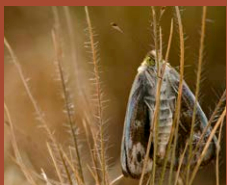


NATIONAL PARKS



Completing Australia's National
Reserve System of
Protected Areas



National Parks Australia Council

**NATURE
FOR LIFE**



NATIONAL PARKS

A Matter of National Significance

Report author: Dr Sarah May

© 2017 National Parks Australia Council

Report design: John Sampson, Ecotype Communications.

Main cover photo: Tasmania's South West Cape, John Sampson.

Contact

Matt Ruchel

Email: mattruchel@vnpa.org.au

Phone: 0418 357 813

Research papers of the National Parks Australia Council

The National Parks Australia Council presents a series of five research papers to influence public debate and government decision making concerning the enhancement and management of Australia's terrestrial and marine estate.

- Maintaining the Values of Australia's National Reserve System of Protected Areas
- Completing Australia's National Reserve System of Protected Areas
- Enhancing Landscape Connectivity
- National Parks - a Matter of National Environmental Significance
- Australia's Marine Protected Areas

The National Parks Australia Council has a mission to protect, promote and extend national parks systems within Australia. NPAC was formed in 1975. We are a national body that coordinates and represents the views of a range of State and Territory non-government organisations concerned with protecting the natural environment and furthering national parks. NPAC provides a forum for regular communication between state and territory national parks associations and related organisations to act as a united voice supporting conservation of the National Reserve System across Australia.

To learn more about NPAC visit www.npac.org.au

All material in this publication is licensed under a Creative Commons Attribution 3.0 Australia licence, save for the Invasive Species Council logo and third party content. You are free to use this publication in accordance with the licence terms, attributing the Invasive Species Council and keeping intact the original copyright notice.



NATURE FOR LIFE



CONTENTS

Executive Summary	4
Resource the Strategic Acquisition of the National Reserve System	6
01 The Issues	12
1 The Minimum Requirements for the National Reserve System: Aichi Target 11.....	12
2 Tenure.....	17
02 Role of the Australian Government	24
1 Leadership.....	24
2 Priorities	26
3 Private Land	26
4 Financing.....	27
5 Biodiversity Fund	27
Endnotes	30
References.....	32
Appendix 1	33
National Parks Australia Council.....	34

Executive summary

All Australian governments have committed to the establishment of a comprehensive, adequate and representative system of terrestrial and protected areas that are effectively and equitably managed, well connected and integrated into the wider landscapes.

While the Australian Government can rightly claim it has substantially expanded the National Reserve System (NRS) in recent years, the gains are less robust than might at first appear and much more needs to be done.

Areas where the National Reserve System goals have not been met include under-representation of more than one third of bioregions and ecosystems, areas of particular importance for biodiversity and ecosystem services such as Important Bird Areas and Centres of Plant Diversity, refugia, threatened species habitat and critical habitat. The National Reserve System is not well connected - leaving species relatively vulnerable to stochastic events and changes to their environment (e.g. resulting from global warming), disproportionately affecting smaller protected areas, and has yet to achieve effective and equitable management. These are all goals of the Aichi Target under the Convention on

Biological Diversity that Australia has committed to. There are substantial challenges that must be overcome if we are to provide minimum adequate levels of protection for all bioregions, endangered ecosystems and species (especially on private land), and more broadly appropriate levels of protection and management for the entire protected area network.

Protection on private land for particularly under-represented bioregions, ecosystems and threatened species must be prioritised for inclusion into the National Reserve System. Given the importance of the reserve system to nature conservation and Australian society in general, it is essential these shortcomings be addressed. All governments, non-government organisations, communities and individuals have a role to play. However, the Australian Government's role is pivotal. Without national leadership and a vision supported financially and administratively it is unlikely Australia will uphold its international reputation as a world leader in protected area establishment and management, and risks compromising the long-term survival of its unique wildlife.



