Pest plants

A number of introduced plant species have been recorded. The main pest problems are:

- horehound
- boxthorn
- bridal creeper
- Bathurst burr
- agricultural weeds such as Patersons curse and Saffron thistle
- St Johns wort.

Control programs are regularly undertaken. Programs have also involved the Department of Agriculture and the CSIRO in releasing biocontrol agents for horehound. The spread of boxthorn has been substantially reduced, with only minor infestations now occurring.

Pest animals

The main pest animals found in the park are goats and foxes, and, to a lesser extent, cats, pigs and rabbits. Goats and foxes pose a particular problem for native animals, and control programs have concentrated on these two pest species. Control programs are regularly undertaken in conjunction with local landholders and rural lands protection boards.

Fire management

Fire management in the park is primarily limited to maintenance of boundary tracks and internal fire trails and suppressing wildfires. There have been several wildfires in the park and adjoining nature reserve, caused by lightning strikes and fire entering the park. All have been readily contained.

Usage and facilities

The park attracts a substantial number of visitors each year, with peak use occurring over the spring months. The most common activities are picnicking, bushwalking and camping. Some visitors are also taking up adventure activities such as rock-climbing.

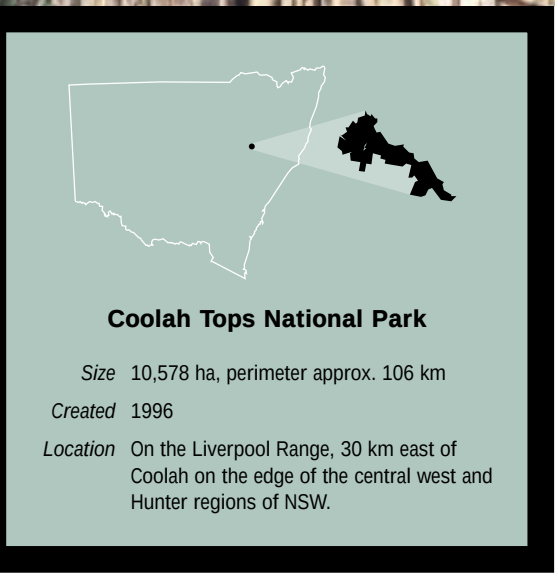
Facilities provided for visitors include:

- barbecues (wood) in designated picnic areas
- a camping area at Woolshed Flat, with barbecues, tables, toilets and tankwater
- a loop walking track at Jacks Creek picnic area
- short walks to Falcon Falls and Woolshed Falls
- a three-hour walk to the trig point on Mount Brogden.

Coolah Tops National Park

M Sharp/NPWS

M Sharp/NPWS



Main picture: Giant grass trees near Shepherds Peak.
Top right: Columnar basalt at Tamalie Creek.

Snapshot of the park

Why it is conserved

Coolah Tops National Park was protected in order to conserve one of last remaining stands of old-growth forest on the Liverpool Range (part of the Great Dividing Range) and one of the most westerly occurrences of snow gum and mountain gum tall open forest.

Plans and agreements

■	Plan of Management – draft
■	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

Interesting features include Norfolk Falls, Talbragar Falls and several lookouts, such as Shepherds Lookout and Bundella Lookout. Old-growth forest, tall grasstree groves and interesting geological features are also worth seeing.

Geology, soils and landforms

Coolah Tops is an elevated basalt plateau on the Liverpool Range. The plateau rises steeply above the surrounding lands and is flanked by cliffs along its northern edge. The basalt is known as the Liverpool Range Beds and is thought to have originated from volcanic vents further to the east on the Liverpool Range during the Tertiary period. Rock types are olivine basalt and dolerite, with occasional sediment beds.

Ecosystems

The park is part of the Brigalow Belt South Bioregion. The dominating tall open forest vegetation communities differ from the other reserves of basalt in the district, which commonly support cool temperate rainforest or have different dominant species. The park contains some old-growth forest areas and has extensive and well-developed snow gum (*Eucalyptus pauciflora*) and silvertop stringybark (*E. laevopinea*) forests, including the tallest recorded examples of these species. The subalpine forests of the park have a few occurrences in a small number of high altitude locations.

Native plants

The park is well known for its very large grasstree groves and tall snow gum and messmate stringybark forests. The threatened plants *Discaria pubescens* and *Teucrium* sp. D, which are otherwise restricted to the Tamworth district, have been recorded in the park.

Native animals

For its size, the park supports a good range of native animals and provides optimum habitat for many arboreal mammals. It has the highest recorded densities of the greater glider (*Petauroides volans*) in NSW. A number of species in the park are at the western limit of their range.

Aboriginal cultural heritage

The Coolah Tops area was part of the land of the Gamilaraay (or Kamilaroi) Aboriginal people, whose territory stretched from Dunedoo and Merriwa northwards into Queensland. Today it is in the area of the Walhollow Local Aboriginal Land Council. The name Coolah is an Aboriginal word meaning 'valley of the winds'. Twenty-five Aboriginal cultural sites have been recorded in the park, as well as a number of isolated artefact finds. The sites indicate that Aboriginal people used the area quite intensively for hunting and food gathering, either visiting it or living there for part or all of the year. Most of the sites are open campsites on level ground next to streams and swamps. The artefacts consist of flakes, backed blades, scrapers, cores, an axe fragment and a hammerstone. All sites are protected in conjunction with the local Aboriginal Land Council.

Historic heritage

There are a number of structures remaining from past agricultural and logging, including sawmill and barracks sites. These are of high local historical interest because of the former importance of forestry to the economy of the area.

Management issues

Pest plants

The native stinging nettle and some pasture weeds, such as spear thistle and catsear, are widespread in the park but do not seriously threaten the native vegetation in the area. The noxious weeds St Johns wort, skeleton weed and blackberry are found infrequently in the park, although blackberry is common in some sites. Two small pine plantations are located in the park. Spraying programs are undertaken for noxious weeds. Blackberry infestations are being progressively controlled but ongoing monitoring and treatment will be necessary. Access to many of the infestations is difficult and poses major problems for control of this species.

Pest animals

Seven species of introduced mammals are found in the park:

- foxes
- goats
- rabbits
- cats
- dogs
- pigs
- black rats.

Foxes and goats are common and it is possible that they have displaced spotted-tailed quolls and brush-tailed rock wallabies from the area. An active feral goat control program is in place in conjunction with local landholders and the Department of Agriculture.

Fire management

The park has a low fire danger because of the cool climate, high rainfall and moist undergrowth. Creeks on the plateau provide good fire breaks. A variety of fire management strategies have been developed, including fuel reduction, fire trail construction and an annual hazard reduction burning program.

Usage and facilities

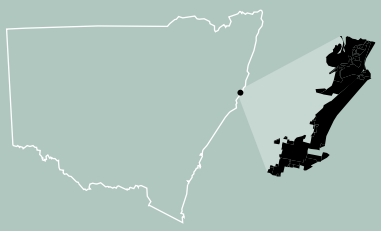
A recent visitor survey indicated that most people visit the park on day or weekend trips with family and/or friends. Most people surveyed were visiting the park for the first time.

Visitor facilities include several camping areas as well as touring roads, cabins and picnicking areas.

Crowdy Bay National Park

P Green/NPWS

P Green/NPWS



Crowdy Bay National Park

Size 9948 ha, perimeter approx. 1420 km

Created 1972

Location 25 km north-east of Taree on the mid-north coast of NSW.

Main picture: The Arch at dawn, Diamond Head.
Top right: Flannel flower.

Snapshot of the park

Why it is conserved

Crowdy Bay National Park protects diverse natural environments, including freshwater wetland systems, dry and wet heath communities, and coastal rainforest remnants. It also conserves threatened and regionally significant flora and fauna, and the European and Aboriginal history of the area. The area is a popular recreation site.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
■	China-Australia Migratory Bird Agreement
■	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The park protects significant Aboriginal sites and middens. A hut used by Australian author Kylie Tennant has been restored by NPWS. Other notable features include the foreshore of Watson Taylors Lake, geology illustrating Tertiary volcano activity, long stretches of beach along Dunbogan and Crowdy beaches, the rugged headland of Diamond Head, and winter wildflower displays.

Geology, soils and landforms

Diamond Head is the result of a volcanic intrusion capped by flows of volcanic lava. Weathering has created a variety of unusual features, such as arches and volcanic plugs. Soils are sandy soils of the Pleistocene and Holocene eras. The soils generally have poor stability and are prone to erosion; there was also sandmining in the area in the 1970s.

Ecosystems

A wide variety of vegetation types occur in the park, including grassland, saltmarsh, mangrove forest, wet and dry heathland, woodland, open forest and estuarine communities. Of special interest are:

- dune woodland of blackbutt (*Eucalyptus pilularis*)
- remnant strands of coastal rainforest on dunes
- Watson Taylors Lake, which contains one of the best examples of a digitate delta in eastern Australia, as well as an unusual reverse tidal delta.

Native plants

More than 550 native plant species have been recorded in the park. These include populations of the endangered *Allocasuarina defungens* and vulnerable *Thesium australe*. Several plant species reach their known geographic limit in the area and are of regional significance.

Native animals

More than 200 native fauna species are known from this park. A particularly diverse bird population reflects the rich heathland communities. Rare and threatened fauna include:

- osprey
- humpback whale
- spotted-tailed quoll
- jabiru
- Pacific baza
- tawny grassbird
- wompoo pigeon
- little tern
- pied oystercatcher.

Aboriginal cultural heritage

Until the mid-19th century, the Ngamba and Birripai people occupied areas in and around the park. Open campsites and shell middens dating back approximately 6000 years occur in the park.

Historic heritage

In 1770 Captain Cook named Indian Head after observing a group of Aboriginal people on the headland. John Oxley traversed the park during his 1818 expedition. 'Kylies Hut', south of Diamond Head, is a one-room timber slab hut built sometime around 1945 for author Kylie Tennant. Tennant's book *The Man on the Headland* recounts the European history of the park. The hut was donated to NPWS in 1976 for protection and preservation.

Management issues

Pest plants

Bitou bush is well established in the park. Regeneration work focusing on bitou bush removal is currently being undertaken at Kylies Beach and Diamond Head. The bitou seed fly was released in 1997-98 and an aerial spraying program was undertaken on Diamond Head in 2000. Lantana is also present and is being progressively controlled and monitored.

Pest animals

The following feral animals occur within the park:

- wild dogs
- foxes
- cats
- goats
- cattle.

Fire management

Fire plays an important role in the dynamics of plant and animal communities within the park. Fire management focuses on managing the accumulation of fuel to prescribed levels to protect assets such as Kylies Hut and maintain habitat diversity and species of special significance. NPWS assists the local council in protecting adjoining land through local environment plans.

Usage and facilities

The park is a popular local destination. Visitor activities include beach fishing, swimming, camping and boating.

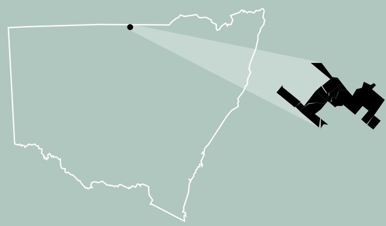
Toilets, picnic areas and fireplaces are provided at Diamond Head, Indian Head and Kylies Beach. Septic toilets and cold showers are available at Diamond Head. Six picnic areas are located along the eastern side of the park. Vehicle entry and camping fees apply.

Culgoa National Park

NPWS

J Little

Main picture: On the floodplain of the Culgoa River.
Top right: Research into the park's ecosystems is still in its initial stages.



Culgoa National Park

Size	22,006 ha, perimeter approx. 142 km
Created	1996
Location	In north-western NSW, 100 km north of Brewarrina. Adjoins Queensland's Culgoa Floodplains National Park.

Plans and agreements

	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Culgoa National Park protects a section of the Culgoa River and the associated floodplain. It conserves several vegetation communities that have been extensively cleared or modified by agriculture in nearby areas and are otherwise poorly represented in NSW reserves.

Points of special interest

The park conserves inland riverine woodlands and open grasslands that are important to a wide variety of species, including a significant number of fauna species considered of conservation concern in western NSW.

Geology, soils and landforms

The park lies in the Surat Basin, an area dominated by Quaternary alluvial and riverine deposits associated with the Darling River and its tributaries. The park is generally flat and dominated by heavy grey cracking clays of the floodplain. There is a sandhill complex to the west of the river and large claypans and sandy rises in the west of the park.

Ecosystems

The park is situated in the Darling Riverine Plains Bioregion. Open coolibah woodlands dominate the central portion of the park, along the Culgoa River and its floodplain. To the east of the river open grassland with scattered lignum is found. The western sections of the park contain complex vegetation communities, with black box, gidgee and brigalow woodlands, and saltbush shrublands.

Native plants

The park protects approximately 350 species of native plants, ten of which are considered threatened, rare or on the edge of their range. The endangered plants *Capparis loranthifolia* and *Euphorbia sarcostemmoides* have been recorded.

Native animals

More than 280 fauna species have been recorded, which is considered diverse compared to other areas of western NSW. Thirteen threatened species have been recorded, including:

- Australian bustard
- five-clawed worm-skink
- koala
- sandy inland mouse
- Major Mitchell cockatoo
- brolga
- painted honeyeater.

Aboriginal cultural heritage

The park forms part of the lands of the Morowari Aboriginal people. An archaeological survey of the park was conducted in 1996 by NPWS staff and members of the local Aboriginal community; over 180 sites were recorded, although the actual number is expected to be significantly higher. The area is significant to the local Aboriginal people today and is significant in capturing a large sample of pre- and post-contact archaeology of a north-western floodplain.

Historic heritage

The park is made up of the three former grazing properties, Cawwell, Byerawering and Burban Grange. The infrastructure associated with these properties, primarily from the mid-1900s, remains. Evidence of infrastructure from the early 1900s remains from properties that were established after European settlement in the 1850s.

Management issues

Pest plants

The main problem weeds are:

- spiny burr grass
- noogoora burr
- African boxthorn
- buffel grass
- saffron thistle
- prickly pear.

Control programs concentrate on these weeds, but other weeds, primarily associated with the park formerly being used as grazing land, are not uncommon.

Pest animals

The main pest animals found in the park are:

- feral pigs
- foxes
- goats
- rabbits.

The most serious problems for conservation in the park are considered to be pigs, because of the soil disturbance and the threat to native fauna, and foxes, because of the threat to small native animals. Control programs are being undertaken for all four pest animal species, though pig control is currently the highest priority.

Fire management

Very little is known about the fire ecology of many ecosystems in western NSW, including those communities in the park. Anecdotal evidence suggests that fire has not occurred in the area for more than 15 years, and fire has rarely been used in the area as a management tool since the introduction of grazing in the 1850s. Only one fire has occurred in the park since it was gazetted in 1996.

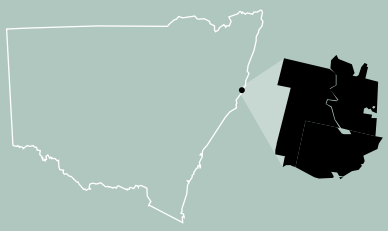
Usage and facilities

The park is still in its infancy and has very few visitors. There are no visitor facilities, though plans for this are well underway. Current visiting is limited to birdwatchers and people wishing to visit a park in an isolated area of NSW.

Dooragan National Park


L Meier


L Meier



Dooragan National Park

Size 1042 ha, perimeter approx. 247 km

Created 1997

Location On the mid-north coast of NSW, 400 km north of Sydney, 25 km south of Port Macquarie and 2.5 km west of Laurieton.

Main picture and top right: Views of North Brother Mountain and Watson Taylors Lake.

Snapshot of the park

Why it is conserved

Dooragan National Park protects some of the state's best examples of old-growth blackbutt forest and coastal vegetation communities, which support rare and endangered plants and animals. The land is spiritually significant to local Aboriginal communities.

Plans and agreements

	Plan of Management
■	Fire Management Plan – draft
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The park has significant Aboriginal and European heritage. The name Dooragan was derived from an Aboriginal Dreamtime legend. According to the legend, three brothers were buried where each of the park's three mountains now stand. Dooragan was buried under the northernmost mountain, now protected by the park. Coincidentally, Captain Cook unknowingly named the three mountains the 'Three Brothers'. The summit of North Brother Mountain offers views of the diverse coastal landscape from Crowdy Bay in the south to Smoky Cape some 85 km to the north.

Geology, soils and landforms

Dooragan has been identified as microgranite of the Tertiary period lying on Comboyne basalt. Low-lying areas consist of alluvial riverine deposits associated with the Camden Haven inlet.

Ecosystems

The park supports a wide range of vegetation communities, ranging from rainforest to saltmarsh and dry sclerophyll forests, as well as a small patch of wet heathland at the base of the mountain. It contains some of the best examples of old-growth blackbutt forest and inadequately conserved forest areas, including wet sclerophyll forest (featuring *Lophostemon confertus*, *Eucalyptus tereticornis* and *E. grandis*).

Native plants

Six plants recorded in the park are at the limit of their range. Two rare plant species and one endangered species inhabit the park:

- *Acacia courtii*
- *Gonocarpus salsoloides*
- *Allocasuarina defungens*.

Acacia courtii is known only from North and Middle Brother Mountains. Monitoring the distribution of *Acacia courtii* populations is a major aim in managing the park.

Native animals

The endangered brush-tailed rock wallaby has been recorded in the park. The rainforest snail reaches the southernmost limit of its range in the park.

Aboriginal cultural heritage

North Brother Mountain is spiritually significant for the local Birpai, Nagamba and Bunya people. The mountain is considered their 'protector'. NPWS maintains close relations with the local Aboriginal community regarding the management and interpretation of Aboriginal sites in the park.

Historic heritage

A timber mill was established in the 1860s to support the logging of softwood. The mountain was established as a timber reserve in 1892, after which time it became Camden Haven State Forest. During this time it was selectively logged; evidence of this can still be seen today. The area was opened to the public in 1970, with facilities erected by local community groups, and finally made a national park in 1997.

Management issues

Pest plants

The park borders an urban area, and a large proportion of weeds are either garden escapees or those that favour disturbance resulting from past forestry operations. Weeds of greatest concern are:

- bitou bush
- lantana
- ochna.

There is a control program for these weeds.

Pest animals

Fauna studies have identified the most prevalent feral animals as:

- black rats
- dogs
- foxes.

Cats are also believed to be present in the park and are of concern.

Fire management

Fire plays an important role in the vegetation dynamics of the park. A significant number of fires has occurred since 1970, burning a large proportion of the park. Due to their close proximity to the park, many private residences are at risk from bushfire. The draft Fire Management Plan for the park aims to protect the surrounding community and conserve flora and fauna via planned fire regimes, including fuel-reduction burning within the park and surrounding land parcels, and community education.

Usage and facilities

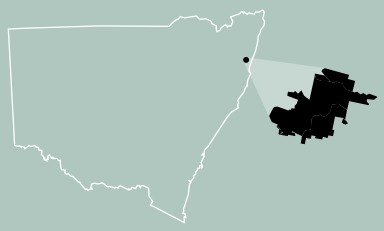
An estimated 120,000 people visit every year, with approximately two-thirds coming from outside the Port Macquarie/Laurieton area. The park is recognised internationally as one of Australia's best hang-gliding locations. Bushwalking, birdwatching and picnicking are also popular.

Viewing platforms, gas and wood barbecues, toilets, sheltered picnic tables and a car park are located at the summit of North Brother Mountain. Two walking tracks of differing degrees of difficulty are available within the park. The 'rainforest loop' track offers assisted access for the disabled.

Dorrigo National Park


J Little


NPWS



Dorrigo National Park

Size	11,871 ha, perimeter approx. 136 km
Created	1957 (parts first reserved in 1901)
Location	In the hinterland of the lower north coast of NSW, 25 km west of Coffs Harbour, 600 km north of Sydney, and adjacent to the town of Dorrigo.

Main picture: World Heritage subtropical rainforest in the park.
Top right: Crystal Shower Falls, on the walking track from the Dorrigo Rainforest Centre.

Snapshot of the park

Why it is conserved

Dorrigo National Park is part of the Central Eastern Rainforest Reserves (Australia) (CERRA) World Heritage Area. It conserves a broad range of forests, including four rainforest types. The park also demonstrates the evolution of the New England Tablelands during the late Palaeozoic era.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

This national park is one of the oldest in NSW, with its earliest components reserved in 1901. Management of the area was undertaken by a local trust committee for the first 75 years. Thus there is a strong attachment between the park and the local community. The many rainforest walks bring visitors into contact with spectacular forests and numerous waterfalls. The 'park with no steps' approach to the Dorrigo Rainforest Centre and the Glade picnic area allow access for all to the heart of the forest and the viewing platforms.

Geology, soils and landforms

The park lies on the eastern edge of the Dorrigo Plateau, which is part of the New England Tablelands. The park ranges in altitude from 1042 metres to 70 metres. The spectacular escarpment edge gives way to many waterfalls. Much of the Dorrigo Plateau is capped with remnants of the Ebor Volcano basalt flows, which overlay carboniferous metamorphic rocks of argillite and slate. Igneous Permian rocks occur in the southern part of the park. The headwaters of Wild Cattle Creek rise in the park, as do the Never Never and Rosewood rivers.

Ecosystems

There are extensive stands of subtropical and temperate rainforest, including stands of cool temperate rainforest – a restricted vegetation type featuring Antarctic beech. Some 500 native plant species, 275 bird species and 80 other native animal species have been recorded.

Native plants

The park protects a large number of threatened plants. These include:

- ravine orchid (*Sarcochilus fitzgeraldii*)
- Dorrigo daisy (*Olearia flocktoniae*)
- red bopple nut (*Hicksbeachia pinnatifolia*).

Native animals

The park is home to about 20 threatened animal species. These include:

- rainforest pigeon
- pouched and sphagnum frog
- wompoo and rose-crowned fruit-dove
- yellow-bellied glider.

Aboriginal cultural heritage

The park lies in the territory of the Gumbaynggirr people. Although the park is known to have some cultural values for local Aboriginal communities, little formal research has been undertaken to determine the nature and significance of these values. A bora ground is located about 1 kilometre from the park boundary.

Historic heritage

The park contains significant and impressive evidence of previous land use, particularly by the timber industry. Most significant are the remains of the Syndicate Tramway, built in 1912 to transfer hoop pine from the plateau to the valley town of Bellingen. Remnant tram carriages, boiler stations and buildings combine to create an impressive picture of these former days.

Management issues

Pest plants

More than 30 species of introduced plants have been recorded. The main problem weeds are:

- mist flower
- ginger lily
- small-leaved privet
- Madeira vine.

A range of programs is being undertaken to control weeds, the first three of these in particular. Mist flower has invaded rock ledges, waterfalls and various creek lines. Staff trained in abseiling techniques are undertaking control of this weed. Six hectares of plateau basalt country dominated by small-leaved privet have been re-established as early-stage subtropical rainforest during the last three years. A mixture of labour market program workers, contractors and staff have contributed towards this project, which has included planting of 17,000 rainforest trees.

Pest animals

The main pest animals found in the park are:

- foxes
- wild dogs
- rabbits.

Foxes and wild dogs pose a particular problem for native animals (both within and outside the park) and livestock on neighbouring properties. A variety of pest animal control programs have been running for the last five years, in cooperation with park neighbours.

Fire management

The damp nature of the rainforest floor contributes to the very low frequency of wildfires in the park. Fire management is primarily limited to suppressing any wildfires that do occur. A Fire Management Plan is to be prepared for the park.

Usage and facilities

The park attracts about 185,000 visitors each year, with peak usage over the summer months, Easter and the other school holiday periods. The Dorrigo Rainforest Centre is the key destination. The most common visitor activities are picnicking and bushwalking. Many school groups, backpackers and tourist coaches visit the centre, and a significant proportion of visitors are from overseas.

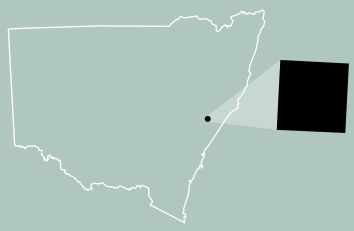
Facilities provided for visitors include:

- electric and wood barbecues in designated picnic areas
- self-guided wheelchair-accessible viewing platforms and boardwalks through several forest areas
- sealed walking tracks
- composting toilets in picnic areas.

Finchley Aboriginal Area

D Lambert/NPWS

D Lambert/NPWS



Finchley Aboriginal Area

Size 4 ha, perimeter approx. 1 km

Created 1976

Location On the Hunter Range on the central coast of NSW, 70 km from Wisemans Ferry towards the Hunter Valley. Is situated within Yengo National Park.

Main picture: Removing paint during restoration work on the rock engravings. The paint was inappropriately added in earlier years.
Top right: A timber boardwalk now protects the engravings.

Plans and agreements

	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the area

Why it is conserved

Finchley Aboriginal Area was reserved for the protection of its Aboriginal sites of significance.

Points of special interest

This Aboriginal area contains an engraving site which is believed to be a tribal boundary of special Aboriginal heritage significance.

Geology, soils and landforms

This area is within the Sydney Basin geological province and the Hornsby Plateau. Hawkesbury sandstone outcrops and associated soil types are common.

Ecosystems

This area is within the Hawkesbury Nepean River catchment and the Sydney Basin Bioregion. It contains dry sclerophyll woodland and open forest communities.

Native plants

There are a number of plant species that are typical of the Hawkesbury sandstone soil types and dry sclerophyll forests and woodlands.

Native animals

The native animals of this area are typical of those found in nearby reserves and include:

- swamp wallaby
- wallaroo
- wedge-tailed eagle
- bush rat
- lyrebird
- koala.

Aboriginal cultural heritage

The Darkinjung, Koompahtoo and Mindaribba Aboriginal Land Councils and Wonnarua Tribal Council have an active interest in the management of this engraving site. The engravings are thought to be related to animal totems and also believed to map features relevant to the area.

Historic heritage

No historic places are known in this area.

Management issues

Pest plants and animals

Weeds and pest animals are not a management issue for this area, which is surrounded by relatively undisturbed national park.

Fire management

Fire management within this area is in accordance with the strategies for the adjoining Yengo National Park. The Sydney wildfires in 1994 had a major impact on the area. A newly constructed elevated timber boardwalk requires ongoing protection from fire.

Usage and facilities

Visitors to the site use the boardwalk, which ensures that the engravings are not damaged by pedestrian traffic.
The boardwalk provides wheelchair access.

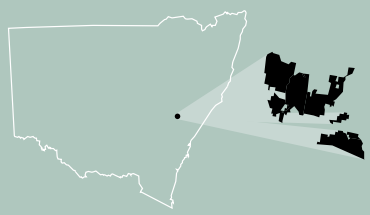
Apart from the elevated boardwalk, there are no visitor facilities within this area; however, there is a lookout and a number of management trails in the adjoining Yengo National Park.

Superb lyrebird

Gardens of Stone National Park

N Fenton/NPWS

J Little



Gardens of Stone National Park

Size 15,010 ha, perimeter approx. 201 km

Created 1994

Location 30 km north of Lithgow on the Central Tablelands of NSW.

Main picture: The pagoda rock formations along the park's escarpments are a distinctive feature.
Top right: The spotted-tailed quoll, formerly called the tiger quoll.

Snapshot of the park

Why it is conserved

Gardens of Stone National Park was reserved for recreational pursuits and for its scenic and geological significance. It also conserves an extension of the North-West Slopes biogeographic vegetation communities. The park forms an integral part of the Greater Blue Mountains World Heritage Area.

Plans and agreements

	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

Points of interest include the Baal Bone Gap picnic area, Pantoneys Crown and Mount Davidson. The Newnes Plateau cliff lines overlooking the Wolgan Valley are also a notable feature.

Geology, soils and landforms

The park is within the Sydney Basin geological province and the Blue Mountains Plateau, and is comprised primarily of Triassic sandstone, Devonian limestone and Quaternary alluvial deposits. The park is well known for its unusual 'pagoda' rock formations.

Ecosystems

The park is partly within the Hawkesbury Nepean River catchment and the Sydney Basin Bioregion. It contains:

- a pagoda rock complex community with heathlands and low woodlands and shrublands
- Blue Mountains sandstone forests
- montane gully forest
- scribbly gum-stringybark woodland
- tablelands grassy woodland
- Capertee valley woodland
- white box woodland
- talus slope woodland.

Native plants

The park contains a number of regionally significant plant species, including:

- *Persoonia marginata*
- *Eucalyptus cannonii*
- *Prostanthera crytandroides*
- *Lasiopetalum longistamineum*
- *Banksia penicillata*
- *Leucochrysum graminifolium*
- *Gonnocarpus longifolius.*

Native animals

A number of significant animal populations are found, including:

- regent honeyeater
- brush-tailed rock wallaby
- powerful owl
- broad-headed snake
- koala
- spotted-tailed quoll
- yellow-bellied glider
- glossy black cockatoo.

Aboriginal cultural heritage

Darkinjung Tribal Council, Bathurst Local Aboriginal Land Council and the Greater Lithgow Aboriginal and Torres Strait Island Corporation represent contemporary Aboriginal community involvement in this park. Some scattered stone chips along a number of streams and gully floors have been found. It is understood that the area has been occupied by Aboriginal people for at least 12,000 years prior to European settlement.

Historic heritage

Surrounding areas contains significant historical sites, though no detailed survey has been carried out within the park.

Management issues

Pest plants

Blackberry, tree of heaven, St Johns wort and prickly pear are all subject to sustained seasonal pest management programs.

Pest animals

The main animals pests are:

- wild dogs
- rabbits
- goats
- feral cats
- foxes.

Pest management programs include regular dog baiting (which is coordinated with neighbours), fumigation and ripping of warrens, and seasonal culling and monitoring of goat populations.

Fire management

There have been no major fires for 30-40 years in some parts, as the types of vegetation in the park burn infrequently in the climate. Strategic burning has been undertaken in conjunction with neighbours and the local Regional Fire Service. Wildfires over the last 15 years have been contained to small areas using remote response techniques. All have been result of lightning strikes. An annual hazard reduction burning program is prepared and implemented, and fire management trails have been constructed.

Usage and facilities

Activities include bushwalking, climbing and canyoning; day visits using 4WD vehicles; and horseriding along the Bicentennial Trail, which passes along the Crown Creek Fire trail from Baal Bone Gap and exits via private landholdings to the north of the park. Trails managed by the adjacent state forest to the south of the park are used for trail bike touring.

Facilities are limited but include the picnic area at Baal Bone Gap (4WD access only) and trails that are suitable for bushwalking and vehicle touring.

Garigal National Park


M Cufer/NPWS


M Cufer/NPWS

Garigal National Park

Size 2203 ha, perimeter approx. 102 km

Created 1991

Location Within the Sydney metropolitan area on the northern side of Sydney Harbour.

Main picture: Canoeing on upper Middle Harbour.
Top right: Rock overhang near The Cascades.

Snapshot of the park

Why it is conserved

Garigal National Park is one of a group of reserves in the Sydney Basin. It provides an important link between Sydney Harbour, Manly Dam and Ku-ring-gai Chase. This linkage greatly enhances the viability of the natural systems within each reserve. The park itself also protects a number of important plant and animal communities within a highly urban setting, while also protecting a significant part of the Sydney Harbour catchment.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The Davidson Visitor Area is a major focus for activities within the park, and the historic Bantry Bay provides opportunities for boating, walking and picnicking.

Geology, soils and landforms

The park is part of the Sydney Basin geological province and the Hornsby Plateau, and has two distinct areas that are both comprised primarily of Triassic Hawkesbury sandstone with small Jurassic volcanic intrusions, Quaternary alluvium and Narrabeen shale outcrops.

Ecosystems

The park is part of the Sydney Basin Bioregion. The main ecosystem types are those commonly associated with Hawkesbury sandstone and include dry sclerophyll forest and woodland with shrubland, heathland, hanging swamps and small pockets of warm temperate rainforest in sheltered gullies. More restricted communities occur on the isolated shale lenses and are associated with alluvial deposits. A vegetation map and report have been prepared for the park.

Native plants

The following regionally significant plants are seen in the park:

- Caleys grevillea (*Grevillea caleyi*)
- *Haloragodendron lucasii*
- *Leptospermum deanii*
- *Bertya brownii*
- *Tetratheca glandulosa.*

The Duffys Forest endangered ecological community occurs in the park on shale and lateritic soils.

Native animals

Regionally significant populations in the park include:

- spotted-tailed quoll
- southern brown bandicoot
- koala
- bentwing bat.

Aboriginal cultural heritage

Aboriginal heritage sites throughout the park include art sites, occupation sites and rock engravings, which are important surviving examples of Aboriginal occupation of the Sydney region.

Historic heritage

The park contains several places of historic interest, including two significant sites – Bungaroo, visited by Governor Phillip in 1788, and Bantry Bay, used in the mid-1800s for loading timber onto barges, and from 1915 as the site for a munitions depot.

Management issues

Pest plants

The weeds of most concern are:

- camphor laurel
- rhus
- cassia
- bitou bush
- ludwigia
- pampas grass
- privet
- mist flower
- crofton weed
- lantana
- wandering Jew
- Japanese honeysuckle.

Pest animals

Cats are a major problem close to urban areas, particularly for native animals and small birds. An education program for neighbours is conducted in conjunction with local government. Foxes are likely to occur throughout the park and benefit from increased food supplies where the park touches urban areas. Control programs have been undertaken where possible in conjunction with other land managers to decrease predator pressure on native species, particularly endangered species such as the southern brown bandicoot.

Fire management

Major concerns of park managers include fuel build-up near urban areas, wildfire control, protection of neighbours and visitors, and the impact of fire on native ecosystems. The 1983 and 1994 wildfires had a major impact on the park. A draft Fire Management Plan is in preparation and is likely to be available for public comment in 2002. A hazard reduction burning program is prepared and implemented annually, and fire management trails have been constructed.

Usage and facilities

Current estimates suggest the park attracts 200,000 visitors annually. The most concentrated use occurs around Roseville Bridge and the Davidson picnic area. Boating, fishing, bushwalking, picnicking and wildlife photography are the most popular activities.

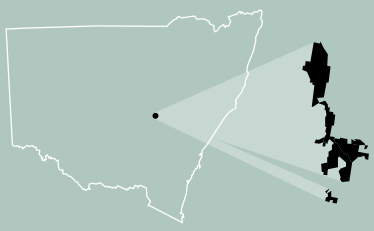
Bantry Bay offers a walk-in picnic area. A number of walking tracks offer opportunities for bushwalking, and trails are available for cycling and limited horseriding. A vehicle entry fee applies.

Caleys grevillea

Goobang National Park

M Sharp/NPWS

P Mathew/NPWS



Goobang National Park

Size 42,080 ha, perimeter approx. 336 km

Created 1995

Location Central west NSW, 400 km west of Sydney and 30 km south-east of Dubbo.

Main picture: Goobang protects one of the largest areas of native vegetation occurring in the central west of NSW.

Plans and agreements

■	Plan of Management – draft
■	Fire Management Plan – draft
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Goobang National Park provides protection for the diverse range of plant and animal communities found in central west NSW, as well as the rich scenic, cultural and natural features of the area.

Points of special interest

The park is claimed to be the largest remnant forest and woodland in the central west. It contains two transitional zones, with flora and fauna species of western NSW overlapping with species common to coastal NSW. A number of the plant communities in the park are considered under-represented within the parks system.

Geology, soils and landforms

The park encompasses the Hervey Range and is within the Lachlan Fold Belt. The diverse geology, which consists of igneous and sedimentary rock types, ranges in age from 2 to 400 million years old. The range rises to an altitude of about 800 metres, with striking cliff faces on the western side. Soil in the higher ridges tends to be infertile, poorly structured and highly susceptible to erosion. In the lower reaches and plains, deep alluvial soils have a high clay content and tend to impede drainage.

Ecosystems

There are 11 vegetation types that are considered rare or vulnerable. Vegetation in the park includes:

- dry sclerophyll woodlands
- white box woodland with grassy understorey
- open heathland
- mallee species.

A total of 459 native plant species have been recorded in the park, many of which had not been recorded in the region.

Native plants

The park protects a large number of threatened plants, some of which are found only in the local area. These include:

- *Leucopogon* sp.
- *Petrostylis* sp. Aff. *longifolia*
- *Petrostylis* sp. Aff. *pusilla*
- *Tylophora linearis*
- *Eriostemon ericifolius*
- *Goodenia macbarronii*
- *Astrotricha linearis*.

Native animals

The park's isolated location and scattered vegetation communities mean that native animal communities are often highly localised. Seven vulnerable and one endangered animal species have been found in the park, including:

- koala
- greater long-eared bat
- yellow-bellied sheathtailed bat
- regent honeyeater
- glossy black cockatoo
- superb parrot
- turquoise parrot.

A previously unknown *Pseudomys* specimen has been recorded.

Aboriginal cultural heritage

A survey and anthropological research was carried out in 1994, revealing a rich variety of sites throughout the park. The Hervey Range marked the boundary between the Bogan River Wiradjuri and other groups. Ceremonial, trade, marriage and occupation camps throughout the park make the landscape very significant for the contemporary Aboriginal community.

Historic heritage

John Oxley passed the park in 1817, and sighted and named the Hervey Range. By 1835, stations had been established around the base of the range. As an important timber resource, the area was reserved as state forest in 1879. Several old logging camps are still evident.

Management issues

Pest plants

The main problem weeds are blackberry and St Johns wort. Control programs are regularly undertaken in conjunction with local landholders and rural lands protection boards. The spread of blackberry, usually along drainage lines, has now been substantially reduced. St Johns wort has been contained, and ongoing programs are aimed at halting its spread.

Pest animals

The main pest animals found in the park are:

- foxes
- rabbits
- feral pigs
- goats.

Foxes, rabbits and pigs pose a major problem for native animals in the park, particularly threatened animal species, while rabbits damage the already fragile soils and threaten endangered plant species. Control programs are being undertaken for all four pest animal species with the cooperation of park neighbours.

Fire management

The park is subject to wildfires caused mainly by lightning during storms in the summer months. Major wildfires have occurred regularly since the 1950s, exacerbated by droughts. Fire plays an important role in the distribution of flora and fauna in the area, and fire regimes are being researched to assess how the frequency of fires affects biodiversity.

Usage and facilities

The park attracts visitors for camping, picnicking, bushwalking and birdwatching. As the summer months are very hot, visiting is most active in spring and autumn.

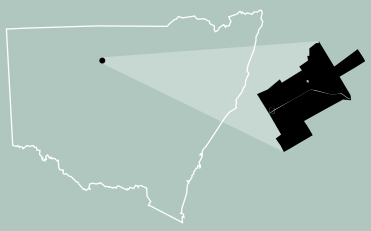
A Draft Plan of Management is currently awaiting final approval. It proposes establishment of:

- barbecues in designated picnic areas
- a self-guided, wheelchair-accessible walk
- composting toilets in picnic and camping areas
- a walking track to lookouts.

Gundabooka National Park


J Little


J Little



Gundabooka National Park

Size 43,591 ha, perimeter approx. 130 km

Created 1996

Location Approximately 50 km south-west of Bourke and 110 km north of Cobar.

Main picture and top right: The ancient rust-coloured rocks of Gundabooka are over 400 million years old.

Snapshot of the park

Why it is conserved

Gundabooka National Park was established to protect the cultural landscape of the Mount Gunderbooka region and the land systems on the surrounding sandplains and stony rises.

Plans and agreements

	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The park is part of the Cobar Peneplain and contains Mount Gunderbooka, the most prominent geological feature in the Bourke/Cobar region. There is rock art painted by the Ngemba people, who lived in the area prior to European occupation. These paintings have been recognised for their significance by being placed on the Register of the National Estate.

Geology, soils and landforms

Lying in the southern end of the park, Mount Gunderbooka is an impressive outcrop of Devonian sandstone rising to 495 metres above sea level. The mountain is located at the junction of two large geological zones, the Girilambone Anticlinorial Zone and the Great Artesian Basin. It is an example of an isolated syncline that has formed as a result of tectonic movements over many millions of years. Soils in the park are predominantly highly erodible ‘red earths’.

Ecosystems

The park is part of the Cobar Peneplain and contains 21 different plant communities. Vegetation types are dominated by open woodland and include:

- mulga, white cypress pine and mallee communities on the Gunderbooka Range and adjacent rocky ridges
- western bloodwood around the base of Mount Gunderbooka
- bimble box, red box and mulga communities on the undulating lowlands and sandplains.

Native plants

The park protects a number of threatened plants. These include:

- *Phebalium glandulosum*
- *Prostanthera stricta*
- *Hedyotis galioides*
- *Acacia curanii*.

A major threat to the long-term survival of these species is continued high grazing pressure by feral animals and native macropods. The primary activities aimed at reducing this grazing pressure are trapping and removal of goats and progressive closure of artificial watering points.

Native animals

Fauna surveys within the park have recorded 137 species of birds, 16 species of reptiles and amphibians, and 14 species of mammals. Six threatened species have been recorded in the park, including:

- little pied bat
- yellow-bellied sheathtail bat
- kultarr
- painted honeyeater.

A new species of freetail bat has also been found in the park.

Aboriginal cultural heritage

The park is of great cultural significance to the Ngemba people, who lived in the area prior to European occupation and whose descendants continue to live in the surrounding towns today. The Ngemba people took advantage of the area's food and water supplies, and certain places in the Gunderbooka Range were used for large ceremonial gatherings, with people travelling large distances to attend.

Historic heritage

The area's European history began with visits to the Gundabooka area by explorers in the 19th century. Charles Sturt noted Mount Gunderbooka as 'Durbans Range' during his exploration of the Darling River in 1829. Pastoralists followed in the footsteps of explorers, and the Gundabooka area was gradually subdivided into large pastoral leases. The leases were further split up in the 20th century as part of the Soldier Settlement Scheme for soldiers returning from the World Wars.

Management issues

Pest plants

A number of introduced plants have been recorded in the park. The main problem weeds are:

- noogoora burr
- saffron thistle
- African boxthorn.

Staff undertake regular weed control programs.

Pest animals

The main pest animals found in the park are:

- feral goats
- foxes
- feral pigs
- rabbits.

Goats, foxes and pigs pose a particular problem for native animals, while rabbits damage the already fragile soils and threaten endangered plant species. Control programs are being undertaken for all pest animal species in the park, although goat and fox control is currently the highest priority.

Fire management

Fires in the region surrounding the park occur infrequently. Anecdotal evidence suggests that the area was burnt frequently by Aboriginal people and early pastoralists, which maintained a large proportion of the park as open woodland. Fire management in the park is currently limited to suppressing wildfires, though hazard reduction and management burning are planned. Few records were kept on the fire history of the area; however, previous owners indicate that fires in the park have been localised and low to moderate in intensity.

Usage and facilities

The park attracts a growing number of visitors each year, with peak use over the winter months. The most common activities are visiting the Aboriginal rock art sites, picnicking, bushwalking, birdwatching and camping. Visitors are increasingly taking advantage of the visitor accommodation to enjoy the peace and tranquillity the area offers.

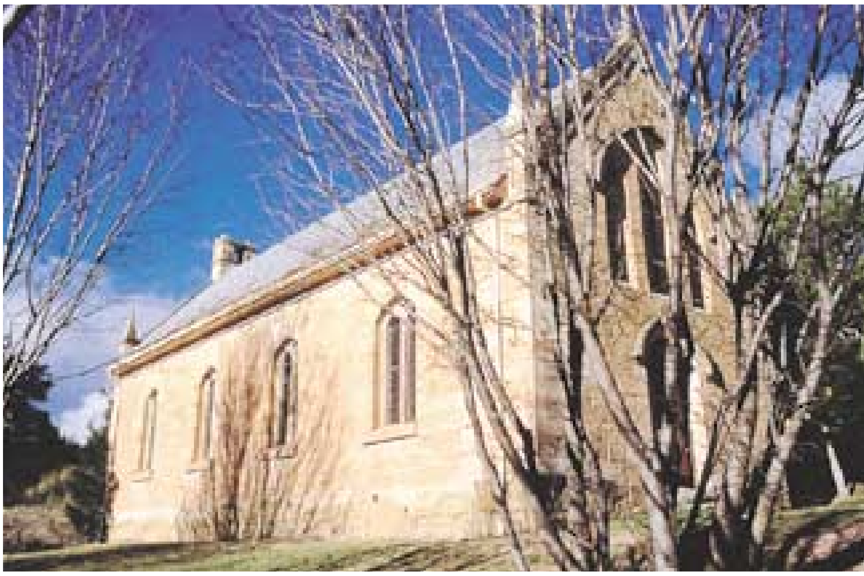
Facilities provided for visitors include:

- overnight camping area with wood/gas fires in designated picnic areas
- two self-guided walking tracks
- pit toilets in picnic areas.

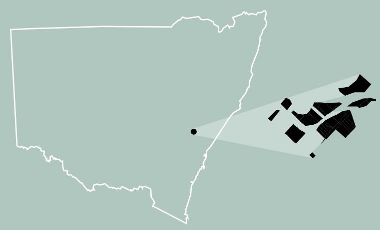
Camping fees apply.

Hartley Historic Site


NPWS


I Brown/NPWS

Main picture: St Bernards Church, Hartley. The 19th-century village is one of the best preserved in Australia.
Top right: The presbytery, which is next to the church.



Hartley Historic Site

Size	13 ha, perimeter approx. 5 km
Created	1972
Location	In the central west (Central Tablelands) of NSW, 15 km east of Lithgow and 140 km west of Sydney.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the site

Why it is preserved

Hartley Historic Site was reserved for the protection of a substantial and well-preserved remnant of one of the first rural settlements west of the Blue Mountains. This town had played a vital role in the development of inland NSW.

Points of special interest

The most popular section of the site is the Greek Revival Courthouse, constructed in 1837 and designed by colonial architect Mortimer Lewis.

Geology, soils and landforms

The site is part of the Sydney Basin geological province and the Blue Mountains Plateau. The geology underlying the site is granite and granodiorite formed during the Carboniferous period. The soils overlaying these vary from sandy loam to sand clay topsoil.

Ecosystems

The park is part of the Sydney Basin Bioregion. The immediate environment is grassed slopes dominated by scattered trees and stands of eucalypts – the native vegetation was primarily cleared during the first ten years of settlement.

Native plants and animals

No native plants or animals have been identified at the site.

Aboriginal cultural heritage

The site is part of the traditional lands of the Gundanangra people. There is only one Aboriginal site recorded. Hartley is significant as a contact site – blankets were distributed to Aboriginal people from the courthouse in past times.

Historic heritage

The site is a significant cultural landscape that contains 15 buildings, dating from the Greek Revival Courthouse in 1837 to the timber and iron Corneys Garage in 1945. The site also contains a large number of portable artefacts and family histories.

The rise and decline of the village of Hartley are attributable to transport developments. In 1815, the completion of Coxs Rd to Bathurst and the subsequent opening of Victoria Pass, in 1832, encouraged the development of farming lands west of the Blue Mountains and the inland centres, particularly Bathurst. But there was nowhere between Penrith and Bathurst where prisoners could be secured. Hence, it was decided to establish a new police district west of the Blue Mountains. The Vale of Clwydd, subsequently named Hartley, was the chosen site.

West of Bathurst in 1815, the discovery of gold and the ensuing goldrush gave further impetus to westward traffic. This added to Hartley's importance as a judicial and administrative centre, and as a staging post providing rest and refreshments.

Hartley's heyday was the period following the gold discoveries. But another transport development was to herald the beginning of the end of Hartley as a transit centre. This was the extension of the Great Western Railway. By 1877 the line had been extended from Mount Victoria to Lithgow, and with it the importance of Hartley began to wane.

However, from the middle of the 19th century Jenolan Caves had become a popular tourist attraction. Visitors from Sydney would make overnight stops at Katoomba, Hartley or Bowenfels. By 1879 it was possible to travel by rail to Tarana – only a short distance from the caves – and this made the tiring road journey less attractive. From the 1920s, when fast and modern transport began to make its appearance, Hartley became what it is today – a historical village located right beside the Great Western Highway.

Management issues

Pest plants

Blackberries, broom, Patersons curse and serrated tussock are the main weed species. Control programs are undertaken as required.

Pest animals

Rabbits are the main feral animal found in the cleared rural environment. Cats are also a problem.

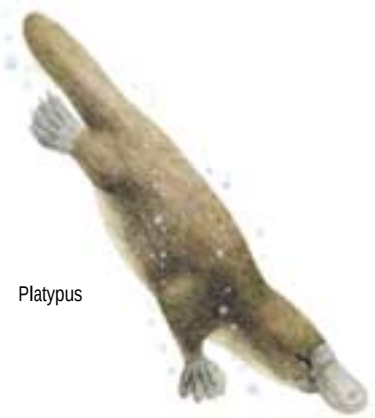
Fire management

Fires within the historic buildings are the main concern of management at the site.

Usage and facilities

The site receives about 60,000 visitors annually. Picnicking, day touring, school tours and guided tours are the most popular activities.

There is an information centre and shop at the site, and a number of the buildings are used for guided tours.

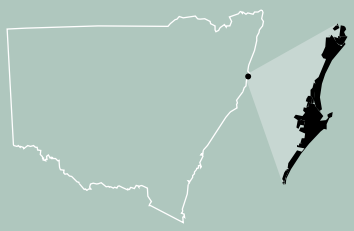


Platypus

Hat Head National Park


J Winter/NPWS


J Winter/NPWS



Hat Head National Park

Size	7362 ha, perimeter approx. 75 km
Created	1972
Location	On the mid-north coast of NSW approximately midway between Sydney and Brisbane. Contains the village of Hat Head.

Main picture: Sitting proudly on the spectacular coastline of the park, the Smoky Cape Lighthouse complex is the most elevated in Australia.
Top right: One of the lighthouse keeper cottages at Smoky Cape.

Snapshot of the park

Why it is conserved

Hat Head National Park provides protection and conservation for the natural and cultural heritage of this 'sand mass' park, which contains beaches, headlands, rainforests, heaths, wetlands and a regionally significant lighthouse complex.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
■	National Estate Register
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

Surrounded by the national park, the Smoky Cape Lighthouse complex is on dramatic terrain. Advanced architectural skill and innovations are evident in the placement, design and construction of the buildings.

Geology, soils and landforms

The park is located on geological formations comprising mainly a type of granite known as Smoky Cape adamellite to the north (from which adjacent Trial Bay Gaol and the Breakwater were constructed), the only coastal granite outcrop between Bundaberg and Moruya. Soils tend to be poorly nourished Quaternary beach sands and decomposed granitic podsoils. These soil types are highly susceptible to erosion.

Ecosystems

The park contains extensive wetlands behind Smoky and Killick beaches, which are bordered by extensive heath communities. The headlands of Smoky Cape and Korogoro Point shelter rare coastal rainforests. These areas provide habitat for a large range and variety of plants and animals species, many of which are listed as rare or vulnerable.

Native plants

The headland heath areas feature hakea, dogwood, boronia, flannel flower, eucalypt species and kangaroo grass. Pandanus occur on the area adjacent to the high-tide line. Coastal rainforests contain species such as lilly pilly and black apple, with cabbage tree palms in more sheltered areas and massive old melaleucas next to the wetlands.

Native animals

Visitors to the park will see eastern grey kangaroos and swamp wallabies in most camping areas. Species such as the koala, brush-tailed phascogale, green and golden bell frog and spotted-tailed quoll find refuge in the park. Hat Head is rich in bird life, with raptors such as ospreys, white-breasted sea eagles and braminy kites around the headlands, and honeyeaters, friar birds and fig birds in the heathlands. Smoky Cape and Korogoro Point provide vantage points to view migrating humpbacked whales, as well as resident pods of dolphins and other marine mammals.

Aboriginal cultural heritage

The entire Smoky Cape Range, of which the lighthouse complex occupies a small part, is of profound spiritual significance to the local Aboriginal community. Prior to establishment of the park, numerous carved trees were removed from sites adjacent to the lighthouse complex and transported to the Australian Museum. Other sites include middens and ceremonial sites.

Historic heritage

Captain Cook named Smoky Cape in his journal entry of 1 May 1770. The Smoky Cape Lighthouse complex was built to an original design by early colonial architect James Barnet. The entire complex is listed on the Register of the National Estate, including the existing architecture as well as remains of World War Two radar installations and gun emplacements.

Management issues

Pest plants

More than 30 species of introduced plants have been recorded. The majority are escapees from gardens or, in the case of bitou bush, were introduced by sandmining companies to stabilise areas after mining. The most significant weeds are:

- lantana
- wandering Jew
- potato vine
- bitou bush
- salvinnia.

Control programs are ongoing in cooperation with local volunteers, such as the Dune Care Group. The headlands are subject to annual spraying of bitou bush.

Pest animals

The main pest animals found in the park are:

- rats
- mice
- foxes
- cats.

These species are a threat to native fauna, especially threatened species that rely on the park for habitat. Control programs are being undertaken for all four pest animal species, with rodent control currently the highest priority at the lighthouse complex.

Fire management

The park is subject to frequent fires, often caused by arson. This has contributed to a limiting of the park's floral diversity and the contraction of rainforest areas. NPWS has prepared a Fire Management Plan for the park that establishes management zones to protect life and property as well as natural and cultural heritage. The lighthouse complex affords extensive views over the park and provides an ideal location for spotting fires.

Usage and facilities

The park attracts more than 450,000 visitors each year, with peak use over the summer months. The most common activities are sightseeing, bushwalking, surfing and fishing. The lighthouse complex is the most popular visitor destination, with over 300,000 visitors each year. Cottages in the complex are available for accommodation; these operations have received Regional Tourism Awards.

Park facilities include electric barbecues, picnic grounds, walking tracks, camping areas and beach access points. Vehicle entry and camping fees apply.

Hill End Historic Site


T Parkin


T Parkin

Hill End Historic Site

Size	134 ha, perimeter approx. 52 km
Created	1967
Location	72 km north-west of Bathurst, due west of Sydney.

Main picture: The town of Hill End, with Bald Hill in the background.
Top right: The town's Catholic Church.

Snapshot of the site

Why it is conserved

Hill End Historic Site provides protection for the historic properties and artefacts of Hill End, once the largest inland town in NSW during the goldrush era of the 1870s. It also protects the historic heritage of an important phase of Australia's history – alluvial and underground reef mining. The triumphs and tragedies of Hill End's past and present community are also portrayed through the site.

Plans and agreements

■	Plan of Management – draft
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

This is a unique site with over 30 commercial and residential buildings dating back to the 1870s. Many of the buildings have been restored and the local community reside and operate businesses from these premises. The cemetery tells of Hill End's hardships and is a source for family history research. Other attractions are the Bald Hill Mine, Golden Gully, Hawkins Hill, Merlins Lookout, The Visitor Centre/Hospital, Quartz Roasting Pits and the Holtermann collection of photos displayed along the streetscape of the village. Hill End was one of the first sites included in the NPWS estate when the Service was formed in 1967.

Geology, soils and landforms

Hill End is situated in a shallow upland valley on the tablelands west of the Great Dividing Range. Its altitude is 970 metres above sea level. Most soils in the area are susceptible to sheet and gully erosion and are poorly drained in the winter months. The eroded gullies are elements of past mining practices.

Ecosystems

The site contains a variety of exotic vegetation, with plantings starting in the 1870s. The early settlers and miners brought with them a range of horticultural species in an attempt to make their isolated community self-sufficient in fruit and vegetables. Species of roses distributed throughout the state have been propagated from Hill End varieties. The exotic flora of Hill End provides research opportunities and shows garden and landscape styles of that era.

Native plants

Hill End and its surrounds were extensively disturbed by mining activity in the 1870s and after. The dominant native vegetation is manna gum and red stringy bark, and these are regenerating in the abandoned mining areas.

Native animals

Native fauna in the surrounds of the village is typical of the Central Tablelands. The habitat of the communities has been disrupted by past activities. No formal fauna survey has been undertaken in the area.

Aboriginal cultural heritage

Although the area is known to have cultural values for local Aboriginal communities, little formal research has been undertaken to determine the nature and significance of these values.

Historic heritage

With the discovery of gold, Hill End became, by the end of 1872, the largest inland town in NSW, with a population of 8000. But the boom was short lived. The decline became evident by 1874 and continued until 1883. In the early years of the 20th century Hill End had some 500 residents engaged mainly in mining, as well as agriculture and tree felling.

In the 1960s community groups successfully lobbied to protect the village's historical values. In 1967 Hill End was proclaimed a historic site and became the first village to come under the management of NPWS. It now has a population of about 150.

Hill End is listed as nationally significant on the Register of the National Estate. Hill End's isolation has protected it from disturbance and change. The architecture of the buildings, streetscape, horticultural elements, social values and opportunities for education and scientific research make the site a valuable resource and attractive tourist destination.

Management issues

Pest plants

Blackberry is the main problem weed in the site. Programs have been implemented to control and eradicate it.

Pest animals

Pest animals in the environs of the village include:

- cats
- rabbits
- goats.

Domestic cattle graze the Hill End Common, which surrounds the village. They stray into the village and damage historic items by brushing against them.

Fire management

The site has been relatively free from fires. Fires from lightning strikes have been contained at the outskirts of the village. The threat to the buildings are from their electrical supply and from fuel heaters and stoves. A fire brigade is stationed in the village.

Usage and facilities

The site attracts many visitors each year, mostly in spring and autumn, with Easter the peak period. School groups visit throughout the year but more often in the third and fourth school terms. The most common visitor activities are picnicking, walking, camping and fossicking. Camping fees apply. There are several tour operators who conduct town and mining tours.

Facilities provided for visitors include:

- gas barbecues in designated picnic areas
- wheelchair-accessible facilities in camping areas
- powered sites
- lookouts.

Tour operators offer various activities.

Illawarra Escarpment State Recreation Area

G Robertson/NPWS

NPWS

Illawarra Escarpment State Recreation Area

Size	1504 ha, perimeter approx. 119 km
Created	1980
Location	On the south coast of NSW, 60 km south of Sydney.

Main picture: The escarpment seen from Bulli Lookout.
Top right: Red-necked pademelon.

Snapshot of the area

Why it is conserved

The Illawarra Escarpment State Recreation Area was reserved to protect and conserve the natural and cultural heritage and scenic values of the Illawarra Escarpment.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

Items of special interest include the lookouts at Mount Keira and Mount Kembla, the Mount Keira Scout and Girl Guide camps, and the Mount Keira rainforest.

Geology, soils and landforms

The recreation area is in the Sydney Basin geological province and has Hawkesbury sandstones that form sheer escarpment cliffs. The Narrabeen sandstones, shales and claystones are underlain by thick beds of coal that form the escarpment slopes. Soils reflect their parent material – soils on the plateaus are sandy and nutrient poor while soils on the escarpment slopes are clayey and nutrient rich. The geology of the area leads to a high incidence of land slippage.

Ecosystems

The recreation area is part of the Sydney Basin Bioregion and is within the Lake Illawarra catchment. Open sclerophyll forests, woodlands, heaths and sedgelands dominate the plateaus. Subtropical rainforests and tall open (wet sclerophyll) forests dominate the escarpment slopes. These vegetation types are exceptionally rich in species due to the high diversity of environmental conditions. A vegetation map and report are in preparation.

Native plants

A number of regionally significant plant species occur within the recreation area, including the nationally endangered rainforest vine *Cynachum elegans*.

Native animals

There are important populations of native animals, mainly in the rainforest areas. Small populations of koala, red necked pademelon, spotted-tailed quoll and potoroo are known to occur. A diverse number of pigeon, brush turkey and grey-headed flying fox also rely on the rainforest for a suitable habitat.

Aboriginal cultural heritage

The recreation area includes the traditional lands of the Dharawal people. The escarpment is of great symbolic significance to the local Aboriginal people and there are reputed to be large number of sites within the area. Many of these are not recorded.

Historic heritage

The escarpment has a rich mining heritage, and many sites remain in varying states of conservation. Notable sites in the park are Port Kembla No 2 mine and the stables at Mount Kembla and Farmborough Heights. Numerous adits from all eras also remain.

Management issues

Pest plants

Lantana camara is the most apparent invasive weed in the understorey. Climbers and vines such as cape ivy, wandering Jew, coastal morning glory and mothvine pose the greatest risk to rainforests because of their tolerance of heavy shade. Crofton weed seeds spread readily along watercourses, and pampas grass is a persistent pest. Formosa lily and caleopsis are emerging as major pests in rainforests and heaths. Control has been underway for the last four years.

Pest animals

Foxes and cats present a serious threat to all categories of protected fauna. Joint fox and cat control between NPWS and other land managers has contributed to a recovery of some native fauna species, such as the brush turkey. Deer present a serious threat to native vegetation along the escarpment from Royal National Park in the north to Barren Grounds Nature Reserve in the south. Deer may also potentially compete with and displace native herbivores and lead to changes in and erosion of soils.

Fire management

Major concerns for park managers are fuel build-up near urban areas, wildfire control, protection of neighbours and visitors, impacts on native ecosystems, and urban (especially ridgetop) developments next to the reserve. The escarpment rainforest is generally not prone to fires unless there is severe fire weather. The last major fire, in 1968, burnt much of the escarpment and the plateau. Fires in Nattai National Park have the capacity to directly affect the conservation of species, habitats, catchment values and diversity in the recreation area. An annual hazard reduction burning program is prepared and implemented and fire management trails have been constructed. A Fire Management Plan is being prepared.

Usage and facilities

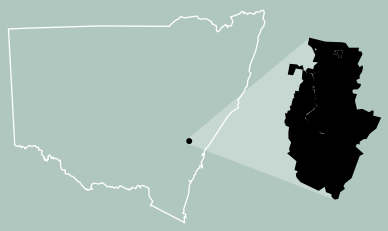
The recreation area receives about 100,000 visitors annually. The escarpment is accessible mainly at Mount Keira and Mount Kembla. The most popular activities are walking, picknicking, and photography and sightseeing from the numerous lookouts. This is done almost exclusively by day visitors as camping is not available.

Facilities include walking tracks for all standards of day walker, and lookouts and picnic areas at Mount Keira and Mount Kembla.

Kanangra-Boyd National Park

J Winter/NPWS

J Winter/NPWS



Kanangra-Boyd National Park

Size	68,661 ha, perimeter approx. 252 km
Created	1969
Location	On the Central Tablelands of NSW, near the Jenolan Caves, about 200 km west of Sydney.

Main picture: Looking north from Kanangra Walls: one of Australia's great wilderness views.
Top right: Heath vegetation on Kanangra Tops.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
■	Under joint management

Snapshot of the park

Why it is conserved

Kanangra-Boyd National Park was reserved for the protection of subalpine plant and animal communities of the Boyd Plateau, and the protection of catchment of the Hawkesbury Nepean River system. Under an agreement with the Sydney Catchment Authority, areas of the park in the Sydney water catchment are jointly managed to preserve water quality and ecological integrity. The park also forms an integral part of the Greater Blue Mountains World Heritage Area.

Points of special interest

Points of interest include Kanangra Walls and the canyons in this area of the park, the Boyd River camping ground and Dingo Dell, and karst features such as Colong and Tuglow caves.

Geology, soils and landforms

The park is part of the Sydney Basin geological province and the Blue Mountains Plateau and is comprised of folded and partially metamorphosed Silurian and Devonian sandstones, limestones, shales and siltstones.

Ecosystems

The park is in the Sydney Basin Bioregion and the Hawkesbury Nepean River catchment. The main ecosystem types are moist montane forest on the higher plateaus and dry sclerophyll forest on the lower slopes.

Native plants

Regionally significant plant species include:

■ *Boronia deani* ■ *Acacia clunies-rossiae* ■ *Hakea* sp. *Kowmung River*.

Native animals

The park provides habitat for a number of threatened species, such as the brush-tailed rock wallaby, and vulnerable species such as the little bentwing bat.

Aboriginal cultural heritage

The area was once inhabited by the Gundangarra people. There are some extensive rock art galleries as well as many unrecorded sites in the park.