Southern Brown Bandicoot, endangered.
Golden Sun Moth, critically endangered.
Photos: IT'S A WILDLIFE



Resource the Strategic Acquisition of the National Reserve System

Recommendation

Allocate adequate resources, including funding of \$660 million over three years, to help states, territories and community partners in completing strategic acquisition of the National Reserve System.

Background

Protected areas, when properly managed, are a proven effective tool for the conservation of biodiversity and the persistence of well functioning, intact ecosystems - they are promoted as the key solution to halting biodiversity loss.¹

In Australia, the terrestrial protected area network is referred to as the National Reserve System (NRS), which aims to protect representative samples of environmental variation and in adequate amounts, their constituent biota and associated conservation values (see the Policy Framework and Scientific Planning Framework below). They are a multi-jurisdictional, multi-tenured mosaic of areas managed for biodiversity conservation (though not exclusively) on public, private and indigenously owned and managed

areas of land. Simply put, the National Reserve System is the Australian Government's primary means for securing long-term protection of Australia's biodiversity.

Policy Framework

International

Australia made an important commitment in 1972, under the World Heritage Convention, to protect representative examples of all major terrestrial, freshwater and marine ecosystem types. Since then, this commitment has been reinforced and refined under various international platforms. Australia's ratification of the international Convention on Biological Diversity 1992 (CBD) in 1993 provides the most significant and widely

Protected area management effectiveness is now a key element of a broader examination of progress towards the Convention on Biological Diversity (CBD) strategic plan and its constituent Aichi Targets – especially Target 11, which addresses the contribution that an effectively and equitably managed protected area system can make to the overall goals of the convention:

By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

– CBD 2011



| Kakadu National Park. Photo: Seb Seb | Flickr | CC BY-NC-ND 2.0



| Uluru in the Uluru-Kata Tjuta National Park. Photo: Stefan Klopp | Flickr | CC BY-NC-ND 2.0

recognised of these international treaties. After ratifying the CBD the Prime Minister at that time announced:

“The establishment of a comprehensive system of protected areas is vital if we are to retain our status as a region of megadiversity. Besides being ecologically viable these areas must represent the full range of ecosystems. The Government is committed to the development of a national comprehensive system of parks and reserves. This will be achieved in cooperation with states and territories.”²

This signalled the move by the Australian Government to establish a National Reserve System and as a means of fulfilling the objectives of the Convention on Biological Diversity. In 2004, all signatories to the convention agreed that ‘at least 10% of each of the world’s ecological regions be effectively conserved’. The parties also agreed to establish (by 2012) and maintain ‘a network of marine and coastal protected areas that are representative, effectively managed, ecologically based, consistent with international law, and based on scientific information’.³

More recently these goals and concepts have been expanded and refined. Aichi Target 11 states:⁴

By 2020, at least 17% of terrestrial and inland water, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

In a historic step forward, all governments agreed to build a network of land and marine protected areas. The Australian Government provided the crucial national leadership and successfully worked in partnership with all levels

of government and the whole community, implicitly acknowledging, inter alia, that state and territory borders do not limit environmental issues and challenges.

National

1996: National Strategy for the Conservation of Australia’s Biological Diversity

Three years after ratifying the Convention on Biological Diversity, the federal, state and territory governments signed the National Strategy for the Conservation of Australia’s Biological Diversity (Biodiversity Strategy).⁵ This committed the Australian Government to establish and protect a CAR (Comprehensive, Adequate and Representative) sample of Australia’s terrestrial and marine environments, and is the nation’s main instrument for implementing all of its obligations under the Convention on Biological Diversity.

The biodiversity strategy recommended ‘Enhancing and expanding the National Reserve System and the National Representative System of Marine Protected Areas’ by all governments and private landholders.⁶

The strategy functions as a policy ‘umbrella’ over subsequently developed (and revised) more specific national frameworks relevant to the establishment of a terrestrial protected area network, i.e.:

- Australia’s Strategy for the National Reserve System 2009–2030 (NRS Strategy).⁷

The National Reserve System

1992: Australia’s Intergovernmental Agreement on the Environment

The Intergovernmental Agreement on the Environment was made between the federal,

state, territory and local governments to facilitate a cooperative national approach to management of the environment. The parties agreed that a representative system of protected areas encompassing terrestrial, estuarine and marine environments is a significant component in maintaining ecological processes and systems.