Historic heritage

The park's historic heritage is mainly related to early settlement patterns, particularly the first attempts by Europeans to cross the Blue Mountains and colonise areas to the west of the mountains.

Management issues

Pest plants

Introduced plants, such as blackberry, have dispersed along waterways from disturbed sites, notably the upper Kowmung River. Other introduced plants of concern include serrated tussock and scotch broom. Broom is aggressively invasive and has a high potential to spread. Willow trees have also spread down the Kowmung River from a variety of sources. Control programs are in place for each of these species, and have been effective.

Pest animals

Feral pigs and wild dogs are a major threat to habitat and wildlife in the park. Also found, but in lesser numbers, are goats, foxes, feral cattle, horses and cats.

Fire management

The major concern is large wildfires escaping from the park and threatening the townships of the Blue Mountains, as well as the damage they may cause wilderness areas of the park. A hazard reduction burning program is prepared and implemented annually, and fire management trails have been constructed.

Usage and facilities

The park receives about 50,000 visitors annually. Bushwalking, camping, canyoning, day touring and caving are some of the most popular activities.

Facilities at the park include the Kanangra Walls lookout and information bay, and camping grounds at the Boyd River and Dingo Dell. A vehicle entry fee applies for the park.

Kinchega National Park

G Robertson/NPWS

M Cufer/NPWS

Kinchega National Park

Size	44,258 ha, perimeter approx. 420 km
Created	1966
Location	In the far west of NSW, 113 km south-east of Broken Hill and adjacent to the town of Menindee. Extends southwards from Menindee for 62 km along the Darling River.

Main picture: The Kinchega Woolshed, once part of the sprawling Kinchega Station.
Top right: Wedge-tailed eagle chick at about four weeks.

Plans and agreements

■	Plan of Management – draft
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
■	China-Australia Migratory Bird Agreement
■	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Kinchega National Park is the only national park in NSW on the Darling River. It is an example of the natural landscapes and associated plant and animal communities typical of the lower Darling River in NSW.

Points of special interest

The park was established as the first national park in western NSW. Lake Menindee and Lake Cawndilla, two of the largest lakes of the Menindee Lakes Storage Scheme, lie within the park. There are significant structures and relics of early pastoral days and a continuing strong relationship with the Paakantji and Nyampa Aboriginal people.

Geology, soils and landforms

The park has a typical landscape of the west Darling country, with alluvial black soil along the river and associated overflow lakes, and small basins and drainage channels on extensive areas of red sand plain. Fossil remains of megafauna are found in the park.

Ecosystems

Vegetation types in the park include:

- open river red gum forest along the river
- open black box/coolibah woodland on the floodplains
- belah, rosewood, wattle and hopbush on the red sand dunes
- bluebush on the plains and lunettes (white sand dunes).

An endangered ecological community of *Acacia loderi* shrublands is also found in the park.

Native plants

The park protects the endangered purple-wood wattle (*Acacia carneii*) and vulnerable *Solanum karsanse*. A range of programs are being undertaken to eradicate rabbits and goats, which threaten purple-wood wattle and *Acacia loderi* shrublands.

Native animals

Recent fauna surveys have recorded nine species of amphibians, 30 species of lizards and eight species of snakes, 202 species of birds, one monotreme species and 16 other species of native mammals. The endangered small mammal, the kultarr, is still found in the park. Red and grey kangaroos, emus, wedge-tailed eagles and goannas are common sights. Birds of interest include the freckled duck, peregrine falcon, white-breasted sea-eagle and Major Mitchell cockatoo. Large rookeries of cormorants, egrets and pelicans, along with extended breeding grounds for spoonbill, Australian darter and white ibis are present in the lakes and drainage channels.

Aboriginal cultural heritage

The park has a variety of outstanding cultural features. These include Aboriginal sites that go back to the Pleistocene period, as well as many others that belong to later times. The long association of Aboriginal people with the area and the presence of occupation and burial sites mean that the park is of continuing importance to Aboriginal people.

Historic heritage

Historic sites include the remains of European settlements, riverboat traffic and the pastoral activities. Remains of the pastoral industry include the woolshed, which was built of local timber during 1872.

Management issues

Pest plants

Large weed infestations occur on the lake shores and watercourses after flood waters recede, the most notable being noogoora burr, stinkwort, medics and caster oil plant. Spraying programs are undertaken and manual weeding close to watercourses has been achieved with the assistance of the Department of Corrective Services.

Pest animals

The main pest animals found in the park are:

- foxes
- feral pigs
- rabbits
- oats.

Foxes and pigs pose a problem for native animals, particularly threatened animal species, while rabbits and goats damage the already fragile soils and threaten endangered plant species and communities. Control programs are being undertaken for all four pest animal species, though fox and rabbit control is currently the highest priority.

Fire management

The incidence of fire in the park is low, though the semi-arid rangelands have an unpredictable fire frequency pattern. The vegetation fails to produce sufficient fuel to carry fire, except in response to above-average rainfall. Large-scale fires in the region occurred in the 1930s, 1950s and 1970s following above-average rains.

Usage and facilities

The park attracts a substantial number of visitors each year over the autumn, winter and spring school holidays. Visiting between school holidays is generally low to very low during summer. The most common activities are picnicking, fishing, birdwatching and camping.

Facilities provided for visitors include:

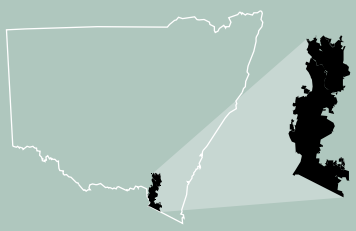
- campsites and picnic areas along the river and at Lake Cawndilla
- wood barbecues at campsites
- self-guided walks around the woolshed and ruined homestead
- basic accommodation in the shearers' quarters.

Vehicle entry and camping fees apply.

Kosciuszko National Park

D Perryman/NPWS

D Perryman/NPWS



Kosciuszko National Park

Size	674,374 ha, perimeter approx.1738 km
Created	1944
Location	In the Snowy Mountains and surrounding slopes and lowlands of south-eastern NSW. The centre of the park is about 450 km south-west of Sydney, 600 km north-east of Melbourne, and 150 km south of Canberra, although Canberra is only 30 km from the north-eastern boundary of the park.

Main picture: The Thredbo River at Dead Horse Gap.
Top right: Fishing in the park's rivers is a popular recreation.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
■	Ramsar wetland convention
	World Heritage listed
■	China-Australia Migratory Bird Agreement
■	Japan-Australia Migratory Bird Agreement
■	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

The main conservation objectives for Kosciuszko National Park are to protect the mountain water catchments and to preserve and protect the outstanding scenery and natural features, particularly the alpine area. The streams and rivers of the park, particularly the snow-fed headwaters of the Snowy River and Murray River system, constitute one of the park's most important resources, the protection of which was a major impetus to the preservation of Kosciuszko State Park in 1944.

Points of special interest

Mount Kosciuszko, at 2228 metres, is the highest point in Australia. The land above 1500 metres is subject to winter snowcover for periods of up to seven months a year, while in the summer the wildflowers are on display. Caves are found at Yarrangobilly and at Blue Waterholes.

Geology, soils and landforms

Many different rock types are exposed within the park. The oldest are marine sediments up to about 450 million years old that have metamorphosed during major earth movements. Granitic rocks, such as those at the summit of Mount Kosciuszko, are the most common of the park's rock types. The central Kosciuszko plateau, which rises gradually from the Eastern Tablelands and falls sharply to the west, was gradually uplifted over about 40 million years.

Some of the landscape features of the highest parts of the Main Range are attributable to minor glacial activity during a period of cold climate 30,000-10,000 years ago. The processes associated with this cold climate also produced a number of unusual landforms, such as boulder streams, on lower slopes.

The park lies astride the Great Divide, the altitude varying from 213 metres in the valley of the Snowy River to 2228 metres at the summit of Mount Kosciuszko. The mountains above 1500 metres comprise the major snow-covered area in Australia, although they comprise only 15 per cent of the park.

Ecosystems

There are four ecosystem types in the park:

- ***Alpine*** (above 1850 metres), with tall alpine herbfield, heathland, sod tussock grassland, short alpine herbfield, feldmark, fens and bogs.
- ***Subalpine*** (between 1500 and 1850 metres), with *Eucalyptus niphophila* woodland, heath, wet heath, sod tussock grassland, fens and bogs.
- ***Montane*** (between 1100 and 1400 metres), with wet sclerophyll forests and dry woodlands of the snow gum alliance, including *E. pauciflora*, *E. dalrympleana*, *E. rubida*, *E. viminalis* and *E. stellulata*.
- ***Tableland*** (below 1100 metres), with savannah woodlands, tall woodland *E. albens-Callitris* spp. Association, and black scrubs.

D Perryman

Snow gums near Charlotte Pass.

Native plants

Some of the flora for the four elements are as follows:

- ***Alpine*** – *Coprosma pumila* and *Neopaxia australasica-Plantago* sp. Association, including *Caltha introloba*, which is unique in that it commences flowering under the snowcover. All species are low-growing or carpet-like plants, such as *Dichosciadium ranunculaceum* and *Parantennaria uniceps*.
- ***Subalpine*** – *Eucalyptus niphophila* woodland, with a dense shrub understorey of the *Oxylobium ellipticum* and *Podocarpus lawrencii*. In the sod tussock grasslands is the *Poa* sp. *Danthonia nudiflora*, in the fens *Carex* sp., and in bogs *Sphagnum* sp.
- ***Montane*** – Trees include *Eucalyptus pauciflora*, *E. dalrympleana*, *E. rubida*, *E. viminalis* and *E. stellulata* with an understorey of *Bossiaea foliosa*. In more sheltered sites *E. globulus* spp. *bicostata*, *E. glaucescens* and *E. fastigata* occur. The westerly exposed aspects are dominated by *E. radiata*, *E. viminalis* and *E. rubida*.
- ***Tableland*** – Trees include *E. melliodora, E. blakelyi*, *E. viminalis*, *E. rubida*, *E. dives* and *E. radiata*, while at the higher altitudes and on the moister sites *E. dalrympleana*, *E. pauciflora* and *E. viminalis* occur.

Native animals

Some 287 vertebrate species have been recorded, a significant proportion of the species in NSW. Of these there are 31 species of mammals, including the mountain pygmy possum and the broad-toothed rat – both listed as vulnerable. The spotted-tailed quoll and koala also occur.

Just over 200 species of birds have been recorded, representing nearly 40 per cent of bird species known in NSW. In alpine areas species include the pipit, nankeen kestrel, Australian magpie and the uncommon peregrine falcon. Others include the pink robin, black-eared cuckoo and blue-winged parrot.

Thirty-one species of reptiles have been recorded. The alpine water skink is restricted to Southern Tablelands habitats above 1000 metres, and the bulk of the species range occurs within the park. Twelve species of frogs are known in the park, including the southern and northern corroboree frog.

Aboriginal cultural heritage

The park has a variety of Aboriginal sites, including artefact scatters, scarred and carved trees, ceremonial sites, axe-grinding grooves, rock engravings and a recently recorded rock art site. The park also contains a number of natural features that have spiritual values for Aboriginal people, not only those in the local area but from as far south as Melbourne, who travelled to this area at certain times of the year. NPWS staff have completed several Aboriginal heritage protection projects with local Aboriginal representatives, and this continues annually in the park and surrounding areas.

Historic heritage

The park contains some large areas of land that are dominated by historic features. The area around Kiandra and leading up to Tabletop Mountain, for example, contains numerous mining remains, and the Coolamine Homestead is also of importance. As well as these historic features, the park contains many isolated sites, such as huts, stockyards, fences and small mining areas.

Management issues

Pest plants

The park has numerous scattered areas of introduced trees related to past land use, such as homesteads, early tourism and the Snowy Mountains Scheme. Some parts are also subject to weed infestations, again often the result of past land use. A total of 187 exotic species have been found in the park, most of which are small herbs (particularly millfoil/yarrow). Weeds include broom, willow, blackberry, briar, St Johns wort, and several garden plants and softwoods, notably lodgepole pine.

Pest animals

The park contains populations of wild horses, rabbits, pigs, hares and wild dogs. It is NPWS policy to respond to substantiated reports by neighbours of wild dog activity on nearby lands or on the edge of the park. Emphasis is given to liaising with neighbouring land-owners concerning the loss of stock from wild dogs from the park, and wherever possible NPWS assists land-owners in the control of these animals. Wild horses are now being removed from alpine areas.

Fire management

Since NPWS assumed responsibility for fire management of the park in 1986, it has concentrated on reducing available fuel in certain areas to protect life and property, rather than on the previously used broad-scale burning. Fire risk assessment is an ongoing process, identifying areas where fires frequently ignite and where there is the potential for major impact on life and property.

Like most of eastern NSW, the park has a long history of wildfires. Several factors affect this, including public use, sources of ignition, types of vegetation, available fuels, and terrain (slope, aspect and elevation). Of all recorded wildfires since 1956, 41 per cent were started by people, either by arson or from campfires, 20 per cent were caused by lightning, and 39 per cent from other, or unknown, causes.

Use by the public

The park currently receives about 3 million visitors per year, more or less evenly split between winter (ski season) and summer. About two-thirds of the winter visitors come for alpine skiing in the only ski fields in NSW. The rest come for cross-country skiing, or to enjoy other forms of snow recreation such as tobogganing. Most of the winter use is concentrated at the ski resorts along Kosciuszko Road and the Alpine Way, such as Perisher, Smiggin Holes and Thredbo.

Summer use is more dispersed, although much of it is also focused along Kosciuszko Road and the Alpine Way to the summit area, where Australia's highest peak (Mount Kosciuszko, 2228 metres) and the wildflowers are a major attraction. However, the roadside picnic and camping areas throughout the park also attract many summer visitors. The park is used for snow recreation, car and bus touring, sightseeing, bushwalking, rock-climbing, ice-climbing, caving, horseriding, cycling, canoeing, hang-gliding, fishing, swimming, photography, painting and many more activities.

Visitor facilities

The park has a number of walking tracks, including a section of the Alpine Walking Track, which extends from Victoria to near Canberra. There are a number of barbecue sites and camping grounds scattered through the park, particularly along the Thredbo River. There are visitor information centres at Tumut, Khancoban and Jindabyne. Cave tours are run at Yarrangobilly Caves, and the Kosciuszko Education Centre is located at the old park headquarters at Sawpit Creek. A vehicle entry fee applies.

In April 2001 land was cleared beneath Transgrid powerlines without environmental guidelines being adhered to, resulting in large areas of bare soil being exposed to winter rains. An emergency rehabilitation program has been initiated to avoid a large siltation problem in mountain rivers.

Bogong moth

Ku-ring-gai Chase National Park

J Winter/NPWS

J Winter/NPWS

Ku-ring-gai Chase National Park

Size	14,883 ha, perimeter approx. 231 km
Created	1894
Location	On the central coast of NSW, about 40 km north of Sydney.

Main picture and top right: Views from the lookout at West Head.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Ku-ring-gai Chase National Park was reserved for the protection of native plants and animals and natural ecosystems of the Hornsby Plateau. It also conserves the catchment of the Hawkesbury Nepean River system, Aboriginal sites that form part of the heritage of the Guringai tribe, and a number of European historic places.

Points of special interest

The most popular sections are the Bobbin Head picnic area, The Basin camping area, Pittwater, West Head on Commodore Heights overlooking the mouth of the Hawkesbury River, and the Barrenjoey Headland. Tourist drives through to Coal and Candle and McCarrs Creek Road are popular for both cars and bicycles.

Geology, soils and landforms

The park is part of the Sydney Basin geological province and the Hornsby Plateau and is comprised primarily of Triassic Hawkesbury sandstone with small volcanic intrusions, Quaternary alluvium and Narrabeen shale outcrops.

Ecosystems

The park is part of the Sydney Basin Bioregion. The main ecosystem type in the park is dry sclerophyll forest and woodland, with shrubland, heathland, hanging swamps and small pockets of warm temperate rainforest in sheltered gullies. A vegetation map and report have been prepared for the park.

Native plants

There are regionally significant populations of:

■ *Grevillea caleyi* ■ *Darwinia biflora* ■ *Haloragodendron lucasii* ■ *Kunzea rupestris* ■ *Persoonia mollis* spp. *Maxima* ■ *Eucalyptus camfieldii* ■ *Angophora costata*.

The Duffys Forest endangered ecological community occurs in the park.

Native animals

Regionally significant populations of several animals occur in the park, including:

- spotted-tailed quoll
- southern brown bandicoot
- koala
- bentwing bat
- large-footed mouse-eared bat
- powerful owl
- masked owl.

Aboriginal cultural heritage

The park contains extensive evidence of Aboriginal occupation. Two groups of the Guringai people occupied the area which is now the park: the Garrigal people occupied the area around the Lambert Peninsula and the Terramerragal lived in the Turramurra area. There are more than 350 Aboriginal sites recorded, with the majority concentrated on the Lambert Peninsula. The most widespread evidence of past Aboriginal use of the park consists of shell middens, which are found along most of the foreshores. There are also over 170 recorded rock engraving sites. Other sites have hand stencils, grinding grooves, stone arrangements, burials and occupation sites. Only a small number of the sites are promoted for public viewing. Many other sites receive regular visits because they are located close to roads or walking tracks.

Historic heritage

The park contains a number of European sites of historic value, including early recreational settings, buildings (including the Bobbin Inn), ruins, monuments, plantings, early transport routes and military installations.

Management issues

Pest plants

The weeds of most concern in the park are:

- bitou bush
- cassia
- asparagus fern
- ludwigia
- pampus grass
- privet
- mist flower
- crofton weed
- lantana
- whisky grass.

Volunteer bush regeneration groups assist NPWS with the control of these species.

Pest animals

Near urban areas cats are a problem for native animals and small birds. An education program for neighbours is conducted in conjunction with local government. Foxes are likely to occur throughout the park and benefit from increased food supplies near urban areas. Control programs have been undertaken where possible in conjunction with other land managers to decrease predator impact on native species, particularly endangered species such as the southern brown bandicoot.

Fire management

Major concerns of park managers are fuel build-up near urban areas, wildfire control, protection of neighbours and visitors, and the impact on native ecosystems. Wildfires in 1983 and 1994 had a major impact on the park. A draft Fire Management Plan is in preparation and is likely to be available for public comment during 2001.

Usage and facilities

The park receives about 2 million visitors annually. Boating, fishing, bushwalking, picnicking, camping, day touring and wildlife photography are the most popular activities.

There are a number of very popular visitor facilities at Bobbin Head, Coal and Candle Creek and West Head. Boat ramps at Appletree Bay and Akuna Bay provide access to Cowan Creek. The park contains about 55 different walking tracks and trails. Camping is available at The Basin and at Brooklyn Dam. A visitor centre, shop and field studies centre are located within the park. A vehicle entry fee applies.

Lane Cove National Park

M Cufer/NPWS

M Cufer/NPWS

Lane Cove National Park

Size 598 hectares, perimeter approx. 71 km

Created 1992

Location Within the Sydney metropolitan area, 11 km north-west of the CBD.

Main picture: The park stretches along four kilometres of the picturesque Lane Cove River.
Top right: The boatshed on the southern bank of the river.

Snapshot of the park

Why it is conserved

Lane Cove National Park is an important area of remnant bushland in the Sydney metropolitan area. It protects a range of flora and fauna, including a number of endangered species, along with a number of Aboriginal and European cultural heritage sites. The northern sections of the park support flora not well represented in other reserves. It also forms part of the network of parks and reserves that link Sydney Harbour to the Hawkesbury and Central Coast Region.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The most popular areas are those around the weir and picnic areas. Although surrounded by urban development, the steep river valley provides visitors with a sense of remoteness. Also within the park is the Kukundi Wildlife Shelter, which focuses on wildlife rehabilitation and public education.

Geology, soils and landforms

The park is part of the Sydney Basin geological province and the Hornsby Plateau. The geology of the park can be broadly divided into two groups: the majority of the park is Hawkesbury sandstone and associated soil types, while remnants of Wianamatta shale and its derived soils are less prevalent, occurring on a few ridgetops.

Ecosystems

The park is in the Sydney Basin Bioregion and forms part of the Lane Cove River and Sydney Harbour catchment. The ecosystem types within the park include woodland with shrubland, heathland, hanging swamps and small pockets of warm temperate rainforest in sheltered gullies. Less common and regionally important are stands of blue gum, blackbutt and turpentine communities. A vegetation map and report have been prepared for the park.

Native plants

In the park there are populations of two vulnerable species, *Darwinia biflora* and *Tetratheca glandulosa*. Other regionally important species include:

- *Melaleuca deanii*
- *Prostanthera howelliea*
- *Diuris maculata*
- *Pultenaea scabra* var. *biloba*
- *Brunoniella pumilio*
- *Hibbertia aspera*
- *Pultenaea viscosa.*

Native animals

Urbanisation has had significant impacts on the diversity and number of fauna species in the park. Despite this, regionally significant populations of red-crowned toadlet and powerful owl occur in the park, as well as populations of more common species.

Aboriginal cultural heritage

The park is within the traditional lands of the Guringai people. There is limited evidence remaining of the Aboriginal occupation of this area, though 40 sites have been recorded within the park, including shelters, cave art, rock engravings, middens and axe-grinding grooves.

Historic heritage

A number of European sites of historic value are found in the park, including early recreational settings, buildings (including the oldest known building in the Ku-ring-gai Shire), early transport routes and cobblestone roads, and dry stone walls.

Management issues

Pest plants

Weed problems in the park have been exacerbated by surrounding urban development and increased nutrient and stormwater runoff. Of most concern are:

- camphor laurel
- rhus
- cassia
- ludwigia
- pampas grass
- privet
- mist flower
- crofton weed
- lantana
- wandering Jew
- balloon vine.

A major bush regeneration program using the skills and experience of a large number of volunteers is underway.

Pest animals

Cats near urban areas are a problem for native animals and small birds. An education program for neighbours is conducted in conjunction with local government. Foxes are likely to occur throughout the park, benefitting from increased food supplies in nearby urban areas. Control programs have been undertaken where possible in conjunction with other land managers to decrease predator impact on native species. Rabbits occur in varying numbers throughout the park, but mainly concentrate round grassed public-use areas in the eastern part of the park. Control programs have been undertaken with varied success.

Fire management

Major concerns of park managers are fuel build-up near urban areas, wildfire control, protection of neighbours and visitors, and the impact of fire on native ecosystems. The 1994 wildfires had a major impact on the park, burning 87 per cent of the land area. A draft Fire Management Plan is in preparation and is likely to be available for public comment in 2002. A hazard reduction burning program is prepared and implemented annually, and fire management trails have been constructed.

Usage and facilities

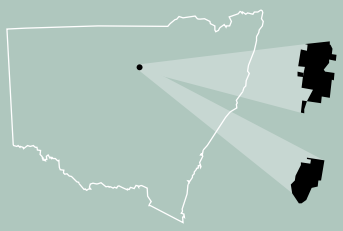
This park receives about 1 million visitors annually, mostly during school holidays, weekends and public holidays. Picnicking, bushwalking, jogging, environmental education, birdwatching, bush regeneration and cycling are the main activities. Over 85 per cent of visitors are from Sydney. Most live within 10 kilometres of the park, and there is a high proportion of repeat visits.

There are several popular visitor facilities, mainly focused around the eastern portion of the park, including walking tracks and trails. The Lane Cove Caravan Park provides a campsite and cabin accommodation and is the only area where camping is permitted in the park. A vehicle entry fee applies.

Macquarie Marshes Nature Reserve

G Croft/NPWS

NPWS



Macquarie Marshes Nature Reserve

Size	18,192 ha, perimeter approx. 110 km
Created	1971
Location	On the Macquarie River in central NSW, 100km north of Warren, 30km west of Quambone and 700km north-west of Sydney. In two distinct blocks in the North and South Marsh.

Main picture and top right: The mosaic of wetland that forms the Macquarie Marshes is one of the largest inland wetland systems in south-east Australia.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
■	Ramsar wetland convention
	World Heritage listed
■	China-Australia Migratory Bird Agreement
■	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Macquarie Marshes Nature Reserve provides protection for part of the internationally recognised Macquarie Marshes wetland, situated at the lower end of the Macquarie River. The Macquarie Marshes are among the largest remaining inland semi-permanent wetlands in south-eastern Australia.

Points of special interest

The reserve is one of the oldest conservation areas in NSW. In 1900 an area of Crown land was reserved for the preservation of game. It then became a Bird and Animal Sanctuary in 1919 and a Fauna Protection District in 1948. In 1971 the area was gazetted as Macquarie Marshes Nature Reserve. The nature reserve was grazed under lease until 1990.

Geology, soils and landforms

The reserve is an alluvial floodplain consisting of four main landforms:

- braided swamps, consisting of a maze of shallow channels and low swamp
- ephemeral lagoons, forming semi-permanent wetlands
- channel country, which receives periodic flooding
- Gilgai floodplains, which receive infrequent flooding.

Ecosystems

The Macquarie Marshes, which include large areas outside of this reserve, contain the largest area of reeds (*Phragmites* sp.) in south-eastern Australia. The reserve also contains significant stands of river red gum (*Eucalyptus camuldulensis*) and coolibah (*E. microtheca*). Other vegetation types include:

- water couch grasslands
- black box woodlands
- lignum
- cumbungi reeds.

Native plants

The reserve protects a representative range of vegetation found throughout the Macquarie Marshes. A comprehensive vegetation survey is yet to be undertaken.

Native animals

A total of 279 native animals have been recorded in the reserve, with 11 bird species and one mammal species listed as vulnerable. The black-necked stork, which is listed as endangered, has also been recorded in the reserve. About 30 species of waterbirds breed in the Macquarie Marshes, including in the reserve. Egrets and ibis often breed in large colonies interspersed with other species such as spoonbills and cormorants. The Macquarie Marshes are important to nine migratory bird species listed in the Japan-Australia Migratory Bird Agreement (JAMBA) and the China-Australia Migratory Bird Agreement (CAMBA).

Aboriginal cultural heritage

The Macquarie Marshes, including the reserve, were occupied by the Wailwan people prior to European settlement. A range of significant Aboriginal sites, including oven mounds, surface campsites, scarred trees and artefacts, are found in the reserve.

Historic heritage

The reserve was grazed under lease from 1900 to 1990. There are a number of timber cattleyards remaining from grazing practices, and the disused Borah Well.

Management issues

Pest plants

Weeds present in the reserve include:

- horehound
- noogoora and Bathurst burr
- lippia
- golden dodder
- weeping willow
- khaki weed
- saffron thistle
- prickly lettuce
- camel melon
- spear thistle
- common heliotrope
- variegated, scotch and cockspur thistle.

Control programs for these plants are difficult to implement as they are close to watercourses and can be reintroduced by seeds from upstream. Biological controls have been introduced with some success, shown for example by the impact of *Epiblema strenuara* on noogoora burr.

Pest animals

The main pest animals of concern found in the reserve are feral pigs and foxes. Pigs and foxes impact on native fauna, particularly those that live and breed on the ground. Pigs reproduce quickly to large numbers and can significantly impact on bird breeding colonies. Aerial culling programs are undertaken to control pig numbers and ground baiting programs are targeted at controlling foxes. Other introduced animals include goats, feral cattle, cats, rats, the house mouse and the common starling.

Fire management

The reserve has been regularly burnt in the past to promote grazing (the reedbeds in particular) and reduce the risk of major wildfire, which can damage vegetation such as river red gum communities. Fuels in the reedbeds build up very quickly and produce very intense fires, often a result of lightning strikes.

Usage and facilities

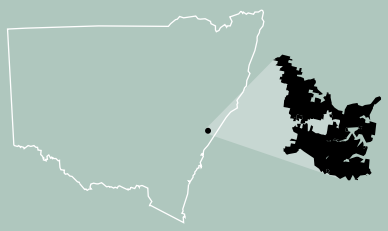
Public use of the reserve is controlled, as the focus of management is on monitoring and research and because the reserve is surrounded by private land. There is an Open Weekend held on the October long weekend each year (depending on water levels allowing access to the reserve), during which NPWS staff take members of the public on tours of the reserve.

There are no visitor facilities. NPWS has constructed a wildlife viewing platform on the Gibson Way, which traverses the Macquarie Marshes.

Marramarra National Park

J Winter

J Winter/NPWS



Marramarra National Park

Size 11,759 ha, perimeter approx. 169 km

Created 1979

Location On the central coast of NSW, 40 km north-west of the Sydney CBD.

Main picture: View from Canoelands Ridge Trail over the park and Hawkesbury River.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Marramarra National Park contains vegetation types that are not well represented in other reserves in the Sydney Basin, including estuarine and saltmarsh communities and vegetation on alluvial and volcanic soils. It also protects a number of Aboriginal and European heritage sites and important native flora and fauna populations.

Points of special interest

The park generally offers remote low-key facilities; picnicking and camping areas are available at Marramarra Creek and Gentlemans Halt. Boat access is available via a wharf at Gentlemans Halt for access by larger boats.

Geology, soils and landforms

The park is part of the Sydney Basin geological province and the Hornsby Plateau. It can be divided into four geological units: the most extensive is Hawkesbury sandstone, and there are minor outcrops of Narrabeen sedimentary rocks, isolated volcanic intrusions and Quaternary alluvial deposits.

Ecosystems

The park is within the Hawkesbury Nepean River catchment and the Sydney Basin Bioregion. The main ecosystem types are those commonly associated with Hawkesbury sandstone and found in other sandstone reserves in the region, such as dry sclerophyll open forests and woodlands. There are a number of vegetation communities protected in this park that are not well represented in other reserves, including Sydney blue gum forest, woodlands on Narrabeen shales, hanging swamp communities, estuarine communities and seagrass communities.

Native plants

A number of regionally significant plant populations are found in the park. These are:

- *Darwinia biflora*
- *Haloragis exalata*
- *Kunzea rupestris*
- *Asterolasia elegans*
- *Leptospermum deanii* (at the western limit of its distribution)
- *Micromyrtus blakelyi*
- *Tetratheca glandulosa*.

Native animals

Regionally significant populations of the following animals are found in the park:

- spotted-tailed quoll
- koala
- giant burrowing frog
- red-crowned toadlet
- glossy black cockatoo
- powerful owl.

The recently listed population of Sydney gang gang cockatoos is also at least a vagrant population in the reserve.

Aboriginal cultural heritage

The park is within the traditional lands of the Guringai and Dharuk people. It contains a number of Aboriginal sites, including cave art and middens.

Historic heritage

There are a number of sites of European historic value, including the foundations of the road and wharf at Gentlemans Halt, the remains of a stone cottage at Sentry Box Reach, orchards along Marramarra Creek, and the foundations of a hut, stone walls and well at Big Bay.

Management issues

Pest plants

The weeds of most concern are:

- camphor laurel
- pampas grass
- cassia
- privet
- mist flower
- crofton weed
- lantana
- noogoora burr
- moth vine.

Control programs primarily using herbicides are undertaken on priority species and locations.

Pest animals

Cats near urban areas are a problem for native animals and small birds; to deal with this, education programs for neighbours are conducted in conjunction with local government. Foxes are likely to occur throughout the park, benefiting from increased food supplies near urban areas; fox control programs are undertaken. Feral goats also occur but only in limited numbers; this species has the potential to affect other native herbivores such as swamp wallabies. Control programs for feral pigs are also undertaken.

Fire management

Major concerns of park managers are fuel build-up in urban/rural areas, wildfire control, protection of neighbours and visitors, and impacts on native ecosystems. The park has a history of wildfires and management burning. A draft Fire Management Plan is in preparation and is likely to be available for public comment in 2001. A hazard reduction burning program is prepared and implemented annually, and trails have been constructed to assist with fire management.

Usage and facilities

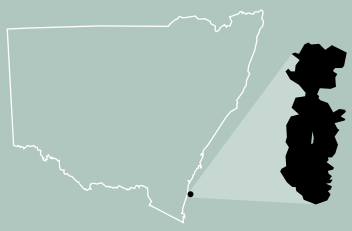
Current estimates suggest the park receives about 8000 visitors annually. The most concentrated use occurs around the edge of the park and on walking trails and camping areas.

The two most popular areas in the park, Gentlemens Halt and Marramarra Creek, provide camping and picnic facilities, though road access to the park is limited. A number of walking tracks and trails in the park provide opportunities for walking and cycling.

Montague Island Nature Reserve

G Robertson/NPWS

A Mostead/NPWS



Montague Island Nature Reserve

Size	81 hectares, perimeter approx. 7 km
Created	1953
Location	500 km south of Sydney on the south coast of NSW, 9 km south-east of Narooma.

Main picture: The island is an important breeding ground for the Australian fur seal.
Top right: Montague Island Lighthouse, one of a chain of nine historic lighthouses along the NSW coast managed by NPWS.

Snapshot of the reserve

Why it is conserved

Montague Island is the largest island off the NSW coast other than Lord Howe Island. It has been classified by the National Trust as a landscape conservation area for its scenic, scientific and historical values.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
■	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The reserve is one of the most significant breeding areas along the NSW coast for seabirds, and is an important site for Australian fur seals. The island is also highly regarded for its historic lighthouse, which was built from island granite and completed in 1881.

Geology, soils and landforms

The reserve is part of the Cretaceous Mount Dromedary monzonite complex. Much of the island is covered in remnant sand dunes up to one metre thick, and consequently the soils are very thin. The southern section of the island reaches a height of 64 metres above sea level and has many rocky outcrops, while the northern section is slightly lower with fewer rocky outcrops.

Ecosystems

The island's photographic records and maps show that at the turn of the century much of the southern section of the island was covered by scattered small trees and shrubs, which probably included banksias, acacias and casuarinas. Some 100 native plant species and 90 bird species, predominantly seabirds, have been recorded on the island, though no native mammal species remain.

Native plants

The native plant species demonstrate the island's previous connection to the mainland, with the dominant species being:

- mat rush (*Lomandra longufolia*)
- tussock grass (*Poa poiformis*)
- bracken (*Pteridium esculentum*).

Native animals

The island is largely dominated by some 90 species of seabirds. It is one of the most important breeding areas along the NSW coast for seabirds, particularly:

- little penguin
- wedge-tailed shearwater
- short-tailed shearwater.

Three threatened bird species have been recorded on the island, namely:

- sooty oystercatcher
- wandering albatross
- fleshy-footed shearwater.

The island also contains the only important site along the NSW coast for the Australian fur seal.

Aboriginal cultural heritage

The island contains numerous Aboriginal artefact scatters and middens. These have high scientific value because of their potential to provide information about Aboriginal use of island resources (such as mutton birds and penguins), the use and manufacture of water craft, and the transportation of raw materials for making stone artefacts. The island is still used today for traditional ceremonial purposes.

Historic heritage

The island was first sighted by James Cook in 1770 and was named nine years later after George Montagu Dunk, the Earl of Halifax. The island was initially managed in 1881 for provision of lighthouse, weather recording and coastal surveillance. It remains today an excellent example of a lifestyle that reflects adaptation to a remote and lonely existence. It was the last occupied island lighthouse in NSW and is the only remaining occupied island lightstation on the NSW coast.

Management issues

Pest plants

The main weeds found on the island are

- kikuyu
- rambling dock
- buffalo grass.

Kikuyu is a particular problem, dominating large sections of the island. It has been found that kikuyu presents an impenetrable barrier to movement and burrowing by penguins and shearwaters, and also threatens native plant species. A joint control program between NPWS and Charles Sturt University is currently being carried out in the hope of drastically reducing the amount of kikuyu on the island.

Pest animals

The only introduced animals found on the island are the house mouse and the rabbit. Rabbits are not numerous but are thought to have contributed to changes in the vegetation on the island and are subject to continuing control programs.

Fire management

Fires occur occasionally on the island, generally from lightning strikes. Fires can have a severe impact on wildlife and can result in erosion and habitat loss, and are therefore suppressed as quickly as practicable.

Usage and facilities

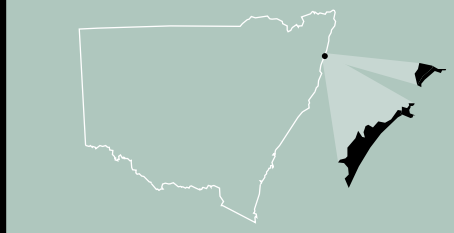
The island attracts a substantial number of visitors each year, particularly in the summer months. Visiting is permitted only as part of an authorised tour. Tours are carried out by a licensed commercial operation and currently involve a boat trip from Narooma, landing at the new jetty, viewing the lightstation and other features such as the seal site. Evening tours are also given, with the main attraction being the little penguin ‘parade’. Facilities provided for visitors include:

- a refreshment area at the lightstation
- a penguin viewing platform
- easy-to-use lawn walkways
- toilets.

Moonee Beach Nature Reserve


H Clark/NPWS


H Clark/NPWS



Moonee Beach Nature Reserve

Size 336 ha, perimeter approx. 20 km

Created 1976

Location In two parts between the villages of Moonee and Sandy Beach, 15 km north of Coffs Harbour.

Main picture: Moonee Beach, with Mount Coramba in the distance.
Top right: Crab markings on the beach.

Snapshot of the reserve

Why it is conserved

Moonee Beach Nature Reserve protects scenic qualities and high scientific values, including those found in rare protected coastal rainforest.

Points of special interest

The scenic headlands and wide variety of coastal vegetation types are key features of this reserve.

Plans and agreements

	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Geology, soils and landforms

The geology of the general area consists of sedimentary rocks that have undergone low-grade metamorphism, with isolated igneous intrusions. Soils are generally loose, medium or coarse quartz sands, of low nutrient status and high permeability. Diggers Point is a granite headland, unusual in this region.

Ecosystems

The reserve protects a great variety of vegetation communities, including spinifex, sclerophyll woodland, mangroves, blackbutt forest and coastal rainforest. A wetland is located in the northern part of the reserve, to the west of Fiddamans Beach.

Native plants

The four headlands in the park support the only known wild populations of the endangered plant *Zieria prostrata*. Rare plant communities also occur on the headlands, including dwarf heath, bare twig rush and headland grasslands. Open swamp woodland of *Melaleuca quinquenervia* occurs along the western edges of the reserve. The sandy plain between Moonee Creek and the frontal dune is dominated by wet heathland featuring *Banksia serrata*. Small stands of *Casuarina glauca* and *Eucalyptus pilularis* occur next to Moonee Creek.

Native animals

Eastern grey kangaroos are found throughout the reserve, and swamp wallabies frequent the coastal rainforests and heathlands. Eighty bird species are known. The 10 endangered species include sooty and pied oystercatchers and black-necked storks.

Squirrel gliders are found in sclerophyll woodland and three endangered bat species – Queensland blossom bat and common and little bentwing bats – roost in coastal caves. Two rare butterflies – the Australian fritillary butterfly and the black and white tiger butterfly – reach their southern limit of distribution in the reserve.

Threats to native wildlife include:

- vehicles on the nearby Pacific Highway
- predation by dogs, foxes and feral cats
- future urban development
- wildfires
- vandalism.

NPWS is addressing these problems through ongoing community education and law enforcement.

Aboriginal cultural heritage

Look-At-Me-Now Headland is of great spiritual significance to the local Gumbaynngirr people. The reserve protects several Aboriginal sites, including extensive middens, stone tool scatters and an axe-making area.

Historic heritage

Dammerel Memorial at Dammerels Headland acknowledges the contribution of the Solitary Island lightstation signallers to early maritime safety. Buried headstones near the walking track behind Shelley Beach mark the graves of victims of a shipwreck in 1886. Fiddamans Goldmine and associated workings were once located at Diggers Headland, but no traces remain. Little physical evidence now remains of the sandmining and grazing that occurred prior to creation of the park.

Management issues

Pest plants

Large sections of the dune communities are infested with bitou bush, while groundsel bush is common in the wetter areas. Weed control programs are ongoing – for example releasing biological control agents for bitou bush. *Casuarina equisetifolia*, *Leptospermum laevigatum* and *Acacia saligna* were planted in the early 1970s to rehabilitate earlier sandmining sites. These species are now prevalent in the northern hind dune areas to the west of Bare Bluff and the northern part of Moonee Beach. NPWS has prepared a pest management plan that identifies these plants for control actions.

Pest animals

Wild and domestic dogs, foxes and feral cats threaten wildlife and feed on native animal populations. NPWS has completed a survey of local residents' and visitors' observations of native and feral fauna, and will use this information to develop strategic pest animal control programs.

Fire management

Areas of this park were repeatedly burnt and grazed prior to gazettal, and arson is an occasional problem today. The primary aims of fire management are to reduce risk to life and property both within the reserve and in the townships of Emerald Beach and Sandy Beach, and to protect and conserve the natural, cultural, scenic and recreational features of the reserve.

Usage and facilities

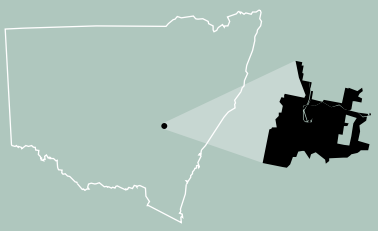
The reserve's scenic headlands and undeveloped surfing beaches are popular recreation sites. They are good for fishing, snorkelling and scuba diving. NPWS maintains a sealed road and car park at Look-At-Me-Now Headland and a new fully paved wheelchair access track has been constructed around this headland, linking it to the walking track to Shelley Beach. A network of other tracks focus on the other headlands.

Staircases are under construction at Dammerels Headland to control erosion caused by walkers. An interpretive display is located near the car park, and directional signs have been installed along the track network. Vehicle entry fees apply to part of the reserve.

Mount Canobolas State Recreation Area

J Winter/NPWS

J Winter/NPWS



Mount Canobolas State Recreation Area

Size 1673 ha, perimeter approx. 50 km

Created 1997

Location Due west of Sydney, 15 km south-west of Orange in central west NSW.

Main picture: View from the peak of Mount Canobolas, 1395 metres above sea level.
Top right: A waterfall on the south-east side of the mountain.

Snapshot of the area

Why it is conserved

Mount Canobolas State Recreation Area provides protection for a diverse range of plant and animal communities. The higher altitude of the park supports subalpine species not found elsewhere in central NSW.

Plans and agreements

	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The peak in this recreation area, 1395 metres, is the highest point west of the Blue Mountains; full panoramic views of the surrounding country can be seen from here. Past volcanic activity has forged a variety of terrain types that support diverse vegetation species.

Geology, soils and landforms

The recreation area is within the Brigooda-Oberon volcanic chain, which was active 11-13 million years ago. Eruptions during that time formed the 50 or so volcanic features present in the area today. The different tiers of lava flows have formed the basis of rich agricultural soils in the foothill and plains, though soils vary from these rich soils to thin soils on the peaks and rocky outcrops. A thick basalt cap forms the top of Mount Canobolas.

Ecosystems

The recreation area supports subalpine vegetation communities on the summit, and both dry and moist woodlands in the lower slopes. A species of candlebark gum is unique to this area. Vegetation types include:

- snow gums with snow grasses and heaths
- tall eucalypt forest
- moist and dry forest/woodland.

Native plants

The recreation area protects 305 native plant species, two of which are found only here, namely *Eucalyptus canobolensis* and *Eucalyptus petracola*. Many of the plant communities are at the northern and western limits of their known distribution.

Native animals

No systematic fauna survey has been carried out in the reserve, but about 60 species are known to occur. More species may be found when a formal survey is carried out because of the area's altitude, isolation and unique vegetation. Significant species recorded are the yellow-bellied glider and the little pied bat.

Aboriginal cultural heritage

A formal survey of the park is yet to be undertaken. However, known sites include substantial campsites, stone tools and rock carvings. Further research is required, particularly near visitor facilities and along watercourses.

Historic heritage

The historic heritage of the park is poorly understood. Further research is required in this area.

Management issues

Pest plants

The main problem weeds are:

- blackberry
- serrated tussock
- St Johns wort.

Control programs have been undertaken on a regular basis using contract weed sprayers. Substantial impact has been made on blackberry and serrated tussock infestations, but long-term commitment to continued control is required to reduce these weeds to low levels.

Pest animals

The main pest animals are:

- foxes
- wild dogs
- feral pigs
- rabbits
- cats.

Foxes, wild dogs and pigs pose a particular problem for native animals in the park, particularly threatened animal species, while rabbits damage the already fragile soils and place grazing pressure on the plant species. No formal control programs are in place at present, but a variety of programs are planned.

Fire management

The park has a low fire frequency, which has allowed the subalpine communities to develop. Some arson reports have been recorded from dumped stolen cars. Fire management in the park is primarily limited to suppressing wildfires.

Usage and facilities

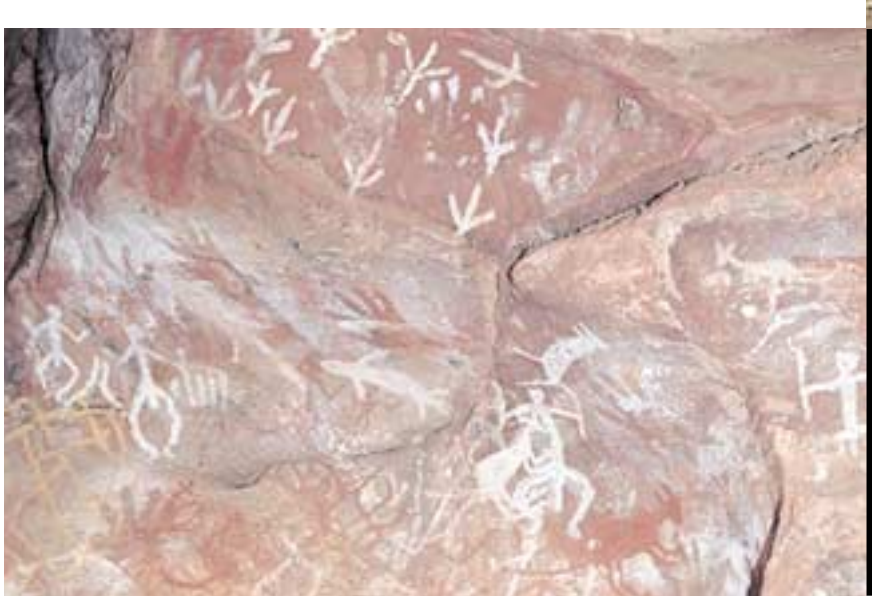
The recreation area attracts at least 75,000 visitors a year. Most visitors to the region drive to the peak for the 360° views. Other popular visitor activities are picnicking, bushwalking and camping. Visiting is more active in the warmer months, although snowfalls also attract the public to the park.

Facilities provided for visitors are being upgraded and include:

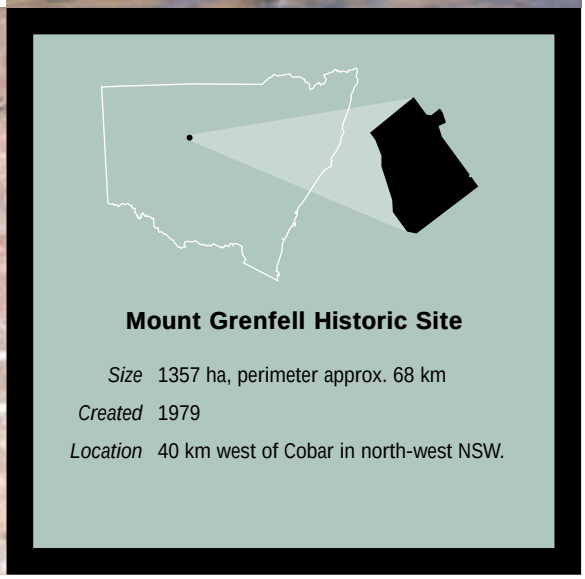
- gas barbecues in designated picnic areas
- water
- self-guided walking tracks
- toilets in picnic/camp areas
- lookouts.

Mount Grenfell Historic Site

G Robertson/NPWS



NPWS



Main picture: Layers of ochre and clay from different eras produce a multicoloured effect on the rock overhangs of the site.
Top right: Euro.

Snapshot of the site

Why it is conserved

Mount Grenfell Historic Site protects a large number of significant Aboriginal rock paintings.

Points of special interest

The site features Aboriginal rock paintings. A 5-kilometre walk provides views over the vast Cobar Peneplain and a chance to see the flora and fauna of the area up close. Negotiations have commenced for the handing back of the site to the local Aboriginal community.

Plans and agreements

	Plan of Management
■	Fire Management Plan – draft
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
■	Identified to be handed back to the local Aboriginal community
	World Biosphere Reserve
■	Subject to Regional Forest Agreement

Geology, soils and landforms

Mount Grenfell is situated on an ancient, weathered sandstone ridge. Erosion has created several large rock overhangs that Aboriginal people have used for painting and stencilling. The soils are thin red sands blown in off the surrounding plains.

Ecosystems

Mount Grenfell contains a sample of semi-arid ridgetop communities, including mulga, eremophilas, callitris, eucalypts and kurrajongs.

Native plants

The most common tree is the mulga (*Acacia aneura*). There are good stands of native pine (*Callitris columellaris*) and bimble box (*Eucalyptus populnea*), and scattered kurrajong (*Brachychiton populneum*). Quinine tree (*Alstonia constricta*) is also present and was used by the Aboriginal people as a bush medicine.

Native animals

The site contains a representation of semi-arid fauna. The rocky habitat provides an ideal habitat for euros and a wide variety of reptiles and scrub birds.

Aboriginal cultural heritage

This is the most important reason for the dedication of the site. It contains a variety of ochre paintings and hand stencils relatively well preserved on the ceilings of large rock overhangs.

Historic heritage

There is very little evidence of early European heritage as the site was only a small section of a larger pastoral property.

Management issues

Pest plants

A few pastoral weeds have been recorded in the site. The main problem weeds are:

- saffron thistle
- horehound
- Patersons curse.

Control programs are regularly undertaken in conjunction with local landholders and rural lands protection boards.

Pest animals

Feral goats are an issue as they foul places used by Aboriginal people and damage art sites within the historic site. All of the significant sites have been fenced off to prevent any further damage, and it is planned to goatproof the surrounding area to keep goats off the historic site. Rabbits are present from time to time and are generally controlled by outbreaks of myxoma virus and more specifically with baits.

Fire management

The site is subject to infrequent fires. It generally takes several years of good rains to produce enough fuel to carry a fire, but when that does occur the region generally experiences very large-scale fires. A trail has been constructed right around the site to aid in fire management.

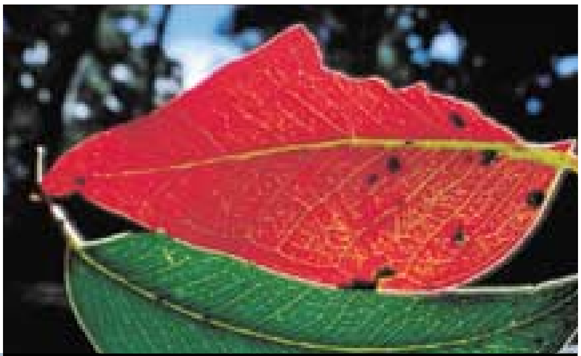
Usage and facilities

The majority of visitors to the site are primarily interested in its Aboriginal cultural heritage. The Aboriginal paintings and stencils are accessed along a short walk, and a longer walk provides the opportunity to see some of the plants and animals of the region and a panoramic view of the Cobar Peneplain.

Picnic tables and chairs are provided. Some are out in the open while several are covered by shelters that incorporate rain water tanks. Pit toilets are also provided.

Lace monitor

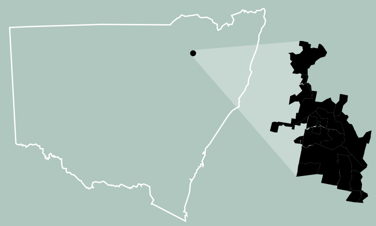
Mount Kaputar National Park



NPWS

S Douglas/NPWS

Main picture: The park is dotted with rocky peaks, remnants of volcanic activity.



Mount Kaputar National Park

Size	36,817 ha, perimeter approx. 100 km
Created	1960
Location	On the north-western slopes and plains of NSW, 580 km north-west of Sydney and 50 km east of Narrabri.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Mount Kaputar National Park provides protection for its diverse ecosystems and its distinctive geological and landform features. Three wilderness areas comprise some 68 per cent of the park.

Points of special interest

Located on the Nandewar Range, the park is part of an eroded volcanic shield. It is a relatively fertile area with a high rainfall and large variation in altitudes. As a result, it supports plant communities ranging from low-elevation woodlands to subalpine communities. There is an interesting overlap between northern and southern species. Prominent rock features provide a scenic backdrop.

Geology, soils and landforms

The park covers a large portion of the Nandewar Range, which is the remains of a complex elongated shield volcano built up between 17-21 million years ago. Erosion of some two-thirds of the mass of the original volcano has revealed numerous tiered basaltic terraces and outcropping dykes of trachyte.

Ecosystems

The park is dominated by dry sclerophyll forest, but includes wet sclerophyll forest, rainforest, heath and subalpine woodland around the summit.

Native plants

Small patches of stunted subalpine woodland consisting of mountain gum and snow gum growing among snow grass are found on high plateau areas. Heath and low scrub occur on the high-altitude peaks and rocky outcrops, while open forest with trees reaching 20-30 metres in height occur on hillsides subject to snow and severe frosts. Wet sclerophyll forest with a dense understorey of tree ferns occurs in lower-altitude sheltered valleys east of Mount Kaputar. Small patches of rainforest occur in the deeper valleys in the park but are very limited in extent.

Native animals

Endangered species recorded in the park include the swift parrot and the boroolong frog. Vulnerable species include:

- koala
- spotted-tailed quoll
- yellow-bellied glider
- brush-tailed rock wallaby
- large-eared pied bat
- common and little bentwing bat
- turquoise parrot
- square-tailed kite
- painted honey-eater
- red-tailed black cockatoo.

Aboriginal cultural heritage

A small number of Aboriginal sites have been recorded, including two campsites, a midden, rock carvings, stone artefacts and a possible stone arrangement.

Historic heritage

A number of European cultural sites have been recorded, including huts, sheds and dingo and stock fences.

Management issues

Pest plants

Invasive weeds in the park include (in order of priority for control):

- sweet briar
- golden dodder
- green cestrum
- saffron thistle
- prickly pear.

Herbicide spraying of weeds is the current control method.

Pest animals

Pest animals in the park include (in order of priority for control):

- feral goats and pigs
- foxes
- cats
- rabbits.

Feral goats compete with native animals for water, food and shelter, and have a significant impact on vegetation structure and soil erosion. Feral pigs contribute to soil erosion, foul waterways and destroy vegetation, including subalpine herbfields. Foxes prey upon ground nesting birds and small mammals and reptiles. Current control programs include aerial shooting of goats and pigs, cage-trapping and poisoning of pigs, and foxbaiting. A ‘Judas goat’ program and radio tracking of pigs currently operates in the park.

Fire management

Fire management within the park has historically consisted of suppressing wildfires and maintaining fire trails, although hazard reduction burning have been implemented along park boundaries in recent years.

Usage and facilities

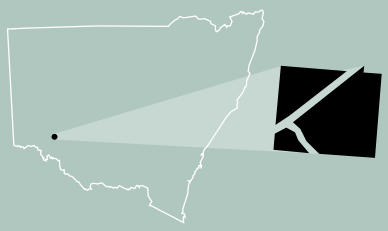
A variety of recreational activities, including camping, bushwalking, rock climbing and sightseeing, are possible in this remote natural setting. There are several walking trails, from easy strolls to rugged climbs, with plenty of spectacular lookouts.

Camping, with facilities such as barbecues and toilets, is available at Bark Hut and Dawsons Spring, which also has two cabins. Camping fees apply. A barbecue is also provided at Sawn Rocks. The access road to the park has unsealed sections and is steep and narrow, so caravans are not permitted.

Mungo National Park


SMaN


S Owen Fox



Mungo National Park

Size	27,847 ha, perimeter approx. 117 km
Created	1979
Location	In the far south-west of NSW, 110 km north-east of Mildura and 150 km north-west of Balranald.

Main picture: The erosion of white sand dunes near Lake Mungo has carved the remarkable Walls of China.
Top right: The wool press in the historic woolshed, reminder of the park's former life as a sheep station.

Snapshot of the park

Why it is conserved

Mungo National Park is a focal point for the Willandra Lakes World Heritage Area, declared for its natural and cultural heritage values. The park has global significance in the study of ancient climatic processes, and holds the longest record for continuous Aboriginal occupation in Australia.

Plans and agreements

	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Forest Regional Forest Agreement
	Under joint management

Points of special interest

The park is famous for the Walls of China, a 33-kilometre-long sand and clay lunette (crescent-shaped formation) with distinctive pinnacles. Over 60,000 years of Aboriginal history is preserved in the sediments of the lunette. This is reflected in ancient fireplaces and hearths, as well as plant remnants, artefacts, stone tools and bones. The Mungo Wool Shed and the Zanci Dugout are important features of the park's European pastoral history.

Geology, soils and landforms

A large proportion of the park is made up of the dry bed of Lake Mungo and the associated Walls of China. Undulating sand plain and sand dune country make up the rest. Soils in the park are sandy, infertile, poorly structured and highly susceptible to erosion. Fossil remains of extinct fauna are found in the park.

Ecosystems

The park contains typical western NSW plant communities. There are 12 identified vegetation types in the park, the three dominant being:

- low open shrub land (bluebush/saltbush), on the lake beds and open plains
- open woodland (*Callitris*, *Casuarina*, *Heterodendron*), on the gently undulating sand plains
- mallee woodland, on the east-west sand dunes.

Some 180 native plant species and 150 native animal species have been recorded in the park.

Native plants

The park is the only conservation reserve that contains plant communities – such as mallee, woodlands of belah/rosewood, and lake bed vegetation – that are representative of the Willandra Lakes region in NSW. NPWS is currently collecting and propagating white and mallee cypress to re-establish stands that were removed during property development.

Native animals

Four vulnerable species have been found in the park, all of which are bird species. Two endangered species have been recorded in the park, namely mallee fowl and Major Mitchell cockatoo.

Aboriginal cultural heritage

Evidence of at least 60,000 years of continuous human occupation is present in the park. The area has deep significance for the traditional owner groups. In particular, burials are common and are of special interest to the local Aboriginal people. In recognition of this, NPWS has established a joint management council made up of elders from the Barkindji, Mutthi Mutthi and Nyiampaa peoples.

Historic heritage

The park contains structures and relics of early pastoral history, the most striking of which is the Mungo Woolshed. This structure was constructed in 1869 from locally harvested cypress pine, and was reportedly built by displaced Chinese gold fossickers looking for work. The Zanci Dugout is also of regional importance as it is the only structure of its type in the area.

Management issues

Pest plants

Introduced plants tend to occur on disturbed areas such as tracks and tank drains, or where domestic stock have been concentrated. The main problem weeds are:

- onion weed
- horehound
- Patersons curse.

Control programs are regularly undertaken, and will continue. Control of outbreaks is a priority task for staff.

Pest animals

The main pest animals found in the park are:

- foxes
- cats
- rabbits.

Foxes and cats pose a major problem for native animals, particularly threatened animal species, while rabbits damage the already fragile soils. Control programs are being undertaken for all pest animal species in the park, though fox control is currently the highest priority. Other programs have been successful in reducing rabbit populations.

Fire management

The bulk of the area of the park is not subject to fires. The high moisture content of the bluebush restricts fire establishment in the lake beds. Other areas have a strategically placed fire trails for wildfire suppression. Fire influences the park's natural features through a complex, dynamic process that is not yet well understood.

Usage and facilities

The park attracts approximately 37,000 visitors each year, with peak use over the cooler school holiday periods (Easter, winter and spring). The most common visitor activities are sightseeing, touring and camping.

Facilities include:

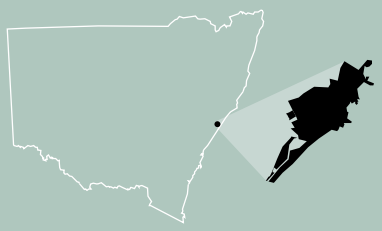
- a visitor centre, located near the entrance to the park
- bunk accommodation at the Mungo Shearers Quarters
- two camp grounds
- gas barbecues
- walking trails
- a self-guided driving tour
- a wheelchair-accessible boardwalk
- composting toilets in Walls car park and at Leaghur Shearers Quarters.

Vehicle entry and camping fees apply.

Munmorah State Recreation Area

K Gillett/NPWS

B Collier



Munmorah State Recreation Area

Size 1462 ha, perimeter approx. 39 km

Created 1977

Location On the central coast of NSW between Budgewoi (Wyong) and Catherine Hill Bay (Lake Macquarie).

Main picture and right: There are many popular spots along Munmorah's 12 kilometres of coastline.

Snapshot of the area

Why it is conserved

The Munmorah State Recreation Area was reserved for the protection of native plants and animals, natural ecosystems and cultural heritage.

Points of special interest

The most popular sections are Frazer Beach and Birdie Beach (Freemans) and their picnic and camping areas.

Plans and agreements

■	Plan of Management
■	Fire Management Plan – draft
	Ramsar wetland convention
	World Heritage listed
■	China-Australia Migratory Bird Agreement
■	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Geology, soils and landforms

The recreation area is part of the Sydney Basin geological province and the Hornsby Plateau. It contains small volcanic dikes, Teralba and Munmorah conglomerates, and a barrier sand dune system.

Ecosystems

The recreation area is part of the Sydney Basin Bioregion. Plant communities include dry sclerophyll open forest and woodland, closed palm forests, heath and wetland.

Native plants

Regionally significant populations of *Tetratheca juncea* occur within the area. The recreation area contains diverse vegetation communities, including woodlands and open forests, wetlands, coastal tea tree shrubland and coastal heath. Three vulnerable species occur: black eyed susan (*Tetratheca juncea*), the orchid *Diuris praecox* and the magenta lilly pilly (*Syzygium paniculatum*). Other species that are limited in distribution, or at the limits of their geographic range, include *Hakea bakeriana*, *Macarthuria neocambria* and hard quondong (*Elaeocarpus obovatus*).

Native animals

A total of 150 birds, 25 mammals, 10 reptiles and 11 amphibians have been recorded in the area. Rock platforms provide important roosting and feeding areas for gulls, terns, migratory waders and herons. Many of the bird species are listed in the Japan-Australian Migratory Bird Agreement (JAMBA) and the China-Australian Migratory Bird Agreement (CAMBA). The little tern, sooty oystercatcher and osprey occur along the coast. The lake foreshore provides refuge and feeding grounds for migratory herons and waders.

The squirrel glider occurs in both the coastal rainforest and eucalypt woodlands in the northern portion of the park. Small mammal species include a regionally significant population of the New Holland mouse, which is associated with sand dunes; brown antechinus; swamp rat and swamp wallaby. Two species of microbats, the little forest bat and Goulds long-eared bat, have been recorded in recent surveys. It is also likely that the eastern chestnut mouse occurs in communities of scrub and open scrub.

Aboriginal cultural heritage

The Awabakal people were the original inhabitants of the Munmorah area, occupying a coastal territory between Tuggerah Lakes and the Hunter River. People lived mainly in huts, large enough for six to eight people, with fires built at the entrance. Settlements of eight or nine huts were recorded by early settlers. Very few sites have been recorded to date within the area. Shell middens and an ochre mining site have been recorded.

Historic heritage

There is little evidence of sites of historic value in the park, though some marginal extractive land use is known to have occurred.

Management issues

Pest plants

Bitou bush is the primary weed affecting dune and hinterland vegetation. Lantana is also a dominant weed within the area. A Dunecare program is underway for the control of bitou bush.

Pest animals

A number of introduced species are present in the area, including the rabbit, black rat, red fox, pig and feral cat. Being close to urban development also means that dogs and cats enter the area. Rabbits and foxes are of particular concern because of their impact on vegetation, species diversity and native rodents. Control programs undertaken include rabbit and rat poisoning, and trapping of rats and feral cats. Calicivirus has been released for the control of rabbits to the south of the area. The feasibility of undertaking a pig trapping and fox shooting and/or snaring program is to be assessed.

Fire management

Major concerns of park managers are fuel build-up near urban areas, wildfire control, protection of neighbours and visitors, and impact on native ecosystems. A draft Fire Management Plan has been prepared. A hazard reduction burning program is prepared and implemented annually and trails have been constructed to assist with fire management.

Usage and facilities

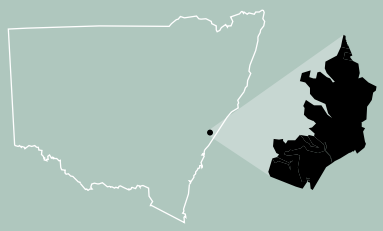
It is estimated that the recreation area has about 500,000 visitors annually. Fishing, bushwalking, picnicking, camping, day touring and wildlife photography are the most popular activities.

The area contains a number of very popular visitor facilities, at Frazer Park, Freemans Camp, the Palms and Tea Tree picnic areas. A vehicle entry fee applies.

Muogamarra Nature Reserve

J Winter/NPWS

J Winter/NPWS



Muogamarra Nature Reserve

Size 2274 ha, perimeter approx. 38 km

Created 1960

Location On the central coast of NSW, 40 km north of the Sydney CBD. Adjoins Ku-ring-gai Chase and Marramarra national parks and Berowra Valley Regional Park.

Main picture: View across the reserve to the Hawkesbury River and Brooklyn.
Top right: *Epacris longiflora*.

Snapshot of the reserve

Why it is conserved

Muogamarra Nature Reserve conserves a relatively undisturbed example of a Hawkesbury sandstone ecological community. The reserve is listed on the Australian Heritage Commission's National Estate Register. It protects a range of flora and fauna communities and heritage sites.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The reserve is mainly used for research and education activities. Peats Crater is a large volcanic diatreme that is of special significance for research and educational purposes.

Geology, soils and landforms

The reserve is part of the Sydney Basin geological province and the Hornsby Plateau. It can be divided into four geological units; the most extensive is Hawkesbury sandstone and there are minor outcrops of Narrabeen sedimentary rocks, isolated volcanic intrusions and alluvial deposits.

Ecosystems

The park is part of the Sydney Basin Bioregion. The main ecosystem types within the reserve are those commonly associated with Hawkesbury sandstone, such as dry sclerophyll open forest, woodland and shrubland. There are a number of vegetation communities protected in the reserve that are not well represented in other reserves, including hanging swamp and estuarine communities. A vegetation map and report have been prepared for the reserve.

Native plants

There are regionally significant populations of:

■ *Darwinia biflora* ■ *Haloragis exalata* ■ *Kunzea rupestris* ■ *Asterolasia elegans* ■ *Leptospermum deanii*
■ *Micromyrtus blakelyi* ■ *Tetratheca glandulosa*.

Native animals

There are regionally significant populations of:

- spotted-tailed quoll
- koala
- giant burrowing frog
- red-crowned toadlet
- glossy black cockatoo
- powerful owl.

The recently listed population of Sydney gang gang cockatoos is also at least a vagrant population in the reserve.

Aboriginal cultural heritage

The reserve is part of the traditional lands of the Darug people. There are a number of Aboriginal sites within the reserve, including rock engravings, cave art, shelter deposits, middens, grinding grooves and stone arrangements. Berowra Creek is recognised by the Darug Tribal Aboriginal Corporation as the boundary between their traditional land and the Guringai lands.

Historic heritage

The reserve contains a number of sites that show past European use, including old building foundations, dry stone walls and earthenware pipes.

Management issues

Pest plants

The reserve is largely free of pest plants, except in limited areas. Weeds of most concern are:

- pampas grass
- cassia
- lantana
- noogoora burr
- blackberry
- honeysuckle
- whisky grass
- couch
- orange trees.

Weed spraying is undertaken on priority species and locations.

Pest animals

Near urban areas cats are a problem for native animals and small birds. An education program for neighbours is being conducted in conjunction with local government. Foxes are likely to occur throughout the reserve, benefitting from increased food supplies near urban areas. Control programs have been undertaken, where possible in conjunction with other land managers, to decrease the impact of predators on native species.

Fire management

Major concerns are fuel build-up near urban areas, wildfire control, protection of neighbours and visitors, and impacts on native ecosystems. The reserve has a history of impact by wildfire and management burning. A draft Fire Management Plan is in preparation and is likely to be available for public comment in 2001. A hazard reduction burning program is prepared and implemented annually, and trails have been constructed to assist with fire management.

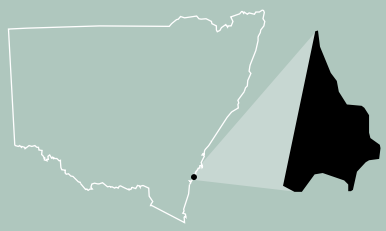
Usage and facilities

Visitor numbers are low as the reserve has no facilities and recreational use is not allowed, but authorised research, educational activities and guided tours are permitted.

Murramarang Aboriginal Area

M Van Ewijk/NPWS

M Van Ewijk



Murramarang Aboriginal Area

Size 60 ha, perimeter approx. 4 km
Created 1976
Location On the south coast of NSW, 30 km north of Batemans Bay. Brush Island Nature Reserve is immediately off-shore from the area and Murramarang National Park is 3 km to the south.

Main picture: View to Brush Island from the beach at Murramarang.
Top right: Aboriginal shell middens, such as this one on the beach, dot the area.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the area

Why it is conserved

Murramarang Aboriginal Area protects unique Aboriginal sites, as well as the most diverse range of plant and animal communities found in the northern granite belt of NSW.

Points of special interest

The area is regarded as the largest unmounded midden on the NSW south coast and is one of the largest sites in NSW showing evidence of exploitation of the intertidal rock platform. The cultural deposits date to about 12,000 years ago. The area is one of only three archaeological sites of the Pleistocene age on the south coast.

Geology, soils and landforms

The underlying strata are composed of monzonite, which is exposed in gullies. Overlying this is sandrock or coffeerock, with a layer of reddish-brown sand. Sand also forms the dune system along Murramarang Beach.

Ecosystems

The area has largely been cleared of native vegetation to make way for grazing and sandmining, but remnants have survived and revegetation programs are helping it become re-established. Plant species include swamp oak and swamp paperbark dominating on the banks of nearby Swan Lagoon, with fringing wetland species such as reeds and spike rushes. On the headland itself coastal vegetation such as coastal wattle, casuarina and banksia species are found, and on dune areas spinifex and pigface are found.

Native animals

The area contains many animal species, particularly the eastern grey kangaroo and the echidna, which has recently recolonised the headland following establishment of ground cover. Seabirds use the rocky shores and the beach, and the endangered red-capped plover has been recorded nesting in the dune area.

Aboriginal cultural heritage

Murramarang Aboriginal Area was an important burial place, with much of the headland covered by a midden of several hectares in size, containing millions of stone artefacts and dense deposits of shell, mammal, fish and bird bone. Its size and content indicates the headland was used by several groups. A number of Aboriginal people were killed by local pastoralists on Murramarang Point during the late 19th century and there may also be burials of Aboriginal people who died of other causes.

The area also has spiritual significance. A lagoon to the north of the headland, and a nearby unidentified waterhole, are home to a Dreamtime serpent associated with traditional beliefs about the creation of the land.

The area is important to contemporary Aboriginal people of the south coast and continues to be used for fishing, recreation and educational activities. It is a place that has been used by Aboriginal people from before European occupation to the present and provides a tangible link to the past.

Historic heritage

Captain Cook made his first sighting of the Aboriginal people of Australia at Murramarang in 1770. The first white settlers arrived in the late 1820s and introduced cattle. Goldmining was also tried at the inlet to Swan Lagoon from 1896 and abandoned by 1898. Other activities have included the cutting of timber, dairying, sandmining and recreation.

Management issues

Pest plants

The main weed problem is infestation by blackberry. Chemical treatment has been undertaken and will continue until control is achieved. Lupin and pennywort are also present, having been introduced for sandmining restoration works and from nearby land.

Pest animals

The main pest animals found in the area are foxes and rabbits. Foxes pose a major problem for native animals, particularly threatened species, while rabbits threaten vegetation, particularly in areas under revegetation programs. Programs are being undertaken to control fox numbers.

Fire management

The revegetation occurring on the headland sand deposits is extremely sensitive to fire. Fire would kill the most common regenerating species, leaving the area open to erosion. In 1987 a fire from a neighbouring land did cause damage to some of the vegetation on the western section of the headland. The main focus for fire management is therefore protection of this area from fire.

Usage and facilities

The area is regularly used by the public and also by schools as part of their Aboriginal Studies curriculum. Both NPWS and the local Aboriginal community offer guided walks. The high visibility of artefacts and shell material offers excellent opportunities for interpretation of Aboriginal culture.

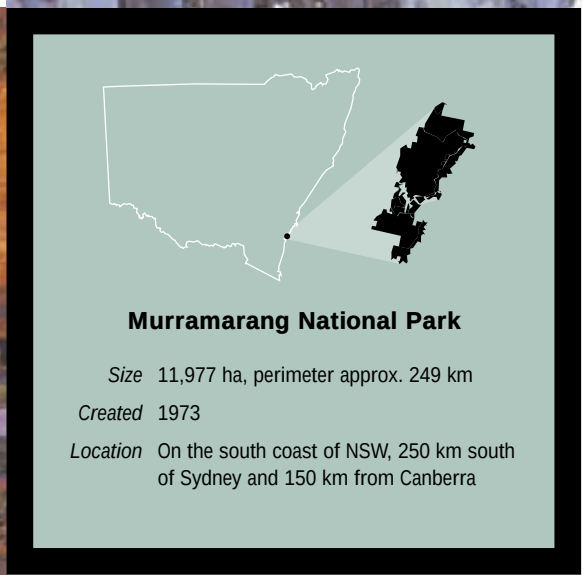
The area is popular for surfing, beach and rock fishing, diving, swimming and exploring the rock platform. The walking track offers panoramic views of the coastline.

Short-beaked echidna

Murramarang National Park

M Van Ewijk

M Van Ewijk



Main picture: Looking south to Point Upright.
Top right: Spotted gums at Depot Beach.

Snapshot of the park

Why it is conserved

Murramarang National Park protects 44 kilometres of coastline, four off-shore islands and extensive areas of coastal and swamp forests, including a substantial part of the Durras Lake catchment, one of the relatively untouched lakes on the NSW coast.

Plans and agreements

	Plan of Management
■	Fire Management Plan – draft in part
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The park features spectacular coastline landscapes that are readily accessible to visitors. There are also sites of geological and archaeological interest. Durras Mountain and Lake Durras are the main features.

Geology, soils and landforms

The park covers two main geological provinces – the southernmost extent of the Permian Sydney Basin, and the Lachlan Ford Belt in the south of the park. Durras Mountain rises 300 metres next to the sea and is capped with Tertiary basalt and limestone outcrops.

Ecosystems

The park provides the most extensive representation of high-fertility spotted gum (*Corymbia maculata*) and burrawang palm (*Macrozamia*) forest in parks on the south coast. Coastal communities along the coastal fringe and islands are protected, as are swamp and intertidal communities surrounding Lake Durras. Substantial pockets of remnant coastal rainforest occur along the coast, and there is warm temperate/sub-tropical rainforest around Durras Mountain. Past intensive logging means that disturbance is significant across large areas of the park, normally associated with logging tracks, log landings, and firewood along ridge lines. Gully areas, however, have been well protected and represent relatively undisturbed and fertile habitats.

Native plants

The southern limit of several subtropical rainforest species, such as the bangalow palm, occur within the park. One endangered orchid, *Genoplesium* sp., occurs on dry forest sites in the west of the park.

Native animals

Extensive mature stands of coastal forest are rich in arboreal species such as gliders, large forest owls, bats and flying foxes. Threatened shorebird species, such as the sooty oystercatcher, forage on the shores but rely heavily on the off-shore islands for breeding. Glossy black cockatoos are often seen.

Aboriginal cultural heritage

The area has known cultural values for the local Aboriginal communities, with many sites occurring throughout the park, especially along the coast and by the lake.

Historic heritage

Durras Mountain was cleared and grazed from the 1820s but is gradually revegetating. From the 1880s the area was used for timber harvesting, with a number of seaside sawmill sites located near or within the park.

Management issues

Pest plants

Introduced plants are mostly limited to disturbed areas, with the most problematic species being blackberry, senna, moth vine and prickly pear. Wild tobacco and coral trees are dominant on Durras Mountain. Bitou bush has occurred historically on the coast but is now largely under control. Regular control and revegetation programs are conducted in priority areas. Green waste dumping and infestation from villages continues to be a problem.

Pest animals

Foxes are common in the park, and cats and wild dogs occur throughout. Pig numbers are increasing, though recent control programs are limiting infestations. Small rabbit populations are confined to cleared or grassy coastal areas. Cooperative control programs with the South Coast Rural Lands Protection Board are current and ongoing, focused on threatened species habitat. Over 30 apiary licences cover the park, and bee populations are significant when eucalypt flowering peaks.

Fire management

The park is historically prone to numerous fires arising from high visitor levels. The park backs on to Merry Beach, Pebbly Beach, Depot Beach, North Durras, South Durras and Maloneys Beach townships, and fire-prone rural-residential land north of Long Beach. The park is well serviced by an extensive network of roads and fire trails. Fire management planning and asset protection are current priorities.

Usage and facilities

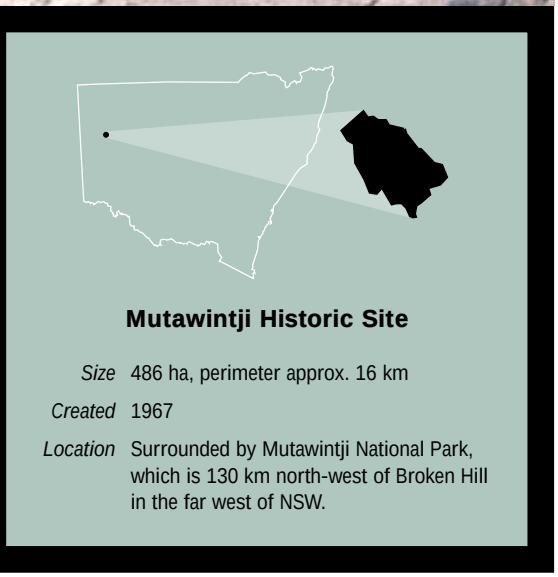
High visitation occurs from October to April but peaks over the summer months and Easter. Pebbly Beach alone receives over 120,000 visitors per year. The main visitor attractions are the beach and other water-based activities, but bushwalking and forest driving in the lake and hinterland areas are increasing in popularity. NPWS-managed camping areas are operated at Pretty Beach, Pebbly Beach and Depot Beach. Less formal camping opportunities occur throughout the park. A number of day visitor sites and walking tracks are also available to the public. Vehicle entry fees are being progressively introduced, having starting with Pebbly Beach and the main managed camping areas. Camping fees also apply.

A number of leases exist within the park, including part of the Merry Beach Caravan Park, the Murramarang Resort and Pebbly Beach Cabins.

Mutawintji Historic Site

B Cameron-Smith/NPWS

K Gillett/NPWS



Main picture and top right: The superb rock engravings at the site can be viewed on a guided tour given by the local Aboriginal people.

Snapshot of the site

Why it is conserved

Mutawintji Historic Site, which is surrounded by Mutawintji National Park, conserves valuable Aboriginal sites, including art, artefacts and campsites, that contribute to the story of Aboriginal occupation of western NSW.

Plans and agreements

■	Plan of Management – draft
	Fire Management Plan
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
■	Under joint management

Points of special interest

The site was permanently reserved in 1967 as Mootwingee Historic Site but gained its current name when handed back to the local Aboriginal people, the Barkintji, in 1998. Access to the site is limited to guided tours conducted by the Aboriginal people themselves. The site contains several large rock overhangs and large rock slabs that are decorated by Aboriginal paintings and markings.

Geology, soils and landforms

On the site and surrounding national park Devonian and Ordovician fossils can be found, and major geological processes, such as faulting and folding, are clearly visible. Soils tend to be infertile, poorly structured and highly susceptible to erosion.

Ecosystems

The site contains large stands of mulga woodland, patches of spinifex and saltbush/bluebush communities. Other vegetation types in the general area include:

- river red gum woodlands, along the creeklines
- red box woodlands, on hillslopes
- belah and white cypress woodlands, scattered throughout.

Native plants

The site and surrounding national park protect a large number of threatened plants. These include:

- green hood orchid (*Pterostylis* sp.)
- *Euphorbia sarcostemmoides*
- *Triodia irritans* var. *laxispicata.*

Vegetation monitoring is undertaken yearly to gather data on the health of the plant communities and identify threats to their long-term survival.

Native animals

Native animal communities are often highly localised, or have only limited distribution in the general area of the site. The most notable of these is the yellow-footed rock wallaby. Other threatened species include:

- peregrine falcon
- grey falcon
- Major Mitchell cockatoo
- rock skink.

Aboriginal cultural heritage

The site, with its ochre stencil galleries and rock engravings, is not only rich in historic relics, but is also spiritually significant to local Aboriginal people. In the past it was the place where initiation, rainmaking and other ceremonies were held. Over 1000 people might gather and camp at the site. The frequency of these ceremonies relied heavily on seasonal climatic conditions. Today, Aboriginal people from around the region still gather here to visit and hold meetings for cultural purposes.

Historic heritage

The site contains natural rock pools that normally hold good water when the surrounding landscape is dry. Both Aboriginal and European people have used these water storage areas throughout history. The Rockholes Pub, located along the old Coach Drive, existed during the 1890s and early 1900s and would get its water from nearby water holes. The first managers of the former Mootwingee Station dammed areas of the escarpment catchment to supply water to the first homestead. Today these waterholes are not used for management purposes.

Management issues

Pest plants

Several species of introduced plants have been recorded within the site and surrounding national park.
The main problem weeds are:

- noogoora burr
- Bathurst burr
- Patersons curse.

Control programs are regularly undertaken in conjunction with local landholders and rural lands protection boards. Efforts are concentrated after significant rainfall, and before plants have a chance to set seed.

Pest animals

The main pest animals found in the site and surrounding national park are:

- foxes
- goats
- rabbits.

All three pose a major problem for native animals, particularly threatened species. Rabbits damage the already fragile soils and threaten endangered plant species. Control programs are being undertaken for all pest animal species, with fox and goat control currently the highest priority.

Fire management

The site and surrounding national park are subject to infrequent wildfires. The risk of a high-intensity burn is calculated at once in every 13 years (dependent on seasons). The semi-arid nature of the area means fuel loads are typically quite low, with grassfires the most common form of threat. Fire management is primarily limited to maintenance of boundary tracks and internal fire trails.

Usage and facilities

The site attracts around 12,000 visitors each year, with peak use during the cooler months. Visitors may inspect the site only through guided tours, which are conducted by Mutawintji Heritage Tours between April and November. Fees apply.
The Mutawintji Cultural Resource Centre, which may also be visited during a tour of the historic site, has murals that depict the story of the local Aboriginal people.

There is no camping at the site but visitors can stay at Homestead Creek Camping Ground in the national park.

Myall Lakes National Park

K Gillett/NPWS

K Gillett/NPWS

Myall Lakes National Park

Size 44,172 ha, perimeter approx. 484 km

Created 1972

Location 50 km north of Newcastle, 30 km south of Forster, and a short distance east of Bulahdelah.

Main picture: Large areas of the park are accessible only by boat.
Top right: The ancient high dunes of the park were the focus of conservation battles in the 1970s.

Snapshot of the park

Why it is conserved

Myall Lakes National Park conserves one of the largest coastal brackish barrier lake systems, largely unmodified by human activity, on the east coast of Australia. The park conserves more than one-third of the catchment of this system.

Plans and agreements

■	Plan of Management
	Fire Management Plan
■	Ramsar wetland convention
	World Heritage listed
■	China-Australia Migratory Bird Agreement
■	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The landforms of the park, particularly the ancient sand dunes, have been described as a giant filing cabinet storing important information on climate change and sea level rise. Broughton Island, 3 kilometres off-shore and included within the park, is one of the largest off-shore islands on the NSW coast. The lakes system has been recognised internationally as a 'Ramsar wetland of international importance'.

Geology, soils and landforms

The dominant feature of the park is the lake system. The three main lakes – the Bombah Broadwater, Boolambayte and the Myall – stretch out in an ancient river basin bounded by high sand dunes to the east and much older, flatter dunes to the west. The dunes have been built up by the seas over various ice ages and fluctuating sea levels. The soils of both coastal and sedimentary origin in the park are often infertile, poorly structured and highly susceptible to erosion.

Ecosystems

The contains more than 16 vegetation communities, including shrubby woodland, open forest, rainforest and heath, and a range of aquatic vegetation types. These habitats support a diverse range of animals.

Native plants

The estimated 1000 plant species found in the park represent 13 per cent of the total NSW flora and 31 per cent of the known flora for the north coast. Five plant species known or expected to occur are listed as vulnerable or endangered under the *Threatened Species Conservation Act*.

Native animals

Over 338 species of animals have been recorded. They include 280 bird, 41 mammal, 15 amphibian, and 16 reptile species. There are over 30 vulnerable species, and four endangered species, namely:

- green and golden bell frog
- beach stone curlew
- regent honeyeater
- red goshawk.

Aboriginal cultural heritage

The Worimi people occupied the area now covered by the park. The Worimi maintain a deep attachment to the landscape within and surrounding the park and are actively interested in park management. Although only a small proportion of the park has been surveyed for Aboriginal sites, more than 60 sites have been recorded. Many more are likely to be found through systematic surveys.

Historic heritage

Many European settler families have been associated with the park and its surrounds since the early 1800s. There are more than 70 historical places, including graves, sawmill sites, the fishing village at Tamboy, remains of old farmhouses at Kataway Bay and Sunnyside, and the remains of punts and shipwrecks. Conservation assessments have been undertaken for several of these sites.

Management issues

Pest plants

Over 17 species of introduced plants have been recorded. The main problem weeds are:

- bitou bush
- lantana
- pine plantations
- aquatic weeds (especially salvinia).

Control programs are ongoing, with a recent emphasis on aquatic weed control.

Pest animals

The main pest animals are:

- cats
- dogs
- foxes
- European honey bees
- rabbits and hares
- cattle
- horses.

Control programs are being undertaken for all of these, except horses. A horse-mustering program is proposed.

Fire management

Almost 200 wildfires were recorded in the park between 1968 and 1998, burning an average of 1691 hectares each fire season. Most fires occur between August and October – the driest time of the year and subject to strong westerly winds – and are linked to arson. Controlled burns are also conducted, primarily aimed at protecting assets and camping areas within and surrounding the park.

Usage and facilities

Because of the extensive waterways, dune systems and over 40 kilometres of ocean beaches, the park is one of the most highly visited in northern NSW. Popular recreation activities include camping, picnicking, sailing, swimming, power boating, canoeing, walking, 4-wheel driving, fishing and birdwatching. NPWS maintains more camping areas here than at any other coastal park in NSW. A vehicle entry fee applies.

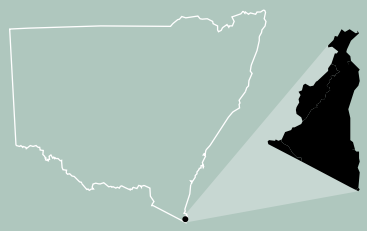
A range of facilities is maintained, including roads, walking tracks, 4WD beach access roads, picnic areas, toilets, camping areas and information bays. NPWS is currently undertaking a program to upgrade all existing toilets to a 'hybrid' design, allowing total removal of human wastes. The NPWS is also reviewing the public safety of some camping areas following the death of a camper in 2000 from a falling tree.

Green and golden bell frog

Nadgee Nature Reserve

M Van Ewijk

M Van Ewijk



Nadgee Nature Reserve

Size	20,671 ha, perimeter approx. 156 km
Created	1957
Location	On the far south coast of NSW, 35 km south of Eden and directly north of the Victorian border. Adjoins Victoria's Croajingolong National Park in the south.

Main picture: The Nadgee River, the most pristine coastal river in NSW.
Top right: Banksia.

Plans and agreements

■	Plan of Management – draft
■	Fire Management Plan
■	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
■	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the reserve

Why it is conserved

Nadgee Nature Reserve protects a wide variety of coastal landforms and habitats in a region that is subject to extensive disturbance from logging and agricultural development. A large number of rare and threatened fauna and flora species are at the limits of their distribution in the reserve. The linking of the reserve with other extensive natural areas contributes to the viability of the natural systems within the reserve and the region.

Points of special interest

The reserve protects a number of isolated and wild locations, including the most isolated beach in NSW (Cape Howe Beach) and the only coastal wilderness area in NSW. Additionally, the reserve includes one of only two coastal rivers identified as 'wild and scenic' for their full length.

Geology, soils and landforms

The reserve consists of primarily late Devonian Merimbula Group sediments. In the west of the reserve, along Table Range, resistant sandstones alternating with more erodible shale have resulted in rugged cliffs and scree slopes. The coastline consists of rock platforms, sand and boulder beaches, and cliffs up to 35 metres high.

Ecosystems

The reserve supports 14 vegetation types considered to be rare or vulnerable at a regional and national level. Included among them are:

■ coastal wetland ■ coastal saltmarsh ■ cool and warm temperate rainforest.

The heathland is one of only four large areas on the south coast of NSW. The southern coastal area has an exceptionally high plant diversity and is recognised as significant nationally. The western corner of the reserve, with warm and cool hinterland and coastal rainforest, along with moist eucalypt forests and rare old-growth dry eucalypt forests, provides an area of high plant diversity.

Native plants

The reserve protects a number of nationally rare and threatened species. These include the rare *Pomaderris brogoensis* and *Pseudanthus divaricatissimus* along the Merrica River, and *Burnettia cuneata* and *Spyridium cinereum* in heathlands.

The endangered *Lepidium hyssopifolium* is found along coastal headlands and beaches in the reserve.

Native animals

The reserve provides fauna habitats that are secure and that have been largely undisturbed in terms of loss and fragmentation as a result of human activities. Some 48 native mammal species, 216 bird species, 28 reptile species and 16 amphibian species have been recorded. Endangered species include:

- green and golden bell frog
- bush stone curlew
- eastern bristlebird
- southern brown bandicoot
- hooded plover
- little tern.

Aboriginal cultural heritage

The reserve contains a variety of Aboriginal sites, including some extensive middens, many rich in archaeological material. Sites within coastal reserves such as Nadgee are important, as the high degree of recreational use and development experienced elsewhere along the coastline has resulted in the loss of many Aboriginal sites.

Historic heritage

The only structure of historic interest is Harrys Hut, originally part of the homestead of the first settlers to the Nadgee area. There are a number of shipwrecks along the Nadgee coastline, and Disaster Bay, in the north of the reserve, owes its name to the large number of boats that ran aground in the area.

Management issues

Pest plants

A number of weed species are present in the reserve, including:

- blackberry
- marram grass
- sea wheat grass
- *Spartina* sp.
- sea sperge.

The most extensive is blackberry, which is found at several locations in clearings and along management tracks. Actions to remove these stands are being undertaken. Monitoring of coastal weed species in the Beach Strand Grassland is also being carried out.

Pest animals

The reserve has a relatively low level of introduced fauna species. Pest animals present include:

- rabbits
- feral cats
- foxes
- house mice
- rats
- feral dogs.

Rabbit control is planned for a number of locations and cat control has been undertaken close to the Wonboyn area and at the Merrica River Crossing.

Fire management

Several major wildfires occurred in and around the reserve in the last century, with most of the reserve being burnt in 1980. Fire management includes strategies for fuel management, fire trails, detection, and cooperative arrangements. Some or all of these are applied when appropriate to protect life, property and cultural and natural assets.

Usage and facilities

Most visitors to the reserve are day visitors, with peak numbers during the summer and Easter school holidays. Bushwalking through the wilderness areas of Nadgee is very popular. Walking tracks range from single to multiple day walks. Joint arrangements are in place with Parks Victoria to regulate and monitor the impact of bushwalking.

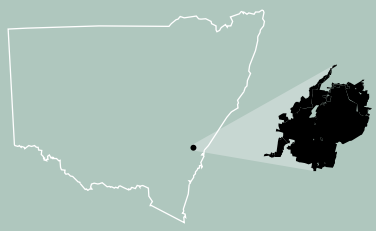
There are number of day-use areas. Facilities in these areas include:

- car parks
- pedestrian and disabled access to adjacent beaches
- toilets.

Nattai National Park

J Little

C Perry



Nattai National Park

Size	47,628 ha, perimeter approx. 263 km
Created	1991
Location	On the Woronora Plateau of NSW, with its northern tip 70 km south-west of Sydney.

Main picture: View of the Nattai River from Starlights Trail.
Top right: Wilderness near Ruffles Needles.

Snapshot of the park

Why it is conserved

Nattai National Park was reserved to protect landforms, geological features, catchments and biodiversity in the Sydney Basin. Under an agreement with the Sydney Catchment Authority, areas of the park in the Sydney water catchment are jointly managed to preserve water quality and ecological integrity. The park also forms an integral part of the Greater Blue Mountains World Heritage Area.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Forest Agreement & Regional Forest Agreement
■	Under joint management

Points of special interest

The park is a major part of the catchment for Warragamba Dam, which supplies Sydney's water. Catchment protection takes precedence over public recreation, though the park attracts more adventurous bushwalkers.

Geology, soils and landforms

The park is part of the Sydney Basin geological province and the Woronora Plateau and is dominated by Hawkesbury sandstone scarps and cliffs. Underlying this sandstone are shales and fine sandstone, and further beneath is Illawarra coal. Wianamatta shales are found in a few locations along the tops of high ridges.

Ecosystems

The park is within the Sydney Basin Bioregion. It is dominated by dry sclerophyll, characterised by a large number of eucalypt species. The slopes and ridges commonly support forest and woodland communities. The major river valleys support forest communities dominated by river she-oak, mountain blue gum and river peppermint. Moist gullies contain small areas of warm temperate rainforest and mixed moist forests. The Douglas Scarp supports a woodland of narrow-leafed red ironbark, black cypress pine and coast myall.

Native plants

Few surveys have been undertaken in the park, though a major survey is planned for 2001/02 by the Sydney Catchment Authority and NPWS. A variety of threatened and regionally significant populations occur in the park, such as:

■ Camden white gum ■ rudders box ■ narrow-leafed mallee ash.

Native animals

Few surveys have been undertaken, and numerous yet-to-be-recorded species may occur.
Threatened species known to occur include:

- brush-tailed rock wallaby
- yellow-bellied glider
- squirrel glider
- spotted-tailed quoll
- long-nosed potoroo
- glossy black cockatoo.

Aboriginal cultural heritage

The park is the traditional home of the Dharawal and Gundangarra people, parts of the area providing a corridor for people travelling northwards from as far as Victoria to ceremonial grounds in the Dharawal lands. The park contains numerous site types, including axe-grinding grooves, engravings and cave art.

Historic heritage

The Nattai area was the scene of considerable activity during the early history of European settlement, though it was not until 1827 that real settlement occurred in the valley. Coalmining and timber getting were carried out in the area, and tourism was a factor up until the flooding of the Burragorang valley. NPWS now provides guided tours into the Burragorang valley and Yerranderie on a regular basis for ex-residents of the area.

Management issues

Pest plants

Introduced plants mainly occur along creek lines or where there has been disturbance, such as along the Wollondilly River and various fire trails. Programs are being developed in partnership with the Sydney Catchment Authority to control and, where practicable, eradicate introduced species of concern.

Pest animals

Populations of introduced animals are relatively low in the park. Joint programs to monitor and manage introduced species are ongoing, with priority given to important conservation areas and neighbouring lands.

Fire management

Fire in the park has the capacity to directly affect the conservation of species, habitats and diversity. Wildfires can have further detrimental effect on catchment areas in the park by accelerating erosion, sedimentation and eutrophication. NPWS continues to promote a cooperative approach to fire management, with emphasis on protecting life and property, being prepared for remote firefighting, and protecting the park from fire originating on neighbouring lands. A hazard reduction burning program is prepared and implemented annually, and trails have been constructed to assist with fire management.

Usage and facilities

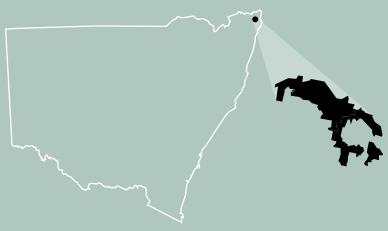
Due to the park's relative isolation and its water catchment status, it is only suitable for low-impact recreation such as bushwalking. Wollondilly Lookout on Wombeyan Caves Road provides scenic views and the Starlights Walk Track provides walking access. A vehicle entry fee applies.

Some illegal activities occur, such as trailbike riding and pig hunting. NPWS and the Sydney Catchment Authority are working to control this type of use.

Nightcap National Park

P Green/NPWS

J Little



Nightcap National Park

Size	8080 ha, perimeter approx. 100 km
Created	1983
Location	30 km north of Lismore, 30 km south-east of Murwillumbah and 30 km west of Byron Bay. Adjoins Whian Whian State Forest.

Main picture: Protesters Falls, site of early rainforest conservation action in NSW.
Top right: Strangler fig.

Snapshot of the park

Why it is conserved

Nightcap National Park protects a diverse range of rainforest species, including significant threatened species that are essential to the ecosystems of the area.

Plans and agreements

■	Plan of Management
■	Fire Management Plan – draft
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The rainforests of the western half of the park and the former Big Scrub and Minyon Flora Reserves to the east form part of the Central Eastern Rainforest Reserves (Australia) (CERRA) World Heritage property. The spectacular Minyon Falls descend 97 metres over a vertical rhyolite escarpment. The park forms part of the mountainous backdrop to the urban areas of Lismore and Byron Bay.

Geology, soils and landforms

The park forms the southern rim of the erosion caldera of the Tweed Shield Volcano. The Nightcap Range was formed from basalt and rhyolite lava flows some 20 million years ago. The ridges and mid-slopes of the range consist mainly of soils produced from the more erosion-resistant and less fertile rhyolite geology. The lowland basins at the foothills of the range contain more nutrient-rich soils derived from the eroded basalts.

Ecosystems

The park supports large areas of warm temperate rainforest and subtropical rainforest, including important lowland subtropical rainforest remnants of the Big Scrub. Key features include:

- old-growth rainforest, tall wet forest and open dry forest
- diverse species-rich transition areas between plant communities
- headwaters of many of the main river systems of the far north coast of NSW.

Native plants

The Mount Warning Shield is the most important rainforest refuge in the Australian subtropics. It supports the major rainforest types that dominated Gondwana. Nightcap National Park is particularly significant as a refuge for warm temperate rainforest species. It also supports lowland species associated with the former Big Scrub, such as southern ochrosia (*Ochrosia moorei*) and southern fontainea (*Fontainea australis*), and vulnerable flora species such as red lilly pilly (*Syzygium hodgkinsoniae*) and ball nut (*Floydia praealta*).

Native animals

The subtropical rainforest habitats of the park support threatened bird species such as the white-eared monarch and the marbled frogmouth, as well as fruit-eating rainforest pigeons and other birds that pass the winter at lower altitudes. Mammal species such as the vulnerable spotted-tailed quoll and parma wallaby occur in these forests. Tall wet forest also provides habitat for the endangered red goshawk and vulnerable sooty owl and masked owl, among others. Open dry forest communities provide habitat for the threatened masked owl, yellow-bellied glider, koala and rufous bettong.

Aboriginal cultural heritage

The park is part of the identity, spirituality and resource base of the Bundjalung nation, particularly the Widjabul people. There are many sacred sites and landforms of mythological significance. NPWS is working with the local Aboriginal community to improve protection of this heritage.

Historic heritage

A flying fox and shelter on the Googarna Track was used to lower logs to the Kunghur mill during the 1940s and 1950s. The park also incorporates the Nightcap Track and Nightcap Range telegraph line, both constructed in the 1870s as the first communication links between the Richmond and Tweed valleys. Gracies Track is a remnant section of hand-built stone pathway reputed to have been constructed in the 1880s.

Management issues

Pest plants

The most significant weeds are:

- lantana
- crofton weed
- mist flower
- whisky grass.

Recent reports indicate that camphor laurel, giant Parramatta grass and devils fig are also of concern. NPWS will prepare a plant pest management plan.

Pest animals

Both dogs and foxes are of concern for native animals and neighbours' stock. Wild dogs are known to occur in the park, and the local Rural Lands Protection Board undertakes wild dog control programs on adjoining private lands. Foxes are likely to occur on neighbouring flat country.

Fire management

The park has a very low occurrence of fire within its boundaries. NPWS is preparing a Fire Management Plan, and a preliminary identification of required fire management trails has been undertaken as part of the recent Plan of Management process.

Usage and facilities

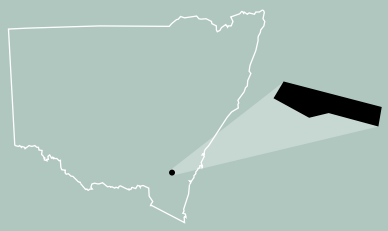
The park receives approximately 87,000 visitors a year. The most popular destinations are Minyon Falls and Minyon Grass. Car touring, picnicking and bushwalking are the most common activities. Less common activities include mountain bike riding and horseriding. The park incorporates part of the Whian Whian Forest Drive, a 30-kilometre all-weather rainforest drive.

There are four day-use areas with parking, toilets, barbecues, tables and interpretative displays. New developments at these areas include upgrading to composting toilets, and a planned raised walkway and new lookout platform at Minyon Falls.

Queanbeyan Nature Reserve

S Cohen/NPWS

S Cohen/NPWS



Queanbeyan Nature Reserve

Size	2 ha, perimeter approx. 1 km
Created	1989
Location	On the southern tablelands of NSW, 4 km from Queanbeyan City in Letchworth, a western suburb of Queanbeyan.

Main picture: The tiny reserve protects the only remaining population of an endangered daisy.
Top right: The endangered button wrinklewort.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the reserve

Why it is conserved

The primary purpose of the Queanbeyan Nature Reserve is to preserve the only population of the endangered button wrinklewort (*Rutidosis leptorrhynchoides*), which is formally protected in NSW. Secondary objectives are to protect a sample of grassy woodland and natural temperate grassland.

Geology, soils and landforms

The main part of the reserve consists of a low grassy westerly ridge on skeletal red-brown clayey loam with a broken rock substrate characterised by low soil moisture.

Ecosystems

The reserve contains an open woodland of Blakelys red gum (*Eucalyptus blakelyi*) and yellow box (*Eucalyptus melliodora*) with apple box (*E. bridgesiana*) and red stringybark (*E. macrorhyncha*). This community is considered endangered, though it is not as yet listed under the *Threatened Species Conservation Act*.

Native plants

The woodland ecosystem has a grassy understorey dominated by:

- kangaroo grass (*Themeda australis*)
- tussock grasses (*Poa sieberiana*)
- wallaby grasses and spear grasses (*Danthonia* and *Stipa* spp.)
- redgrass (*Bothriochloa macra*).

There is also a diversity of forbs, such as golden buttons (*Chrysocephalum* spp.), hoary sunray (*Leucochrysum albicans*) and bluebells (*Wahlenbergia* spp.). Other native species occurring in the reserve include blue devil (*Eryngium rostratum*), blue flax lily (*Dianella revoluta*) and the endangered *Rutidosis leptorrhynchoides*.

Native animals

Although small, the reserve is an important habitat for a variety of birds, with over 26 species recorded. They include:

- white-winged chough, which nests in the reserve
- pallid cuckoo
- striated pardalote
- silvereye
- noisy friarbird
- golden-headed cisticola.

A fauna survey has not been undertaken and this is considered a priority. A number of threatened fauna species occur in the nearby area and the reserve may provide habitat for these species. Locally occurring threatened species include:

- pink-tailed legless lizard
- striped legless lizard
- south-eastern lined earless dragon
- golden sun moth.

The Keys matchstick, a wingless grasshopper, is uncommon and occurs in grasslands that have had relatively little disturbance in the past. This species is also likely to occur in the reserve.

Aboriginal cultural heritage

The reserve is within the tribal land of the Ngunnawal people, but to date no Aboriginal sites have been recorded in the reserve. However, there are a number of archaeological sites of significance within the local area. The reserve's small size dictates that any assessment of Aboriginal heritage values can only be done within a broader context.

Historic heritage

To date little information has been collated on past European use of the area.

Management issues

Pest plants

Thirty-six introduced plants have been recorded in the reserve. While some of these occur in relatively low densities, others directly compete with the endangered *Rutidosis leptorrhynchoides* for space, nutrients, light and moisture. These include:

- cocksfoot
- phalaris
- St Johns wort
- sweet briar
- tree lucerne
- Patersons curse
- Monterey pine
- a variety of thistles.

Cocksfoot, with some scattered phalaris, occurs as a monoculture, especially in the lower-lying north and south-west sections of the reserve. It is found less densely in other areas of the reserve. These species are ready colonisers of disturbed areas, thus competing with *R. leptorrhynchoides* for germination sites.

Pest animals

Few introduced animals have been observed in the reserve, with the exception of rabbits, hares and domestic dogs. It is likely that domestic cats also frequent the reserve and may impact on the native wildlife.

Fire management

As the reserve is small, and set in a semi-urban environment, wildfire is not considered a major problem. The main threats of fire to the reserve are from activities along the Cooma-Queanbeyan railway easement immediately to the west, or from wildfire moving into the reserve from grassland west of the railway line.

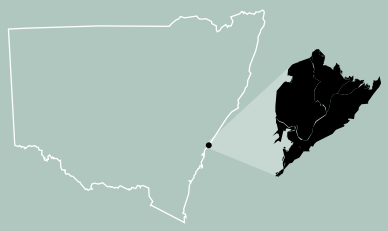
Usage and facilities

Recreational use of the nature reserve is not appropriate because of its focus on conservation of an endangered species in a small remnant area. The reserve is currently an important research site. Public access is therefore restricted and visitor facilities are not provided.

Royal National Park

J Little

M Cufer/NPWS



Royal National Park

Size	15,080 ha, perimeter approx. 202 km
Created	1879
Location	On the coast near the southern fringe of metropolitan Sydney and about 30 km north of Wollongong.

Main picture: An Aboriginal *Discovery* Ranger explains engravings at Jibbon Rocks.
Top right: Looking from the escarpment down to the beach at Burning Palms.

Plans and agreements

■	Plan of Management
■	Fire Management Plan – draft
	Ramsar wetland convention
	World Heritage listed
■	China-Australia Migratory Bird Agreement
■	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Dedicated in 1879, the Royal National Park (then known as The National Park) was one of the first areas of land in Australia to be set aside specifically for conservation and recreation. Today it conserves scenic and natural features, biodiversity, Aboriginal sites and historic features, and is used for scientific research and education.

Points of special interest

The most popular sections of the park are Audley, with its historic boatshed, Garie Beach, the beach and lagoon at Wattamolla, and the camping area at Bonnie Vale.

Geology, soils and landforms

The park is part of the Sydney Basin geological province and the Woronora Plateau and is dominated by Hawkesbury sandstone, which produces sandy soils along the coast. Wianamatta shales occur on high ridgetops, producing soils of low fertility, and the more fertile Narrabeen shale occurs along the rivers and streams.

Ecosystems

The park is within the Hacking River catchment and the Sydney Basin Bioregion. Its ecosystem types include eucalypt woodland, tall open eucalypt forest, rainforest, coastal heathland and wetlands.

Native plants

There are significant populations of *Eucalyptus leuhmanniana*, *E. campfieldii*, *Melaleuca deanei* and *Leucopogon exolasius* in the park. Fire management regimes are in place for each of these to minimise species decline from fire.

Native animals

Threatened species found in the park in recent years include:

- giant burrowing frog
- red-crowned toadlet
- broad-headed snake
- large-eared pied bat
- sooty owl
- powerful owl.

Distribution is monitored through regular fauna surveys and research into population size. Studies are being conducted on habitat restoration, artificial habitats, population size and predator/prey relationships for the broad-headed snake, which is being further threatened by illegal poaching. Patrols and surveillance are carried out by rangers and law enforcement officers in known poaching areas.

Aboriginal cultural heritage

Aboriginal sites in the park include rock engravings, axe-grinding grooves, middens, occupational sites and sacred sites. The park is part of the traditional lands of the Dharawal people. Aboriginal cultural heritage tours are conducted by Aboriginal Discovery Rangers.

Historic heritage

Historical heritage sites in the park include buildings, stonework, historic plantings, roads, fences and foundations. A management plan is currently being written for the historic cabins along the coast. The historic precinct of Audley has plantings, a boatshed, pavilion and picnic areas along the Hacking River.

Management issues

Pest weeds

Weeds that successfully compete with native plants are spreading gradually into the park from urban areas. Runoff from urban areas is a major contributor to the spread of weeds by increasing the nutrient and moisture content of soils and transporting sediments rich in weed seeds and propagules. A high level of use by visitors also compounds the problem. Weed-spraying programs are carried out at critical times of the year and bush regeneration volunteers work year-round to combat weeds at specific locations.

Pest animals

Introduced animals found in the park include:

- cats
- dogs
- pigs
- house mice
- brown and black rats
- rabbits
- foxes
- mallard and Muscovy ducks
- fallow and Javan rusa deer.

Fox-baiting programs are regularly carried out, ducks are removed as necessary, and further research is being conducted into the effects of deer on the park.

Fire management

A draft Fire Management Plan has been completed and will be placed on public exhibition in the near future. Hazard reduction burning is carried out annually for the protection of neighbours, visitors and infrastructure, taking into consideration rare and threatened species and previous fire history.

Usage and facilities

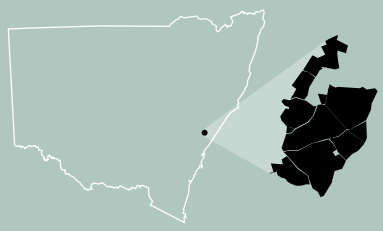
The park receives about 2 million visitors annually. This high level of visitor use puts pressure on popular locations, particularly during summer weekends and public holidays. Popular activities include bushwalking, fishing, surfing, picnicking, camping, day touring, educational tours, boating and cycling.

The popular areas – Audley, Wattamolla and Garie – have visitor facilities, including picnic grounds and camping areas, parking and walking tracks and trails. The park also has a visitor centre and field study centre. A vehicle entry fee applies.

Scheyville National Park

M Cufer/NPWS

M Cufer/NPWS



Scheyville National Park

Size	920 ha, perimeter approx. 37 km
Created	1996
Location	Within the Sydney metropolitan area, 50 km north-west of the CBD and 5 km north-east of Windsor.

Main picture: A silo at Scheyville, evidence of the park's agricultural history.
Top right: A school group on field study in the park.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
■	China-Australia Migratory Bird Agreement
■	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Scheyville National Park was reserved for the protection of native plants and animals and natural ecosystems, including endangered ecological communities and species of the Cumberland Plain and Hawkesbury River catchment. It also has significant European and Aboriginal cultural heritage.

Points of special interest

A major point of interest is the European cultural and social history attached to the buildings and surrounding natural and cultural landscape, showing the various uses of Scheyville over the last 100 years. Longneck Lagoon is popular for birdwatching and walks.

Geology, soils and landforms

The park is part of the Sydney Basin geological province and the Cumberland Plain. Scheyville consists of Tertiary and Triassic horizontally bedded sedimentary rock. Wianamatta shale forms most of the upper areas of Scheyville, with Quaternary alluvials and Rickabys Creek gravels also present.

Ecosystems

The park is within the Hawkesbury Nepean River catchment and the Sydney Basin Bioregion. It consists of Cumberland plain woodland, a small area of Castlereagh scribbly gum woodland and shale/gravel transition forest, as well as the Longneck Lagoon wetland. There are still substantial areas of grassland in the centre of the park.

Native plants

The park contains the largest reserved remnant of the threatened Cumberland Plain woodland ecological community. It also contains regionally significant populations of *Pulteneaea parviflora*, *Dillwynia tenuifolia* and *Acacia pubescens*.

Native animals

Native species recorded in the park include the vulnerable swift parrot and turquoise parrot, and the endangered regent honeyeater. Two vulnerable migratory wetland birds, the black bittern and the combed jacana, have been recorded in the past.

Aboriginal cultural heritage

The park is part of the traditional lands of the Daruk people. Remaining evidence indicates that occupation was focused around the lagoons but would have also included hunting in surrounding woodland and probably included burning of the bush.

Historic heritage

There are reminders of a rich history of social and cultural change in Australia. The area is named after William Francis Schey MP, who was largely responsible for the establishment of the Scheyville Government Agricultural Training Farm.

Management issues

Pest plants

A number of species remain from former grazing practices, including:

- invasive woody weeds such as blackberry and lantana
- vines such as ballon vine and bridle creeper
- introduced grasses such as Indian love grass and pasture grasses.

Control measures include bush regeneration, spraying programs and burning. NPWS will continue to deal with the removal of *Salvinia molesta* in Long Neck Lagoon over the next few years.

Pest animals

Cats near urban areas are a problem for native animals and small birds. Trapping occurs when possible. Foxes occur throughout the park and baiting programs are carried out.

Fire management

Major concerns of park managers are fuel build-up near urban areas, wildfire control, protection of neighbours and visitors, and the impact of fire on native ecosystems. No major fires have been recorded in the park in the last 40 years. A hazard reduction burning program is prepared and implemented annually, and trails have been constructed to assist with fire management.

Usage and facilities

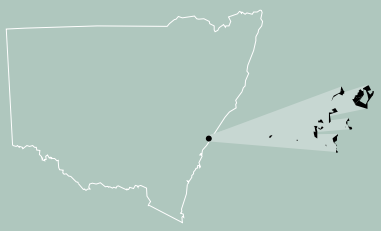
The park currently receives low numbers of visitors, and primarily on weekends. Walking, bike riding, horseriding and birdwatching are the main activities. A large number of school groups use the Field Studies Centre that is associated with Long Neck Lagoon area.

The park has picnic facilities near the building complex and numerous management trails, which are available for recreational use. A Heritage Trail interprets the European history of Scheyville. Additional picnic and interpretative facilities are planned.

Sydney Harbour National Park

S Cohen

NPWS



Sydney Harbour National Park

Size	393 ha, perimeter approx. 47 km
Created	1975
Location	Spread over various parts of Sydney Harbour. Includes six major headlands, a number of smaller separate pieces of land, and five islands.

Main picture: Hornby Lighthouse on South Head.

Plans and agreements

■	Plan of Management
■	Fire Management Plan – draft
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Sydney Harbour National Park is one of a group of national parks in the Sydney metropolitan area – Botany Bay, Ku-ring-gai Chase, Garigal, Lane Cove and Royal national parks – that together conserve various sections of the coastline, the harbour, and sandstone environments. It protects natural and cultural heritage, and scenery, of Sydney Harbour.

Points of special interest

The park is an important tourist destination for national and international visitors. It also provides recreational opportunities for Sydneysiders from the local area and further afield. The park comprises North Head, Dobroyd Head, Middle and Georges Head, Bradleys Head, Nielsen Park, South Head/Gap Bluff, Fort Denison, Goat Island, Rodd Island, Clark Island and Shark Island.

Geology, soils and landforms

The park is part of the Sydney Basin geological province. The harbour was formed about 6000 years ago when the sea rose to its present level, drowning the Parramatta River valley. The Hawkesbury sandstone terrain of steep hills, long narrow ridges, deep rocky valleys and intricately eroded cliffs typifies the landscape of the park. Older Narrabeen series formations can be seen at the base of North Head, while the central ridge of North Head consists of aeolian sand dunes overlaying sandstone. Remains of basalt dykes are visible at Bottle and Glass, Bradleys Head and North Head. Most of the soils in the park are highly erodible, shallow, stony, infertile quartz sands derived from Hawkesbury sandstones.

Ecosystems

The park is part of the Sydney Basin Bioregion. Its vegetation is an important remnant of that which once covered much of the coast around Sydney. The structure of the vegetation varies from coastal heath on poorly drained shallow soils, to woodland on exposed ridges and slopes, to forests and gullies. Heathlands make up approximately 40 per cent of the park, forests 15 per cent, and woodlands 25 per cent, with 20 per cent having been cleared or modified.

Native plants

The endangered species *Allocasurina portuensis* occurs within the park. A recovery plan has been prepared for this species and several actions implemented, such as protection and monitoring of original plants, collection and propagation of seeds, and bush regeneration. The vulnerable species *Eucalyptus camfieldii* also occurs in the park, and monitoring of this species is ongoing. In addition, species found in the park that are rare in the region include the ground orchard (*Erythrorchis cassythoides*), the wet heath ground cover *Rulingia hermanniifolia*, and *Gonocarpus salsoloides*.

S Cohen/NPWS

View from Bradleys Head.

Native animals

Two endangered animal populations occur in the park, the little penguin at Manly and the long-nosed bandicoot at North Head. Recovery plans have been prepared and are currently being implemented for both populations, involving measures such as monitoring existing populations, identifying potential habitats, regulating commercial and recreational boating, and educating the community. Vulnerable species occurring or reported in the park include the:

- red-crowned toadlet
- little bentwing bat
- sooty oystercatcher
- powerful owl.

Monitoring of these species is ongoing.

Aboriginal cultural heritage

The park is part of the traditional lands of the Eora, Guringai and Daruk people living around the harbour. There are 70 sites recorded in the park, mostly on land that was reserved for recreation or defence purposes, or was too difficult to develop. Site types include rock engravings, cave art, shelter deposits, middens and axe-grinding grooves. A review of Aboriginal heritage across the harbour is underway, having commenced with North Head.

Historic heritage

Initial European settlement in Australia centred on Sydney Harbour, and the park contains a number of places, buildings and structures associated with aspects of the development of Sydney and Australia. These include the role and contribution of convicts, the development of systems of fortifications to protect the colony, navigation and maritime industry, immigration and quarantine, and the development of recreational uses of the harbour and its foreshores.

Major buildings and structures include the Quarantine Station at North Head, the beehive casemates at Georges Head, the gun emplacements and rifle wall at Bradleys Head, Fort Denison, Goat Island, Greycliffe House at Nielsen Park, and the lighthouse and fortifications at South Head.

Management issues

Pest plants

A large number of introduced plants occur in the park that have spread from neighbouring gardens or garden refuse dumped in the park, or have been carried by wind or birds. The highest concentrations of weed species are found on the perimeters of the park, and include:

- lantana
- asparagus fern
- morning glory
- crofton weed
- pampas grass.

An outbreak of alligator weed at Collins Flat and other locations has been controlled. Extensive bush regeneration works, involving park staff, contractors and volunteers, have been implemented. The cooperation of local councils and park neighbours is also sought in implementing weed control and bush regeneration programs.

Pest animals

Feral animals are commonly found within the park and include:

- foxes
- cats
- rabbits
- rats
- mice.

Domestic cats and dogs are also common in the park, despite being prohibited for many years. Control programs have been implemented for foxes, cats, rabbits and rats at various locations within the park, including North Head, Dobroyd Head, Middle Head and Bradleys Head. Public education programs have also been implemented in most park precincts highlighting the impact of cats, dogs and other introduced animals on natural areas and the need for them to be controlled.

J Winter/NPWS

Nielsen Park.

Fire management

The park has been subjected to a variety of fire regimes. Some areas formerly within military and quarantine lands or close to urban development have been protected from fire, while others have been burnt regularly to protect property or because of arson. Only a small amount of hazard reduction burning has been undertaken in recent years, with the protection of property on the boundaries achieved by fire breaks. A draft Fire Management Plan has been prepared. A hazard reduction burning program is prepared and implemented annually, and trails have been constructed to assist with fire management.

Usage of the park

Sydney is the most popular destination in NSW for domestic tourists, and the main entry point for international tourists visiting Australia. In excess of 1 million visitors come to the park each year to enjoy the park's natural and cultural heritage, views of the harbour and city, and special celebrations such as for New Years Eve, Boxing Day and Australia Day.

Popular activities include picnicking, bushwalking, swimming, sightseeing, fishing and sunbathing. Guided tours are conducted at Fort Denison, the Quarantine Station, Middle Head Forts and Goat Island, among other places. Fun runs, triathlons, and small orienteering events are also held in parts of the park, and group activities such as weddings and family gatherings are common. Commercial filming and photography is another activity conducted in the park.

Facilities

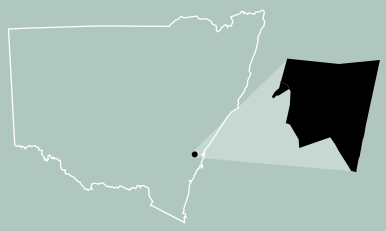
The park has an extensive network of walking tracks, providing access to places of scenic, natural and cultural interest. These include the Manly Scenic Walkway and walking tracks at North Head, Bradleys Head, Nielsen Park and the Hermitage Foreshore, and South Head. Lookouts and viewing platforms have been constructed at North Head, Bradleys Head, Dobroyd Head and South Head. Car parks are provided at North Head, Middle Head, Bradleys Head, South Head and Green Point. Public toilets with disabled access are provided at the key visitor areas, and there is a netted swimming area and change rooms at Nielsen Park. Kiosk facilities are available at Athol Hall at Bradleys Head and at Nielsen Park. A vehicle entry fee applies to parts of the park.

Water rat

Throsby Park Historic Site

F Kristo/NPWS

F Kristo/NPWS



Throsby Park Historic Site

Size	74 ha, perimeter approx. 4 km
Created	1975
Location	On the outskirts of Moss Vale in the Southern Highlands, about 140 km south of Sydney.

Main picture and top right: Throsby Park, built in 1834 for Charles and Elizabeth Throsby, who filled the house with their 17 children.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the site

Why it is conserved

This historic site protects Throsby Park and several associated farm buildings, as well as archaeological features, garden, orchard and farm areas, and a large number of heritage items. Throsby Park is entered on the Register of the National Estate and listed on the State Heritage Register and the Register of the National Trust. The house is also separately listed. Buildings in private ownership – the former barn, the flour mill, the original stables, Gundagai Cottage and Christ Church – are also entered on the Register of the National Estate.

Historical significance

The property set in motion the first settlement outside the Sydney region, opening up of the Southern Highlands. It exhibits a sense of continuity from its early colonial origins and continuous family ownership, and is a symbol of early colonial Australia and of the lifestyle of the wealthier members of colonial society. It reflects its colonial period of use as an intense commercial, mixed farming and subsistence operation.

Aesthetic significance

The Throsby Park landscape is an essentially intact example of an early 19th-century rural property. It contains a residue of the activities that have been carried on there since the 1820s. The house makes a visual statement, with its commanding position and attendant dark pines contained within the rural landscape. The buildings are of pleasing design and proportions, in a picturesque and evocative setting. The property was celebrated in a painting by Conrad Martens in 1836.

Research significance

Research is important for improving understanding of the history of the historic site, the nature and use of various features, and appropriate management strategies. Considerable research has already been undertaken both by NPWS and by individuals. Research by other organisations and students may also provide valuable information for management. A prospectus will be prepared to encourage involvement of other organisations in priority research areas.

Social significance

The Throsby Park land grant began the opening up of the Southern Highlands to European settlement and the property contributed to the development and diversity of the district. It was one of a few properties in the district large enough to be a major producer of primary products for the colonial market and was an important employer of labour. The families of many of the people who worked for the Throsbys still live in the district. There is considerable local interest in, and attachment to, the site and there has been significant involvement of local people in its conservation and management since acquisition by NPWS.

Conservation works

A comprehensive conservation works program has been undertaken on the site since its acquisition. A major part of this was work on the house, including improved drainage to overcome rising damp, removal of concrete rendering from the house walls, repair of ceilings, floors, sandstone flagging and interior woodwork, roof support and reconstruction of some collapsed elements. Research and archaeological investigation were undertaken to guide conservation work.

Native plants

The site protects remnant areas of native vegetation, including specimens of the rare Paddys River box (*Eucalyptus macarthurii*).

Use by the public

It is desirable for the public to have access to as much of the historic site as possible, and for the site to be managed in a manner that maintains and presents its cultural significance, unbroken agricultural use, and character. Objectives for public access and use of the site are:

- to be open for public viewing as frequently as possible
- controlled public access
- continued agricultural uses
- appropriate use of the buildings
- promotion of understanding of the site's history and significance
- community involvement in management.

Use of the site must be sympathetic to its cultural heritage, respect the residential needs of Ms Throsby, require minimal intervention and change, and be compatible with the nature of the site. If possible, uses should be financially self-supporting and provide revenue for maintenance of the historic site. It is recognised, however, that major conservation works will continue to require external funding.

Towra Point Nature Reserve

SMeN

NPWS

Towra Point Nature Reserve

Size 386 ha, perimeter approx. 23 km

Created 1982

Location Within the Sydney metropolitan area on the southern shores of Botany Bay.

Main picture: Shorebirds such as the terek sandpiper are at home in the reserve's internationally recognised wetlands.
Top right: A lake in the reserve.

Plans and agreements

■	Plan of Management
	Fire Management Plan
■	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the reserve

Why it is conserved

Towra Point Nature Reserve is an internationally significant wetland system listed under the Ramsar Convention. In combination with the adjacent Towra Aquatic Reserve it contains the largest remaining wetland system in the Sydney Basin, with a complex of rainforest, swamp forest, saltmarsh, mangroves, seagrass beds and intertidal sand and mudflats.

Points of special interest

Key locations in the reserve include the coastal rainforest, the saltmarshes, Towra Beach and Towra Lagoon, and Towra Spit Island, the breeding site for the little tern.

Geology, soils and landforms

The reserve is part of the Sydney Basin geological province and is largely comprised of Holocene sand deposits. The area is still highly dynamic, but the major period of landscape formation has been over the last 3000 years since the mouth of Botany Bay opened and the area was transformed from a coastal lagoon system to a bay.

Ecosystems

The park is within the Georges River catchment and the Sydney Basin Bioregion. The terrestrial part of the reserve is coastal rainforest and a swamp eucalypt forest with sparse understorey. The major part of the reserve is the surrounding saltmarsh flats and mangrove forests. A typical profile runs from rainforest to saltmarsh to mangroves and/or intertidal mudflats.

Native plants

The main terrestrial communities, Sutherland Shire littoral rainforest and estuary swamp forest, are listed as endangered ecological communities. Saltmarsh has suffered severely from human impacts and is now rare in the region. The reserve is the largest saltmarsh remnant in the Sydney Basin.

Native animals

The reserve and the surrounding wetlands are notable for their birdlife. This includes breeding populations of the threatened shorebirds little tern and pied oystercatcher, and migratory waders that spend each summer in the area. The reserve is particularly important for the two largest wader species, eastern curlew and whimbrel. The eastern curlew is listed as a threatened species, as well as being a migratory wader.

Aboriginal cultural heritage

Members of the local Aboriginal communities have strong connections with the reserve area. The area was, and is, a highly productive area for a wide range of resources, and contains midden sites.

Historic heritage

There is little obvious historic heritage in the reserve. The causeway that links it with the Kurnell peninsula was installed by the airport authorities in the early 1950s, at which time a shed and navigational facility were also installed. There are the remains of old oyster leases, including stone slabs from last century.

Management issues

Pest plants

The most common weed on the reserve is lantana, though bitou bush and African olive are also present. Lantana is tenacious and highly labour intensive to remove. There is an active 'friends' group that conducts regular lantana control. Grants have previously been received for lantana control at specific sites, notably the area known as Weedy Pond. Approval has been received to commence a major program at Towra over two years using Conservation Volunteers Australia and Greencorp teams. They will be present for a week each month over the two years, allowing for the necessary follow-up to primary weed control.

Pest animals

Foxes are the main pest animal in the reserve. They are particularly problematic in the little tern breeding season, with the capacity to wipe out all of the eggs and/or chicks in a single night. Accordingly, fox control is a high priority. Permanent bait stations have been established, with active baiting in the lead-up to the little tern season. The fox management plan has been forwarded to the local Rural Lands Protection Board for endorsement.

Fire management

The reserve is not prone to fires.

Usage and facilities

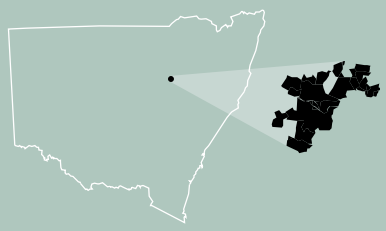
The reserve is mainly accessed from the water. The western beach is a day-use area with unrestricted use during daylight hours. There are also short walks onto the causeway and at Quidbray Bay, providing views of the saltmarshes, mangroves and mudflats. The rest of the reserve is only accessible by permit, and these are mostly provided to school groups and birdwatchers.

As the reserve is not generally open to the public, visitor facilities are restricted to signs at the public access points on the causeway and Quidbray Bay.

Warrumbungle National Park

S Cohen/NPWS

J Little



Warrumbungle National Park

Size	23,198 ha, perimeter approx. 149 km
Created	1953
Location	On the north-west slopes of NSW, 33 km west of Coonabarabran. Adjoins the Siding Spring Astronomical Observatory and the Pilliga Forest.

Main picture: The park's spectacular scenery is the result of intense volcanic activity some 13 to 17 million years ago.
Top right: Bushwalking near The Breadknife.

Plans and agreements

■	Plan of Management
■	Fire Management Plan – draft
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Warrumbungle National Park was conserved to provide protection for the most scenic parts of the Warrumbungle Range. The park's landscape is classified by the National Trust of NSW and listed on the Register of the National Estate. The park contains a great diversity of plant and animal communities, and evidence of Aboriginal occupation has been found.

Points of special interest

The landscape is largely volcanic in origin, with spectacular mountain scenery. In the 1930s some of the original landholders donated their land for the establishment of a reserve and since then the size of the park has gradually increased. The park has long been a popular destination for naturalists. Bushwalking, camping and more recently rock climbing are popular activities.

Geology, soils and landforms

The mountains in the park are the eroded remnants of the Warrumbungle Shield Volcano. Underlying these outcrops is Pilliga sandstone, which marks the eastern margin of the Great Australian (Artesian) Basin. The mountains today rise up to 700 metres above the surrounding area, with much of the terrain very steep. The creeks that drain from the park form a radial pattern. Shallow soils dominate the upper slopes while sandy alluvial soils are found further down the valleys.

Ecosystems

Heath communities are found around rocky, exposed cliff lines. Eucalypt woodlands dominate the slopes. Many of the valleys were cleared for agriculture and have been invaded by weed species. NPWS has been attempting to rehabilitate many cleared areas with tree planting and soil erosion control. Over 620 plant species have been recorded, as well as 296 species of vertebrate fauna.

Native plants

The park protects a number of rare and threatened plants, including *Acacia floctiniae*. A comprehensive vegetation survey is yet to be undertaken, but it is likely that further rare and threatened species will be found.

Native animals

Surrounded by farming land, the park is an important refuge for native animals. Approximately 180 bird, 52 reptile and 23 mammal species are found, many at or near the edge of their range. Threatened species include:

- koala
- greater long-eared bat
- grey falcon
- turquoise parrot
- regent honeyeater
- pale-headed snake.

A threatened population of brush-tailed rock wallabies also occurs in the park. This is of great importance because it is the only known population remaining west of the Great Dividing Range.

Aboriginal cultural heritage

For many thousands of years before European settlement, Aboriginal people lived in the Warrumbungle Mountains. Three separate language groups – Gamilaroi, Kawambarai and Weilwan – bordered the area. The name 'Warrumbungle' comes from the Gamilaroi language and is believed to mean 'crooked mountains'. A walking track is currently being constructed to Tara Cave, an occupation site that has been dated by archaeologists to approximately 4000 years ago.

Historic heritage

The first European record of the Warrumbungle Mountains was by John Oxley in 1818. The mountains were not used to a large degree by early settlers because of the rugged terrain. Some logging took place in the mountains and on the slopes, but clearing for grazing and agriculture was restricted. Most structures have been removed, though a shearing shed and one of the original homesteads remain.

Management issues

Pest plants

A range of programs are being undertaken in the park to control weeds. Weeds currently being targeted include:

- blackberry
- prickly pear
- noogoora burr
- St Johns wort
- khaki weed
- spiny burr grass.

Blue heliotrope is an invasive species of great concern because all controls to date have failed. Tree planting is ongoing and methods to control grazing are being investigated.

Pest animals

The main pest animals found in the park are:

- foxes
- goats
- pigs
- rabbits.

Control programs focus on foxes and goats, which significantly threaten rock wallaby populations. Feral pigs cause damage to drain lines and creeks. Rabbits are restricted mainly to the cleared areas.

Fire management

Fires in the park have tended to be small and infrequent. Most of the wildfires in the past have been ignited by lightning strikes, and only a few by arson. A draft Fire Management Plan has been prepared. It aims to prevent single large fire events and protect the colonies of rock wallabies. Strategic fire management zones have been established where hazard reduction burning is conducted.

Usage and facilities

The park is a popular attraction, with between 40,000 and 70,000 visitors a year. Around 50 per cent of visitors camp in the park, concentrated at Easter and the October school holidays.

Facilities include:

- 36 powered camping sites
- hot showers and a laundry
- gas barbecues in picnic areas
- wheelchair-accessible tracks
- toilets in camping areas.

Vehicle entry and camping fees apply.

Washpool National Park


P Green


P Green

Washpool National Park

Size	59,024 ha, perimeter approx. 464 km
Created	1983
Location	On the Northern Tablelands of NSW, midway between Glen Innes and Grafton. Part of a continuous expanse of protected land that includes Gibraltar Range, Nymboida and Barool national parks.

Main picture: Washpool has the world's largest stand of coachwood trees.
Top right: Fungi near Coombadjha Creek.

Plans and agreements

	Plan of Management
■	Fire Management Plan – draft
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Washpool National Park protects some of the most diverse and least disturbed forested country remaining in NSW. The landscape includes expansive rainforests, tall trees, steep gorges, clear waters, granite boulders and wilderness forests.

Points of special interest

The eastern section of the park contains the largest rainforest wilderness in NSW. The area west of the Timbarra (Rocky) River was first dedicated in 1997 and recent acquisitions adjacent to this section are awaiting formal reservation.

Geology, soils and landforms

The park extends from the Great Dividing Range and the New England Tablelands in the west, across the Demon Fault to the base of the Great Escarpment in the east. Altitudes range from almost 1500 metres above sea level in the west to 350 metres in the Timbarra (Rocky) River valley. Red and brown earths and red and yellow podsoils are common, with a high degree of intermixing depending on the variations in soil parent material, topology and vegetation.

Ecosystems

The complex mosaic of rainforests and wet sclerophyll forests in the park is of global significance. The warm temperate rainforests in the park include the Willowie Scrub and the largest remaining coachwood forest in Australia, and therefore the world. Vegetation types in the park include:

■ warm temperate rainforest ■ subtropical rainforest ■ tall moist and dry forest vegetation
■ subalpine vegetation ■ heath ■ sedgeland.

Native plants

The park protects one of the most important and florally diverse landscapes in NSW. Approximately 1000 native species have been recorded, including several endangered, vulnerable and endemic species.

Native animals

The reserve provides essential habitat for a large number and range of species, including 50 mammal, 123 bird, 37 reptile and 19 amphibian species. A significant number of threatened fauna species have been recorded, including 27 listed as vulnerable and three as endangered, namely:

- Hastings River mouse
- red goshawk
- giant barred frog.

Populations of several of these threatened species constitute a significant proportion of statewide populations.

Aboriginal cultural heritage

The area encompasses parts of the former countries of the Bundjalung and Jukumbal people of the Bundjalung Aboriginal nation, the Ngarrabul people of the language group of the Northern Tablelands area around Glen Innes, and the Gumbaingirr people. There has been limited archaeological and anthropological surveys undertaken in the park. Sugarloaf (Gwydir) and Waratah Trig have recently been declared as Aboriginal places under the *National Parks and Wildlife Act*.

Historic heritage

Extremely rugged terrain and low-productivity soils hindered farming use over the majority of the park. However, forestry, grazing, mining and the construction of the Gwydir Highway have all impacted on the area. A cultural heritage assessment is currently in progress.

Management issues

Pest plants

Introduced plants account for approximately 6 per cent of the flora in the park. Lantana is the most significant weed threatening the park. Control programs have been undertaken within the reserve, including the trial release of biological control agents.

Pest animals

The main pest animals are:

- wild dogs
- feral pigs
- cats
- goats.

Feral animals affect the park's native biodiversity as well as the profitability of grazing enterprises that adjoin the reserve. Control programs are being undertaken for all four pest animal species, including twice-yearly baiting on the park perimeter for wild dogs and trapping for pigs and cats.

Fire management

The extensive area of rainforest and wet sclerophyll forest, particularly in the east of the park, has a low natural fire frequency. The higher fire frequency in the west has minimised the transition areas between closed forest and eucalypt forest. Fire management aims to reduce fire frequency and is primarily limited to wildfire suppression, although some limited hazard reduction burning is carried out. A Fire Management Plan, incorporating the surrounding reserves, is in preparation and will involve a cooperative management approach with park neighbours.

Usage and facilities

The proximity of the park to the Northern Tablelands and the north coast via the Gwydir Highway (World Heritage Way) make it readily accessible for recreational use. The most common visitor activities are picnicking, bushwalking and camping. The wilderness walking opportunities are considered to be of national significance.

Camping grounds, picnic areas, walking tracks and lookouts offer outstanding opportunities for outdoor and nature-based recreation. Picnic and camping areas are provided in the south of the park, and a low-key picnic and camping area is maintained on the north-east edge. There are currently no visitor facilities provided in the western additions to the park. Vehicle entry and camping fees apply.

Regent bowerbird

Weddin Mountains National Park


SMaN


J Little

Main picture: The view from Eualdrie.
Top right: An island in a sea of farmland, the Weddin Mountains were once the haunt of bushrangers.

Snapshot of the park

Why it is conserved

Weddin Mountains National Park provides protection for the diverse range of plant and animal communities found in the southern section of central west NSW, as well as the rich cultural, scenic and natural features of the area.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The park was proclaimed a wildlife refuge in 1962 and gazetted as a national park in 1971. It contains Ben Halls cave, a favourite hideout for the famous bushranger. Seatons Farm, also in the park, illustrates the struggles of the Seaton family trying to make a living after the Depression.

Geology, soils and landforms

The park lies within the Lachlan Fold Belt and is a crescent-shaped 19-kilometre-long range that rises sharply from the surrounding plains to an altitude of 700 metres. The soil is generally skeletal, having been developed from sandstone parent rock. It is therefore susceptible to gully and sheet erosion.

Ecosystems

The park contains five distinct vegetation communities, including:

- dry open woodland/forest
- Blakelys red gum woodland
- low open woodland with heath understorey
- fuzzy box woodland, which is poorly conserved within the region and the parks system.

Some 140 native plant species and 170 native animal species have been recorded in the park, many of these at the limit of their known distribution.

Native plants

One threatened plant species, *Goodenia macbarronii*, has been recorded. The park conserves a large variety of ground cover, shrubs and trees that are surrounded by agricultural and pastoral land.

Native animals

The park's isolated location and scattered vegetation communities mean that native animal communities are often highly localised. Weddin Mountains has a very rich birdlife, with 151 species recorded in a 1988 survey. Threatened species recorded in the park include:

- superb parrot
- turquoise parrot
- regent honeyeater.

In conjunction with park neighbours, a variety of pest animal control programs have been carried out in recent years to protect native fauna.

Aboriginal cultural heritage

Although the park is known to have cultural values for local Aboriginal communities, little formal research has yet been undertaken to determine the nature and significance of these values.

Historic heritage

Seatons Farm has examples of the architecture and farming practices of the area in the time of the early settlers. Oral history of the farm from Mrs Seaton is interpreted throughout the precinct.

Management issues

Pest weeds

The park has been relatively free of weeds, with the exception of cape weed and Patersons curse. In recent times large invasions for St Johns wort has encroached on the park from neighbouring properties. Programs are regularly undertaken in conjunction with local landholders and rural lands protection boards to control or eradicate the weeds.

Pest animals

The main pest animals found in the park are:

- foxes
- goats
- feral pigs
- rabbits.

Foxes, goats and pigs pose a major problem for native animals, particularly threatened animal species, while rabbits damage the already fragile soils and threaten endangered plant species. Control programs are being undertaken for all four species, though fox control is currently the highest priority.

Fire management

The park is subject to wildfires resulting from thunderstorms in the summer months. Large fires in 1913, 1927 and 1975 burnt most of the park. Since then, ignitions have been quickly extinguished because of good cooperative action between NPWS and neighbours.

Usage and facilities

The park attracts a substantial number of visitors each year, with peak times in spring and autumn. The most common activities are picnicking, bushwalking and camping. Many visitors and residents use the park for family reunions, and there is an annual Ben Hall family get-together. The park is also popular for birdwatchers.

Current facilities include:

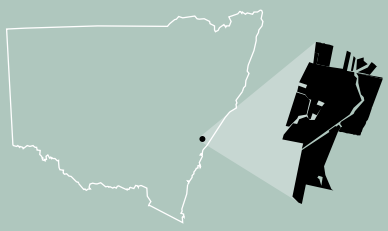
- picnic areas
- self-guided wheelchair-accessible interpretation signs through Seatons Farm
- toilets in picnic and camping areas
- a walking track to Ben Halls cave.

An upgrade of the facilities is being developed.

Western Sydney Regional Park

C McCormack/NPWS

NPWS



Western Sydney Regional Park

Size 582 ha, perimeter approx. 31 km

Created 1998

Location Within the Sydney metropolitan area in the south-west suburbs of Horsley Park, Wetherill Park, Bosley Park, Abbotsbury and Cecil Hills.

Main picture: The equestrian centre in the park was built for the Olympics in 2000 and continues to be used.
Top right: Treeplanting day for senior citizens.

Snapshot of the park

Why it is conserved

Western Sydney Regional Park was the first of a newly created category of land reserved under the *National Parks and Wildlife Act*. As a regional park it has a highly modified landscape and provides open space and recreational opportunities in an urban setting.

Plans and agreements

	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The most popular area open to the public is the Pimelia picnic area and 'playspace', which incorporates a state-of-the-art play area for children of all ages incorporating art, environment, and sensory and intellectual aspects.

Geology, soils and landforms

The park is part of the Sydney Basin geological province. There are three types of soil present, the main one being Luddenham soil landscape, originating from Wianamatta Group shales on undulating-to-rolling hills. There is also a small area of Picton soil landscape.

Ecosystems

The park is within the Hawkesbury Nepean River catchment and is part of the Sydney Basin Bioregion. The dominant vegetation is Cumberland Plain woodland, associated with Wianamatta-based soils. Eastern-facing gullies at the southern end contain remnant pockets of dryland rainforest.

Native plants

Significant plant species and communities listed under the *Threatened Species Conservation Act* include the endangered *Pimelia spicata* and Cumberland plain woodland.

Native animals

Formal fauna studies have not found any threatened animals in the park. However, 18 regionally significant species have been recorded in the vicinity.

Aboriginal cultural heritage

The park falls within the interests of both the Deerubbin and Gandangara Local Aboriginal Land Councils. The site is identified as highly significant by the Deerubbin Council as these hills were a natural meeting place for Aboriginal people.

Historic heritage

The park has important associations with prominent early settlers, including Edward Abbott and George Johnson. Evidence of early patterns of rural development and settlement are considered important aspects of the site.

Management issues

Pest plants

African olive is a pervasive weed in the forested part of the park and is treated through active cutting and poisoning. Sesstrum is another weed of concern mainly found in the gullies, and is treated with herbicide spraying. African boxthorn and lantana are also found in the park, and are treated with herbicide or removed manually or mechanically.

Pest animals

Rabbits occur throughout the park and impact on native species through grazing and erosion due to warren construction. Warrens are treated with fumigation or destroyed. Foxes occur throughout the park and are treated with baits.

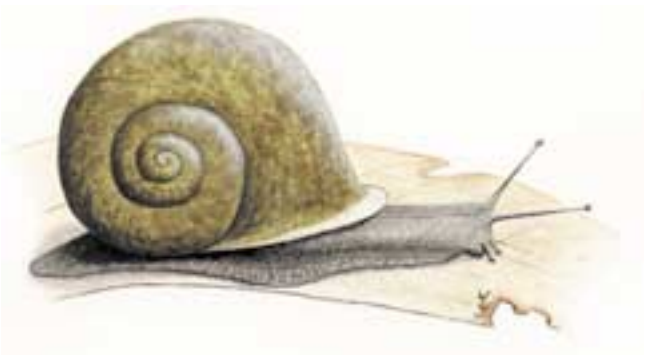
Fire management

Major concerns of park managers are fuel build-up near urban areas and across open grasslands, wildfire control, protection of neighbours and visitors, and impact on native ecosystems. The park has a Fire Management Plan.

Usage and facilities

As this is a newly established park, visitor counts have not yet been conducted. However, forecasts suggest a figure of 280,000 visitors annually rising to 430,000 visitors as the park becomes better known and the facilities are completed.

Current facilities include the Pimelia picnic area and playspace, and Restwell Road and Sugarloaf picnic areas, all of which have shelters and free barbecues. There are 10 kilometres of walking tracks, 12 kilometres of service trails, lookouts, horseriding trails and an international equestrian centre that was used for the Olympics and continues to be used.

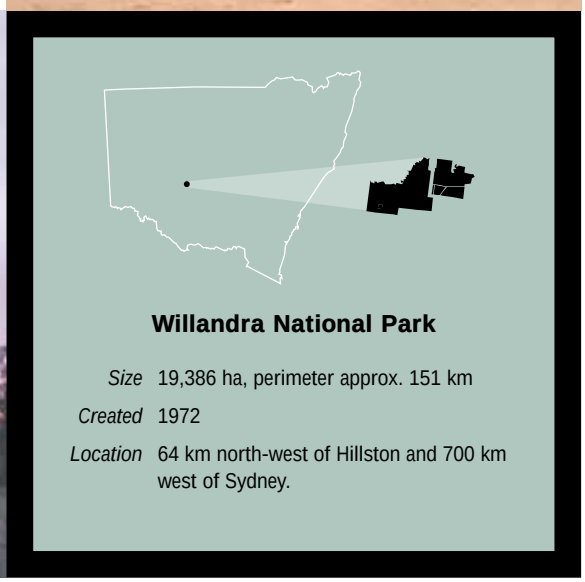


Cumberland Plain land snail

Willandra National Park

SMaN

S Cohen



Main picture: The homestead, part of the former Big Willandra station, was built in 1918 – the third homestead on the property.
Top right: Field work in the park.

Snapshot of the park

Why it is conserved

Willandra National Park conserves the historic heritage of one of the largest western Riverina pastoral stations, Big Willandra. It also conserves grasslands of the Riverine plain.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The homestead and shearing areas contain a variety of historic buildings for visitors to explore. The public can learn about pastoral land use in a semi-arid environment, and the flat, grassy landscape provides opportunities for observing sunsets and sunrises and gives a real sense of wide-open space. Wildflowers are on display in spring, and wildlife, such as kangaroos, waterbirds, reptiles, raptors and emus, are easily observed.

Geology, soils and landforms

The park is situated on the Riverine plain of the Murray Basin Lowlands. The soils consist of red and grey clay loams on the plains, and low sandy rises and heavy grey silty clays along the flood plains and depressions. There are two watercourses on the park, Willandra Creek and Yangellawah Creek, both tributaries of the Lachlan River. The park is very flat, with few elevated features other than trees along the creeks and around the lakes and depressions.

Ecosystems

The park is in the Riverina Bioregion. Vegetation types include:

■ open grassland ■ low woodland on sandy rises ■ riparian vegetation.

Native plants

Around 150 native plant species have been recorded in the park. There is one threatened species, the slender Darling pea (*Swainsona murryana*).

Native animals

Of about 200 native animal species found in the park, 14 threatened species have been recorded, including 10 bird species. Two endangered species have been recorded, the plains wanderer and the southern bell frog. Willandra is the only conservation reserve that protects the plains wanderer.

Aboriginal cultural heritage

Willandra was traditionally Wiradjuri and Ngiyampaa country, and there are many significant sites in the park. The park was also an important Aboriginal site after the arrival of Europeans, as many Aboriginal people worked and lived there when it operated as a station.

Historic heritage

Willandra Station is of state and national significance as a fine and largely intact example of one of the state's better-known sheep stations. Formerly one of the largest Western Riverina pastoral stations, Big Willandra is representative of several periods in Australian history. Squatters used and modified the land for grazing from the 1830s, and the buildings, structures, materials and construction techniques seen in the park cover a period from the 1880s to the 1960s. In their design, construction and materials, the buildings and structures are evidence of changing standards of living and technology, with continuous adaptation of elements to meet the evolving needs of the pastoral station and its occupants.

Management issues

Pest plants

Approximately 20 species of introduced plants have been recorded in the park. The main problem weeds are:

- noogoora burr
- Bathurst burr
- devils claw
- box thorn.

Weed control programs are regularly conducted to control Bathurst burr, devils claw and box thorn.

Pest animals

The main pest animals found are:

- pigs
- foxes
- rabbits
- goats
- cats.

Control programs are being undertaken for all five of these species, though fox and goat control is currently the highest priority. Fox control programs are regularly undertaken in conjunction with local landholders and rural lands protection boards.

Fire management

The park is subject to infrequent wildfires, generally started by lightning strikes. Fire management in the park is primarily limited to suppressing wildfires and maintaining fire trails. The last major fire occurred in 1985.

Usage and facilities

The park attracts approximately 5000 visitors each year, with peaks over the spring and autumn months. The most common activities are birdwatching, exploring the buildings, bushwalking and camping.

Facilities provided for visitors include:

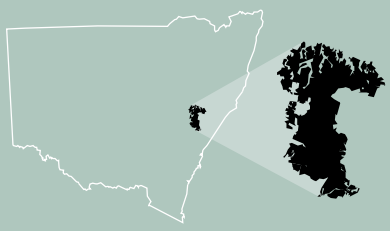
- self-contained accommodation in the cottage, men's quarters and homestead
- wheelchair access and facilities in the homestead
- basic camping
- drive tours
- walking tracks
- picnic areas.

Vehicle entry and camping fees apply.

Wollemi National Park

G Steer/NPWS

M Sharp/NPWS



Wollemi National Park

Size	492,976 ha, perimeter approx. 1999 km
Created	1979
Location	On the central tablelands and central coast of NSW, from 100 to 250 km north-west of Sydney.

Main picture: Dunns Swamp, a popular camping and picnic spot in the park.
Top right: The valleys of the park present experienced bushwalkers with challenging opportunities for exploring the rugged terrain.

Plans and agreements

■	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Wollemi National Park is the second-largest national park in NSW, and contains the largest wilderness area in the state. It was primarily reserved for the protection of native plants and animals and its diverse range of natural ecosystems. The park forms an integral part of the Greater Blue Mountains World Heritage Area.

Points of special interest

The park has a high public profile because of its wilderness status, for its proximity to Sydney, for the wild and scenic Colo River, and particularly for the discovery and protection of the internationally significant Wollemi pine.

Geology, soils and landforms

On the western edge of the Sydney Basin on the Blue Mountains Plateau, the park is based on four strata of sedimentary rock: Permian coal measures, Narrabeen and Hawkesbury sandstones and shales, and Wianamatta shales. The rock strata in this section of the Sydney Basin tilt upwards to the north-west. Erosion activity has weathered away most of the Wianamatta and Hawkesbury strata throughout the park, exposing the Narrabeen stratum.

Ecosystems

The park is within the Hawkesbury Nepean River catchment and the Sydney Basin Bioregion. It is dominated (approximately 90 per cent) by eucalypt open forests on steep sandstone-shale terrain. About 40 per cent of the vegetation is composed of a sheltered dry sandstone forest, and other types include northern escarpment woodlands, exposed Hawkesbury woodland and grey box woodland. Only about 4 per cent is rainforest. Of particular significance in the park is the diversity of eucalypts, with over 70 species recorded.

Native plants

Although there has been no extensive and systematic survey of plants, the park and its surrounds are known to have a number of threatened species, species at the limit of their distribution, and species of limited distribution. These include *Apatophyllum constablei*, *Acacia asparagoides*, *Eucalyptus bensonii* and *Rupicola decumbens*, all of which are highly restricted local endemics.

The Wollemi pine (*Wollemia nobilis*) exists only in the park – a small grove of the trees was found by an NPWS ranger in 1994. Other significant species include *Eucalyptus gregsoniana*, *Isopogon prostratus*, *Pomaderris brunnea* and *Acacia bulgaensis*.

Native animals

The park provides habitat for a number of threatened species, including:

- brush-tailed rock wallaby
- koala
- regent honeyeater
- broad-headed snake
- glossy black cockatoo.

Aboriginal cultural heritage

There is currently only a relatively small number of recorded sites. Those known are in the Colo River area and along Bells Line of Road.

Historic heritage

Historic heritage in the park generally relates to shale mining activities in the Newnes, Glen Davis and Baerami Creek areas.

Management issues

Pest plants

Problem weeds include St Johns wort in the Nullo Mountain area and Widden Valley, and blackberry along waterways. Cape ivy occurs in the wilderness area of the Wolgan Valley, and tree of heaven occurs at Koondah Creek and in the Newnes and Wheeney Creek areas. Other species of concern are prickly pear and tiger, willow and *Coreopsis* sp. Ongoing park management programs have aimed to control specific infestations of introduced plants, and considerable success has been had in controlling tree of heaven, blackberry and lantana.

Pest animals

Foxes and wild dogs have been the focus of control programs so far. The fox program focuses on habitats of threatened species such as the rock wallaby, and the wild dog program, in the Mudgee management area, aims to reduce the threat to park neighbours' agricultural interests.

Fire management

Fire management is an important issue in the east due to the closeness of rural agricultural lands (where there is a history of many ignitions and large fires) and in the south-east (to protect rural residential areas). A large part of the park was affected by the 1994 Sydney wildfires. A hazard reduction burning program is prepared and implemented annually, and trails have been constructed to assist with fire management.

Usage and facilities

The Wheeny Creek area, in the southern side of the park, attracts the most visitors. Bushwalking, camping, canyoning, day touring and caving are among the most popular activities. The Dunns Swamp visitor area is popular for camping, picnicking and canoeing. The Bicentennial National Trail, which runs through the north-western part of the park, is regularly used by horse riders.

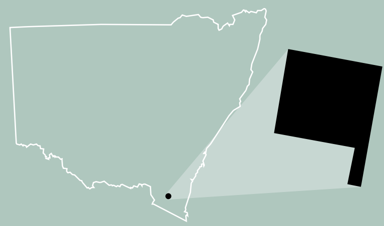
Visitor facilities are provided at Dunns Swamp, and there are camping areas at Newnes and Wheeney Creek. Bush camping elsewhere in the park is popular among campers who are able to navigate independently.

Wollemi pine

Wullwye Nature Reserve

NPWS

M Young



Wullwye Nature Reserve

Size	155 hectares, perimeter XX km
Created	2001
Location	About 6 km north-east of Dalgety in the south east tablelands of NSW.

Main picture: The reserve was created this year as part of the Southern Comprehensive Regional Assessment forest process.
Top right: Burramys mountain pygmy possum

Plans and agreements

	Plan of Management
	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Forest Agreement & Regional Forest Agreement
	Under joint management

Snapshot of the reserve

Why it is conserved

Wullwye Nature Reserve makes a significant contribution to the conservation of the south east tablelands dry shrub tussock grass forest and some old-growth eucalypt forest types that are under-represented in the NSW parks system.

Points of special interest

Wullwye Hill is the most significant point on the reserve, overlooking the Snowy River with views across the Monaro Plains to the east and the Great Dividing Range to the west.

Geology, soils and landforms

The reserve contains the northern and eastern flanks of Wullwye Hill. The geology is mainly sedimentary with a granitic intrusion on the western edge. The soils are shallow and rocky with low nutrient content.

Native plants

The reserve contains two vegetation types: tableland dry shrub grass forest and south east tablelands dry shrub tussock grass forest. The overstorey is dominated by broad-leaved peppermint (*Eucalyptus dives*), red stringybark (*E. macrorhyncha*) and scribbly gum (*E. rossii*). Of particular interest is the diversity of lichens in the groundcover of the southern slopes. There are no threatened species in the reserve.

Native animals

Although there is suitable habitat for a number of vulnerable species, such as the koala and the spotted-tailed quoll, the fauna is representative of the Monaro, with grey kangaroos, red-necked wallabies, common wombats and brush-tailed possums. The birds, too, are fairly representative, with white-winged choughs, red-rumped parrots, honeyeaters, thornbills and wrens.

Aboriginal cultural heritage

The reserve is about 5 kilometres north of Hickeys Crossing on the Snowy River. This was a site to which Land Commissioner John Lambie said in 1948 'Aborigines are fond of resorting'. Anecdotal evidence suggests that a large, flat rock area on the hill may have spiritual significance.

Historic heritage

The reserve has been used historically as grazing land and for firewood collection but there are no known historic sites within the reserve.

Management issues

Pest plants

There are 19 introduced plant species scattered through the reserve, including serrated tussock, Patersons curse, vipers bugloss and thistles.

Pest animals

European rabbits and red foxes occur within the reserve and evidence for both is widespread.

Fire management

The reserve is subject to infrequent wildfires, from lightning strikes (two in the past 20 years), which play a minor role in the distribution of flora and fauna in the area. Fire management in the park is primarily limited to wildfire suppression, although some hazard reduction burning may be carried out in the future. A Fire Management Plan will be prepared for the reserve in the next two years; until this plan is in place the reserve will be managed consistent with the Kosciuszko National Park Fire Management Plan.

Usage and facilities

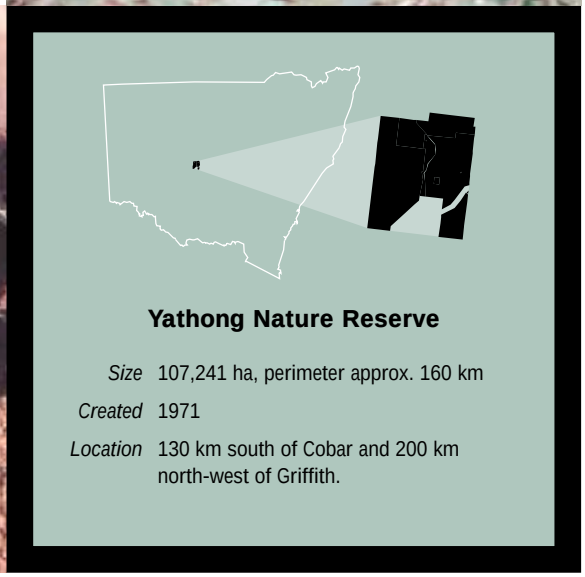
There is no recreational use of the reserve. The main visitors are school groups on geological field trips.
There are no visitor facilities.

Eastern grey kangaroo

Yathong Nature Reserve

R Wheeler/NPWS

G Ross/NPWS



Main picture: *Nephrurus levis*.
Top right: Mallee fowl.

Snapshot of this park

Why it is conserved

Yathong Nature Reserve conserves one of the largest continuous stands of mallee remaining in NSW. It supports a large array of wildlife communities and is a major habitat for a number of rare and threatened plant and animal species.

Plans and agreements

■	Plan of Management
■	Fire Management Plan
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
■	World Biosphere Reserve
	Subject to Regional Forest Agreement
	Under joint management

Points of special interest

The reserve has been used for a reintroduction program of the endangered mallee fowl. The reserve was dedicated as a World Biosphere Reserve in 1977.

Geology, soils and landforms

The reserve covers a large area of the plain and ridge country between Cobar and Griffith. It also contains most of the Merrimerriwa Range. It conserves sections of the Cobar Peneplain, Murray-Darling Depression and Riverina bioregions.

Ecosystems

The reserve contains one of the largest continuous stands of mallee in NSW. Much of this is old-growth mallee not burnt for at least 15 years, providing ideal habitat for the mallee fowl.

Native plants

The reserve protects a number of threatened plants, including:

- wild lime (*Eremocitrus glauca*)
- common sour bush (*Choretrum glomeratum*)
- western wedding bush (*Ricinocarpus bowmannii*)
- iron grass (*Lomandra patens*)
- yellow darling pea (*Swainsona laxa*)
- *Phebalium obcordata*.

Native animals

The reserve contains over 130 bird species and is rich in mammal and reptile fauna. Threatened animals present in the park include:

- kultarr
- mallee fowl
- striated grass wren
- red-lored whistler
- grey falcon
- Major Mitchell cockatoo.

Aboriginal cultural heritage

The reserve contains a number of Aboriginal sites, including open campsites, art sites and scarred trees. Little formal research has been undertaken to determine the nature and significance of these values.

Historic heritage

There is evidence in the reserve of European settlement from early times to the present, including former homesteads, shearing quarters, tanks bores, troughs, yards and huts dating from the 1860s to the 1980s.

Management issues

Pest plants

A range of programs is being undertaken in the reserve to control weeds, particularly:

- African boxthorn
- noogoora burr
- Bathurst burr.

Control programs are regularly undertaken in conjunction with local landholders and rural lands protection boards.

Pest animals

The main pest animals found in the reserve are:

- foxes
- goats
- pigs
- rabbits
- cats.

Foxes are fairly well controlled by an extensive aerial baiting program; this is particularly designed to reduce predation of mallee fowl by foxes. Goats are removed by trapping and being driven from the reserve. Pigs are trapped or poisoned, rabbits are controlled by destroying warrens and by the introduction of calicivirus and myxoma virus. Cats still remain an issue and have no recognised method of control.

Fire management

The reserve is subject to infrequent wildfires. It generally takes several years of good rains to produce enough fuel to carry a fire, but when that does occur the whole region experiences large-scale fires. In 1974 and 1984 the whole reserve was burnt; in fact the 1984 fire is still the largest ever to occur in NSW.

Usage and facilities

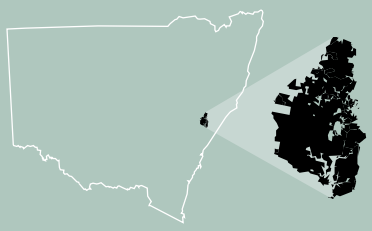
As it is a nature reserve, visiting is limited to scientific research and education. Accommodation for visiting scientists and school groups is provided in renovated shearing quarters.

Painted dragon

Yengo National Park

J Winter/NPWS

J Winter/NPWS



Yengo National Park

Size	150,569 ha, perimeter approx. 1241 km
Created	1988
Location	On the central coast of NSW, 70 km from Wisemans Ferry. Adjoins Wollemi and Dharug national parks.

Main picture: Looking north-east from near Finchley Trig.
Top right: Grass tree.

Plans and agreements

	Plan of Management
■	Fire Management Plan – draft
	Ramsar wetland convention
■	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
	Subject to Forest Agreement & Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Yengo National Park was reserved for the protection of native plants and animals, natural ecosystems and cultural heritage. It forms an integral part of the Greater Blue Mountains World Heritage Area.

Points of special interest

The most popular sections are the Finchley Trig lookout and camping area, and the Mogo Creek camping area. There are spectacular views to the south and of Mount Yengo from this area. Mount Yengo itself is an outstanding feature in the park, being a mountain which is twice as high as the surrounding sandstone ridges and which is capped by basalt.

Geology, soils and landforms

The park is part of the Hornsby Plateau, a sandstone plateau within the Sydney Basin. The western edge of this plateau is of considerable scientific and educational value as it features some interesting alluvial features. Exposed within the park are Tertiary volcanics, which are restricted in distribution to several small outcrop areas.

Ecosystems

The park is within the Hawkesbury Nepean River catchment and the Sydney Basin Bioregion. Most of the ridgetops and north-west-facing slopes consist of low woodland with a sclerophyllous shrub understorey. The drier north-eastern part supports plant communities typical of the western slopes of NSW, such as cypress pines and seven types of ironbark. A vegetation map and report have been prepared.

Native plants

A total of 701 plant species have been identified in the park, of which 32 are threatened. For some of these the park is the last remaining stronghold. At least 20 other plant species are at the limit of their known distribution, or occur as unusual outlying populations. For example, the park protects three of the four known populations of *Olearia cordata* and most of the population of *Acacia fulva*, which is restricted to the basalt soils on Mount Yengo and Mount Wareng.

Native animals

Regionally significant populations of brush-tailed rock wallaby, New Holland mouse, turquoise parrot and spotted-tailed quoll exist within the park.

Aboriginal cultural heritage

There are a diverse number of site types and a high density of Aboriginal sites in the park, including rock engravings, cave art, shelter deposits and axe-grinding grooves.

Historic heritage

Early European transport routes between Sydney and the Hunter Valley are evident in the park, with remnants of the Old Great North Road and the Old Bulga Road. The Old Great North Road lies on the eastern boundary of the park. Also of importance is the Old Settlers Road, previously known as the Old Convict Road, which was built by Howes Valley settlers. It linked Howes Valley with the Wollombi District and is almost wholly within the park. Stone embankments and pavements along the route of this road are still evident.

Management issues

Pest plants

Particularly invasive introduced species, such as blackberry, have colonised disturbed sites in and around the built-up areas and nearby rural properties. Water- and wind-borne weeds such as noogoora burr, dandelion and weeping willow occur in some isolated localities downstream of disturbed lands within the catchments of the park. Control programs target these species, especially where they affect threatened species habitats.

Pest animals

Wild dogs, cats and foxes are found throughout the park. Cattle, rabbits, pigs and goats also occur, but are not so widespread. Feral cattle and straying domestic cattle are a major cause of disturbance to native plant and animal communities. Feral pigs cause soil disturbance when rooting for food and wallowing. Isolated small herds of feral goats are targeted quickly for control when located. The control of goats in brush-tailed rock wallaby habitat is given priority, as this may be a vital factor in the survival of this threatened species.

Fire management

Major fire management concerns are fuel build-up in settled areas, wildfire control, protection of park neighbours and visitors, and the impact of fire on native ecosystems. A large part of the park was affected by the 1994 and 1997 Sydney wildfires. A hazard reduction burning program is prepared and implemented annually, and trails have been constructed to assist with fire management. A draft Fire Management Plan has been prepared.

Usage and facilities

Recreational use of the park has not changed significantly over the years, with vehicle touring being the main form of recreation. Horseriding is popular, particularly in the southern section of the park. Other activities include bushwalking, picnicking, camping, birdwatching, photography, nature study and mountain bike riding.

Camping facilities are provided at Mogo and Finchley camping areas. There are also camping areas for hikers and mountain bike riders. Picnic facilities are provided at Finchley and Mogo camping areas, Bucketty Wall and Little Mogo Creek.

Yuraygir National Park


P Green


P Green

Yuraygir National Park

Size	30,406 ha, perimeter approx. 578 km
Created	1980
Location	On the north coast of NSW, 650 km north of Sydney and 400 km south of Brisbane.

Main picture: Pandanus on Plover Island in the park.
Top right: View to Plover Island.

Plans and agreements

■	Plan of Management – draft
■	Fire Management Plan – draft
	Ramsar wetland convention
	World Heritage listed
	China-Australia Migratory Bird Agreement
	Japan-Australia Migratory Bird Agreement
	World Biosphere Reserve
■	Subject to Forest Agreement & Regional Forest Agreement
	Under joint management

Snapshot of the park

Why it is conserved

Yuraygir National Park is a key component of a protected area complex that includes three parks and one marine park. This complex protects an extensive area of northern NSW coastline. Yuraygir represents an area of national and international significance in terms of biodiversity, landscape and cultural heritage.

Points of special interest

Interest in the park is focused on coastal features such as the swamps, rivers, estuaries, lakes, headlands and marine systems. Overlaying these features is a diversity of plants and animals. The park offers a range of readily accessible visitor experiences.

Geology, soils and landforms

The park sits on the eastern edge of the Clarence Basin. This in turn lies within the ancient New England fold belt, which has remained relatively unchanged since it was laid down. Recent fluctuating sea levels have created incursions of sand and other deposits. The north coast is typically sandy with well-developed beaches and dunes.

Ecosystems

The park is in an ecological zone in which the temperate south and tropical north overlap. The park's large size, location and history all contribute to the broad range of high-quality natural systems. There are nine distinct vegetation communities, including:

■ swamp ■ dune complex ■ low grassy heath ■ coastal woodland and forest ■ subtropical rainforest.

Native plants

Of the 658 native plants known in the park, 22 are considered of high conservation value, including:

■ *Olax angulata* ■ *Callistemon acuminatus* ■ *Rutisdosis heterogama*.

Native animals

There are 188 species of birds in the park, of which 12 are listed as threatened, including:

- sooty oystercatcher
- black bittern
- red goshawk.

The area is important for migratory and wading birds, and also contains a high diversity of mammal, reptile and amphibian fauna, with threatened species such as:

- loggerhead turtle
- rufous bettong
- hoary bat
- green and golden bell frog.

Aboriginal cultural heritage

Yuraygir is derived from the name of the Aboriginal people who occupied the coastal areas between Yamba and Corindi. The park contains many culturally significant sites, including middens, tool scatters, quarries and areas of spiritual value. Local Aboriginal people continue to maintain strong links to this land.

Historic heritage

The park is rich in European history, with past uses including grazing, sandmining, military activity, and now recreation and conservation. Many reminders of these activities remain intact today.

Management issues

Pest plants

Weeds are the primary threat to the park and the natural values of coastal northern NSW generally. Bitou bush has infested the majority of coastline within the park and can have a devastating impact on coastal plant and animal communities. Other species include lantana, glory lily and groundsel. NPWS is recognised in the region as a leader in bitou bush control. By cooperatively implementing control practices with councils and community groups – biological control, seed fly and tip moth spraying, hand weeding, and revegetation – significant improvements have been achieved.

Pest animals

Vertebrate pests include:

- pigs
- foxes
- wild dogs
- cats
- horses.

Currently control programs are in place for pigs and foxes as these species represent the largest potential impact, given their abundance.

Fire management

Fire is central to the maintenance of biodiversity in the coastal ecosystems of the park. While providing for ecologically appropriate fire regimes, NPWS is also responsible for ensuring that fires that originate in the park do not threaten townships and development areas. To protect these assets NPWS undertakes an extensive hazard reduction burning and wildfire response program. A draft Fire Management Plan has been developed.

Usage and facilities

More than 400,000 people visit the park each year – on foot or by boat and vehicle. Numbers fluctuate throughout the year in response to climate and depending on holiday periods.

NPWS maintains 10 visitor areas throughout the park that provide a range of nature-based recreational opportunities, including camping, picnicking and bushwalking. Vehicle entry and camping fees apply.

Appendix – Protected areas in NSW

	Area (ha)	Created	Latest addition (if any)
Aboriginal areas			
Appletree	4	1972	
Finchley	4	1976	
Howe	7	1976	
Lennox Head	0.3	1972	1992
Mooney Mooney	8	1979	
Mount Kuring-Gai	0.6	1997	
Murramarang	60	1976	
Nambucca	2	1979	1997
Nungumirar	122	1999	
Pindera Downs	11,433	1986	
Stonewoman	2	1980	
Historic sites			
Cadmans Cottage	0.01	1972	
Clybucca	459	1979	1993
Davidson Whaling Station	27	1986	1999
Hartley	13	1972	1989
Hill End	134	1967	2001
Koonadan	22	1988	
Maroota	33	1983	
Mount Grenfell	1,357	1979	
Mutawintji	486	1967	
Throsby Park	74	1975	1977
Tweed Heads	8	1980	
Wisemans Ferry	21	1986	1987
Yuranighs Aboriginal Grave	2	1982	1998
National parks			
Abercrombie River	19,000	1995	
Abercrombie River	4023	1999	
Bald Rock	7453	1971	1999
Bangadilly	2146	2001	
Barakee	3230	1999	
Barool	11,214	1999	
Barrington Tops	73,884	1969	1999
Basket Swamp	2820	1999	
Bellinger River	2830	1997	
Ben Boyd	10,259	1971	1999
Ben Halls Gap	2500	1995	
Benambra	1399	2001	
Biamanga	13,749	1994	1999
Bimberamala	4458	2001	
Bindarri	5321	1999	
Biriwal Bulga	4690	1999	
Blue Mountains	248,148	1958	1999
Bongil Bongil	978	1995	1995
Boonoo Boonoo	4352	1982	1999
Booti Booti	1567	1992	1999
Border Ranges	31,683	1979	1996
Botany Bay	458	1984	1997
Bouddi	1216	1935	1997
Bournda	2563	1992	1999
Brindabella	18,290	1996	2001
Brisbane Water	11,497	1959	1998
Broadwater	4209	1974	1999
Budawang	23,786	1977	2001
Budderoo	7119	1986	2001
Bugong	1002	2001	
Bundjalung	20,097	1980	1999
Bungawalbin	3730	1999	
Butterleaf	3000	1999	
Capoompeta	3900	1999	

Appendix – Protected areas in NSW – *continued*

National parks continued	Area (ha)	Created	Latest addition (if any)
Carrai	11,397	1999	1999
Cascade	3620	1999	
Cathedral Rock	8839	1978	1999
Cattai	424	1992	1992
Chaelundi	10,125	1997	1999
Clyde River	1278	2001	
Cocoparra	8358	1969	1983
Conimbla	7589	1980	1983
Conjola	8737	1994	2001
Coolah Tops	10,578	1996	
Coorabakh	1840	1999	
Cottan-Bimbang	26,861	1999	
Crowdy Bay	9948	1972	1999
Cudmirrah	2326	1994	1995
Culgoa	22,005	1996	1998
Cunnawarra	15,751	1999	
Deua	117,557	1979	2001
Dharug	14,850	1967	1998
Dooragan	1042	1997	1998
Dorrigo	11,871	1957	1999
Dunggir	2500	1997	
Eurobodalla	2315	1995	2001
Fortis Creek	7838	1997	
Gardens of Stone	15,010	1994	1995
Garigal	2203	1991	1998
Georges River	335	1992	1999
Ghin-Doo-Ee	3650	1999	
Gibraltar Range	25,346	1963	1999
Goobang	42,080	1995	1995
Goonengerry	440	1999	
Goulburn River	70,161	1983	1998
Gourock	7878	2001	
Gulaga	4673	2001	
Gundabooka	43,591	1996	
Guy Fawkes River	68,460	1972	1999
Hat Head	7362	1972	1999
Heathcote	2250	1944	1975
Indwarra	940	1999	
Jerrawangala	4013	2001	
Junuy Juluum	945	1999	
Kanangra-Boyd	68,660	1969	1999
Kinchega	44,260	1967	1997
Kings Plains	6852	1988	2000
Kooraban	13,807	2001	
Koreelah	5270	1999	
Kosciuszko	674,438	1944	2001
Ku-ring-gai Chase	14,883	1894	1999
Kumbatine	13,029	1999	
Kwiambal	1301	2000	
Lane Cove	598	1992	1999
Livingstone	1919	2001	
Lower Hunter	2140	1999	
Macquarie Pass	1064	1969	
Mallanganee	1144	1999	
Mallee Cliffs	57,969	1977	1983
Maria	2335	1999	1999
Marramarra	11,759	1979	1992
Maryland	890	1999	
Mebbin	3800	1999	
Meroo	3642	2001	
Mimosa Rocks	5667	1973	1999
Minjary	1462	2001	

Appendix – Protected areas in NSW – *continued*

National parks continued	Area (ha)	Created	Latest addition (if any)
Monga	25,142	2001	
Mooball	1160	1999	
Morton	189,531	1938	2001
Mount Clunie	1426	1999	
Mount Imlay	4822	1972	1999
Mount Jerusalem	5149	1995	1999
Mount Kaputar	36,817	1960	1980
Mount Nothofagus	2180	1999	
Mount Pikapene	2630	1999	
Mount Royal	6920	1997	1999
Mount Warning	2380	1967	1989
Mummel Gulf	12,220	1999	
Mungo	27,847	1979	1986
Murramarang	11,978	1973	2001
Mutawintji	68,912	1998	
Myall Lakes	44,172	1972	1999
Nangar	9196	1983	1994
Nattai	47,628	1991	1999
New England	71,207	1935	1999
New South Wales Jervis Bay	4214	1995	2001
Nightcap	8080	1983	1999
Nowendoc	8820	1999	
Nymboi-Binderay	16,870	1997	1999
Nymboida	31,566	1980	1999
Oxley Wild Rivers	120,394	1986	1999
Peery	41,680	2000	
Popran	3970	1994	
Ramornie	3160	1999	
Richmond Range	15,420	1997	1999
Royal	15,080	1879	2000
Scheyville	920	1996	
Seven Mile Beach	898	1971	1987
Single	2559	1999	1999
South East Forest	115,372	1997	1999
Sturt	310,634	1972	1986
Sydney Harbour	393	1975	1995
Tallaganda	16,727	2001	
Tapin Tops	10,976	1999	
Tarlo River	8074	1982	1993
Thirlmere Lakes	630	1972	1982
Tomaree	2318	1984	1999
Tooloom	4380	1995	1999
Toonumbar	14,991	1995	1999
Towarri	4787	1998	1999
Ulidarra	680	1999	
Wadbilliga	95,598	1979	2001
Wallingat	6557	1999	1999
Warra	2031	1999	1999
Warrabah	3471	1984	1988
Warrumbungle	23,198	1953	1999
Washpool	59,024	1983	1999
Watagans	7751	1999	
Weddin Mountains	8361	1971	1987
Werrikimbe	31,448	1975	1999
Willandra	19,385	1972	1977
Willi Willi	29,025	1996	1999
Woko	8598	1982	1999
Wollemi	492,976	1979	1999
Woomargama	23,577	2001	
Wyrrabalong	620	1991	1994
Yabbra	8890	1999	
Yanununbeyan	3472	2001	

Appendix – Protected areas in NSW – *continued*

	Area (ha)	Created	Latest addition (if any)
National parks continued			
Yengo	150,569	1988	2000
Yoorigan	1830	1999	
Yuraygir	30,406	1980	1999
Nature reserves			
Agnes Banks	107	1982	1995
Andrew Johnston Big Scrub	21	1993	
Arakoola	3180	1999	
Araluen	656	2001	
Avisford	2437	1985	1987
Awabakal	228	1978	1987
Baalijin	1211	1999	
Back River	735	1999	
Badja Swamps	561	1979	
Bagul Waajaarr	520	1999	
Ballina	721	1975	1988
Bamarang	367	2001	
Bandicoot Island	30	1976	
Banyabba	15,210	1969	1999
Barren Grounds	2030	1956	2001
Barrengarry	21	2001	
Barton	529	1972	1988
Bee's Nest	576	2001	
Bell Bird Creek	53	1965	
Belowla Island	4	1972	
Berkeley	8	1972	
Bermaguee	818	1967	1983
Big Bush	640	1984	1999
Billinudgel	737	1996	1997
Bimberi	11,077	1985	2001
Binjura	770	2001	
Binnaway	3699	1976	
Bird Island	7	1960	
Black Andrew	1559	2001	
Black Ash	89	1965	
Bluff River	1793	1999	
Boatharbour	24	1987	1994
Bobundara	204	2001	
Bogandyera	8759	2001	
Boginderra Hills	554	1982	
Bolivia Hill	1782	2000	
Bollanolla	650	1999	
Bondi Gulf	1800	1994	
Boomi	156	1976	
Boomi West	149	1977	
Boonanghi	3753	1999	1999
Boondelbah	9	1960	
Boorganna	390	1954	1977
Booroolong	865	1999	
Boronga	195	1977	
Bournda	5862	1972	1999
Bowraville	61	1962	1971
Bretti	2725	1999	1999
Brigalow Park	202	1986	
Brimbin	40	1999	
Broken Head	98	1974	1988
Broulee Island	42	1972	
Brundee Swamp	230	2001	
Brunswick Heads	205	1979	1999
Brush Island	47	1963	
Buddigower	327	1963	1978
Bugan	1530	1999	

Appendix – Protected areas in NSW – *continued*

Nature reserves continued	Area (ha)	Created	Latest addition (if any)
Bungabbee	169	1999	
Bungawalbin	467	1977	
Burning Mountain	15	1975	
Burnt School	285	2001	
Burnt-Down Scrub	364	1999	
Burra Creek	270	2001	
Burrinjuck	3248	1984	2001
Byrnes Scrub	705	1999	
Cambewarra Range	1084	2001	
Camels Hump	545	1981	
Camerons Gorge	1280	1987	
Captains Creek	2290	1999	
Careunga	469	1971	
Castlereagh	490	1995	
Cecil Hoskins	47	1975	1981
Cedar Brush	190	1977	
Chambigne	798	1999	1999
Chapmans Peak	72	1999	
Clarence Estuary	120	1999	
Clarkes Hill	2139	2001	
Cockle Bay	44	1992	1997
Cocopara	4647	1963	1965
Comerong Island	660	1986	1990
Coocumbac Island	5	1981	
Cook Island	5	1959	
Coolbaggie	1793	1963	1980
Coolongolook	198	1977	
Coolumbooka	1529	1995	1999
Cooperabung Creek	325	1999	
Coornartha	1184	2001	
Copperhannia	3494	1972	1980
Coramba	8	1982	
Corrie Island	164	1999	
Couchy Creek	218	1999	
Courabyra	206	2001	
Coxcomb	73	1999	
Cudgen	671	1995	1999
Cullendulla Creek	126	1999	2001
Cumbebin Swamp	40	1999	
Cuumbeun	968	2001	
Dalrymple-Hay	11	1972	
Dananbilla	1855	1983	
Dangelong	1966	1999	
Dapper	999	1981	1990
Darawank	575	1999	
Davis Scrub	14	1980	
Deer Vale	181	1985	
Demon	900	1995	
Devils Glen	40	1965	
Dharawal	341	1996	
Downfall	496	2001	
Duval	240	1999	1999
Eagles Claw	1	1986	
Egan Peaks	2145	1972	
Ellerslie	1278	2001	
Eugowra	120	1972	
Evans Crown	425	1975	1983
Fifes Knob	553	1999	1999
Fishermans Bend	160	1999	
Five Islands	27	1960	
Flaggy Creek	72	1999	
Flagstaff Memorial	18	1968	

Appendix – Protected areas in NSW – *continued*

Nature reserves continued	Area (ha)	Created	Latest addition (if any)
Freemantle	361	1973	
Gads Sugarloaf	477	1999	
Gamilaroi	114	1994	
Ganay	355	1999	
Georges Creek	1190	1967	
Gibraltar	161	1999	
Girralang	640	1999	
Good Good	20	2001	
Goonawarra	437	1967	
Goonook	930	1999	
Goorooyarroo	266	1973	1989
Gubbata	162	1971	
Gulguer	359	1994	
Guy Fawkes River	1534	1970	1972
Hattons Bluff	18	1999	
Hattons Corner	4	1982	
Hayters Hill	8	1989	
Hexham Swamp	900	1990	
Hogarth Range	853	1999	1999
Hortons Creek	330	1993	
Illawong	51	1964	
Iluka	136	1976	
Imbota	218	1999	
Ingalba	4012	1970	1983
Inner Pocket	236	1989	
Ironbark	1604	1985	1988
Ironmungy	713	2001	
Jaaningga	975	1999	
Jagun	100	1999	1999
Jasper	355	1983	
Jerralong	341	2001	
Jingellic	2177	2001	
Joadja	832	2001	
Jobs Mountain	702	1999	
John Gould	26	1954	
Julian Rocks	0.4	1961	
Juugawaarri	2149	1999	
Kajuligah	13,660	1979	
Kangaroo River	126	2001	
Karuah	2758	1999	
Kattang	58	1984	
Kemendok	1043	1988	
Khappinghat	3514	1993	1999
Khatambuhl	694	1999	
Killabakh	2644	1999	1999
Killarney	435	1999	
Kooragang	2926	1983	1986
Koorebang	465	1997	
Kororo	11	1967	1969
Koukandowie	1283	1999	1999
Kybeyan	432	2001	
Lake Innes	3526	1984	1999
Lake Urana	302	1996	
Langtree	235	1995	
Limeburners Creek	9224	1971	1999
Limpinwood	2647	1963	1989
Linton	640	1979	
Lion Island	8	1956	
Little Broughton Island	36	1961	
Little Llangothlin	258	1979	
Little Pimlico Island	16	1988	
Long Island	73	1972	

Appendix – Protected areas in NSW – *continued*

Nature reserves continued	Area (ha)	Created	Latest addition (if any)
Loughnan	385	1981	
Macquarie	12	1966	1993
Macquarie Marshes	18,192	1971	1995
Mann River	6593	1985	1999
Manobalai	3758	1967	1997
Marshalls Creek	112	1999	
Meringo	49	2001	
Mernot	320	1999	
Merriangaah	5669	2001	
Midkin	359	1976	
Mills Island	61	1977	
Moffats Swamp	151	1977	
Monkerai	865	1999	
Monkeycot	1612	1999	
Montague Island	81	1990	
Moon Island	1	1960	
Moonee Beach	336	1976	1999
Moore Park	15	1989	1999
Mororo Creek	80	1999	
Morrisons Lake	312	1985	
Mother Of Ducks Lagoon	97	1973	
Mount Clifford	306	2001	
Mount Dowling	366	2001	
Mount Hyland	2519	1984	1999
Mount Mackenzie	141	1999	
Mount Neville	5821	1987	1999
Mount Nullum	99	1999	1999
Mount Seaview	1704	1965	1986
Mount Yarrowyck	170	1983	
Mucklewee Mountain	355	1999	
Mudjarn	591	2001	
Muldiva	10	1981	
Mulgoa	138	1994	1999
Mullengandra	150	2001	
Mundoonen	1375	1970	1996
Munghorn Gap	5635	1961	1987
Munro Island	14	1999	
Muogamarra	2274	1969	1983
Mutawintji	6688	1998	
Muttonbird Island	8	1971	
Myalla	143	2001	
Nadgee	20,671	1957	1997
Narran Lake	5538	1988	1999
Narrandera	71	1965	
Narrawallee Creek	910	1986	2001
Nearie Lake	4347	1973	
Nest Hill	759	2001	
Ngadang	160	2001	
Ngambaa	10,555	1999	
Ngulin	1250	1999	
Nimmo	762	2001	
Nocoleche	74,000	1979	
Nombinnie	70,000	1988	
North Obelisk	36	1999	
North Rock	4	1959	
North Solitary Island	20	1972	
North-West Solitary Island	4	1971	
Numeralla	435	2001	
Numinbah	858	1981	1989
Oak Creek	404	2001	
Pambalong	35	2000	
Parma Creek	3457	2001	

Appendix – Protected areas in NSW – *continued*

Nature reserves continued	Area (ha)	Created	Latest addition (if any)
Paupong	1838	1999	
Pee Dee	441	1989	1999
Pelican Island	40	1968	
Pilliga	80,239	1976	1997
Pitt Town	46	1999	
Planchonella	717	1988	
Pucawan	274	1970	
Pulbah Island	69	1963	
Pulletop	145	1963	
Quanda	854	1963	1966
Queanbeyan	2	1989	
Queens Lake	969	1999	1999
Quidong	629	2001	
Rawdon Creek	560	1999	
Razorback	2595	1988	
Red Rocks	669	1968	1979
Regatta Island	102	1976	
Richmond River	256	1986	1999
Rileys Island	46	1989	1994
Robertson	5	1979	1996
Rodway	83	1970	
Round Hill	13,630	1960	1970
Running Creek	910	1999	
Saltwater Swamp	215	2001	
Scabby Range	4982	1982	1998
Scott	151	2001	
Sea Acres	76	1987	1989
Seaham Swamp	11	1975	1988
Seal Rocks	0.3	1972	
Serpentine	723	1979	
Severn River	4290	1968	1998
Sherwood	4724	1966	1999
Silverwater	48	2000	
Skillion	691	1999	
Snapper Island	13	1982	
Snows Gully	34	1992	
South West Solitary Island	3	1961	
Spectacle Island	36	1972	
Split Solitary Island	4	1961	
Stony Batter Creek	564	1999	
Stony Creek	80	2001	
Stormpetrel	8	1976	
Stotts Island	142	1971	
Strike-a-Light	407	2001	
Susan Island	23	1982	
Tabbimoble Swamp	1070	1999	
Tabletop	104	1965	1971
Talawahl	3150	1999	
Tallawudjah	1247	1999	
Tapitallee	95	2001	
Tarawi	33,573	1996	
The Basin	2318	1964	1987
The Castles	2720	1999	
The Charcoal Tank	86	1966	
The Glen	2750	1999	
The Rock	347	1962	1985
Tilligerry	120	1999	
Tinderry	14,552	1981	2001
Tingira Heights	18	1989	
Tollgate Islands	12	1959	
Tollingo	3232	1988	
Tomalla	605	1999	

Appendix – Protected areas in NSW – *continued*

	Area (ha)	Created	Latest addition (if any)
Nature reserves continued			
Towibakh	62	1999	
Towra Point	386	1982	1996
Triplarina	163	2001	
Tuckean	917	1982	1999
Tucki Tucki	4	1963	1966
Tuggolo Creek	645	1999	
Tweed Estuary	59	1999	
Tyagarah	763	1986	1999
Ukerebagh	150	1980	
Ulandra	3931	1981	1983
Undoo	19	2001	
Uralba	288	1976	
Valla	30	1999	
Victoria Park	18	1975	
Wadjan	92	2001	
Wallabadah	1132	1971	
Wallamba	1160	1999	
Wallaroo	2780	1999	
Wallis Island	473	1983	1997
Wallumatta	6	1990	
Wamberal Lagoon	132	1981	1992
Wambina	54	1997	
Wambool	194	1987	
Wanna Wanna	33	2001	
Waragai Creek	186	1999	
Watsons Creek	1260	1980	
Wee Jasper	700	1979	2001
Weelah	37	1971	
Weetalibah	613	1968	
Wiesners Swamp	103	1996	
Willi Willi Caves	8	1973	
Wilson	27	1993	
Winburndale	10,048	1967	1993
Windsor Downs	363	1990	1999
Wingen Maid	1077	1974	1981
Wingham Brush	8	2000	
Wogamia	277	2001	
Woggoon	6565	1974	1981
Wongarbon	99	1965	
Woodford Island	374	1999	
Woollamia	479	2001	
Wooyung	87	1999	
Worimi	500	1999	
Worrigee	232	2001	
Wullwye	155	2001	
Yahoo Island	47	1983	
Yanga	1773	1972	
Yanununbeyan	40	2001	
Yaouk	2924	2001	
Yarravel	318	1969	1999
Yathong	107,241	1971	1977
Yatteyattah	19	1996	
Yessabah	10	1996	
Yina	100	1999	

Appendix – Protected areas in NSW – *continued*

	Area (ha)	Created	Latest addition (if any)
Regional parks			
Berowra Valley	3870	1998	
Leacock	34	1997	
Parramatta River	85	2001	
Penrith Lakes	0.7	1998	
Rouse Hill	43	1997	1999
Western Sydney	580	1998	2001
William Howe	43	1998	
Wolli Creek	7	2001	
Yellomundee	300	2000	
State recreation areas			
Arakoon	114	1974	2000
Bargo	5660	1991	
Barnunj	164	2001	
Bents Basin	48	1980	1996
Bungonia	3977	1974	1999
Burragorang	17,312	1991	
Cape Byron	99	1997	1998
Colymea	1674	2001	
Corramy	856	2001	
Dharawal	5650	1996	
Garawarra	900	1987	
Georges River	1	1975	1989
Glenrock	516	1986	1999
Illawarra Escarpment	1504	1980	1999
Lake Macquarie	667	1997	1999
Mount Canobolas	1673	1997	
Mullion Range	1025	1999	
Munmorah	1462	1977	1998
Nattai	3383	1991	
Parr	38,121	1988	1998
Torrington	29,370	1996	
Yerranderie	12,192	1991	