1996: National Reserve System Program

The National Reserve System program was established in 1996-97 as part of the National Heritage Trust (NHT) to purchase, establish and effectively manage land for the reserve system, and relied on partnerships with the state and territory governments, industry and community to achieve its goals. Millions of dollars became available to help states, territories, Indigenous communities, local councils and conservation organisations acquire land for inclusion within the reserve system.

2005: Directions Statement

In 2005 the federal, state and territory governments re-affirmed their commitment

to developing a CAR National Reserve System. All levels of government agreed on a strategic national approach and an action plan, presented in the Directions for the National Reserve System – A Partnership Approach.⁸

2006: Evaluation of the National Reserve System

In 2006, the Evaluation of the National Reserve System commended the progress of the reserve system and hailed it as ‘a flagship in biodiversity conservation’, but recognised that an increase in investment was needed if the objectives were to be met within the timeframe.¹⁰

2008: Caring for Our Country

Acting on the recommendation to increase investment, and the conclusion of the Australian Auditor-General that despite being cost effective, the total area within the National Reserve System was significantly below target, the Australian Government in 2008 injected a further \$180 million over five years (2008-2013) under Caring for Our Country, and with the support of the states and territories, facilitated an unprecedented expansion of the reserve system. An estimated \$72 million a year was spent on land acquisition for the National Reserve System during this time,⁹ and another \$50 million over this period was directed at the complementary programme Indigenous Protected Areas (IPAs).

2009: Australia’s Strategy for the National Reserve System 2009-2030

The National Reserve System strategy was developed as an update to the 2005 Directions for the National Reserve System – A Partnership Approach, and to complement a number of other strategies, including the Biodiversity Strategy, the Native Vegetation Framework, the National Forests Statement and the Convention on Biological Diversity.

The strategy recognises protected areas as the foundation of Australia’s efforts to protect terrestrial biodiversity in a changing climate BUT in itself, the National Reserve System will not ensure that all biodiversity conservation objectives will be met. In addition to the establishment of protected areas, successful biodiversity conservation requires they be well managed in conjunction with the full range of conservation measures applied to other lands across the landscape, thereby promoting the integration of the reserve system within the wider landscape. The National Reserve System strategy includes guidance for effective collaboration across governments and with all

stakeholders to enhance the ongoing development and effective management of the system.

2012: The End of the National Reserve System Program

In December 2012, the Australian Government announced it was ending nearly two decades of dedicated financial support to expand the National Reserve System.¹⁰

2014: The Australian Government Claims Completion of the National Reserve System

In November 2014, coinciding with the IUCN World Parks Congress in Sydney, the then federal environment minister Greg Hunt announced that Australia has ‘... achieved our international IUCN Aichi target of 17 per cent of land mass now being covered by terrestrial protected area’.¹¹

The Scientific Planning Framework

The science-based bioregional frameworks guide the strategic acquisition of areas for inclusion within the protected area networks to ensure Australia progresses towards its goal of developing a CAR system of marine and terrestrial protected areas.¹²

Comprehensive, Adequate and Representative

- 1. Comprehensive:** the inclusion of examples of regional-scale ecosystems (at an appropriate scale) within each bioregion.
- 2. Adequate:** the inclusion of sufficient levels of each ecosystem within the protected area network to provide ecological viability and to maintain the integrity of populations, species and communities.
- 3. Representative:** the inclusion of areas at a

finer scale, to encompass the variability of habitat within ecosystems (or reasonably reflect the biotic diversity of marine ecosystems).

Interim Biogeographic Regionalisation of Australia and Ecosystem Mapping

The Interim Biogeographic Regionalisation of Australia (IBRA) and ecosystem mapping underpin the National Reserve System. Bioregions are large, geographically distinct areas of land with common characteristics such as climate, ecological features and plant and animal communities.

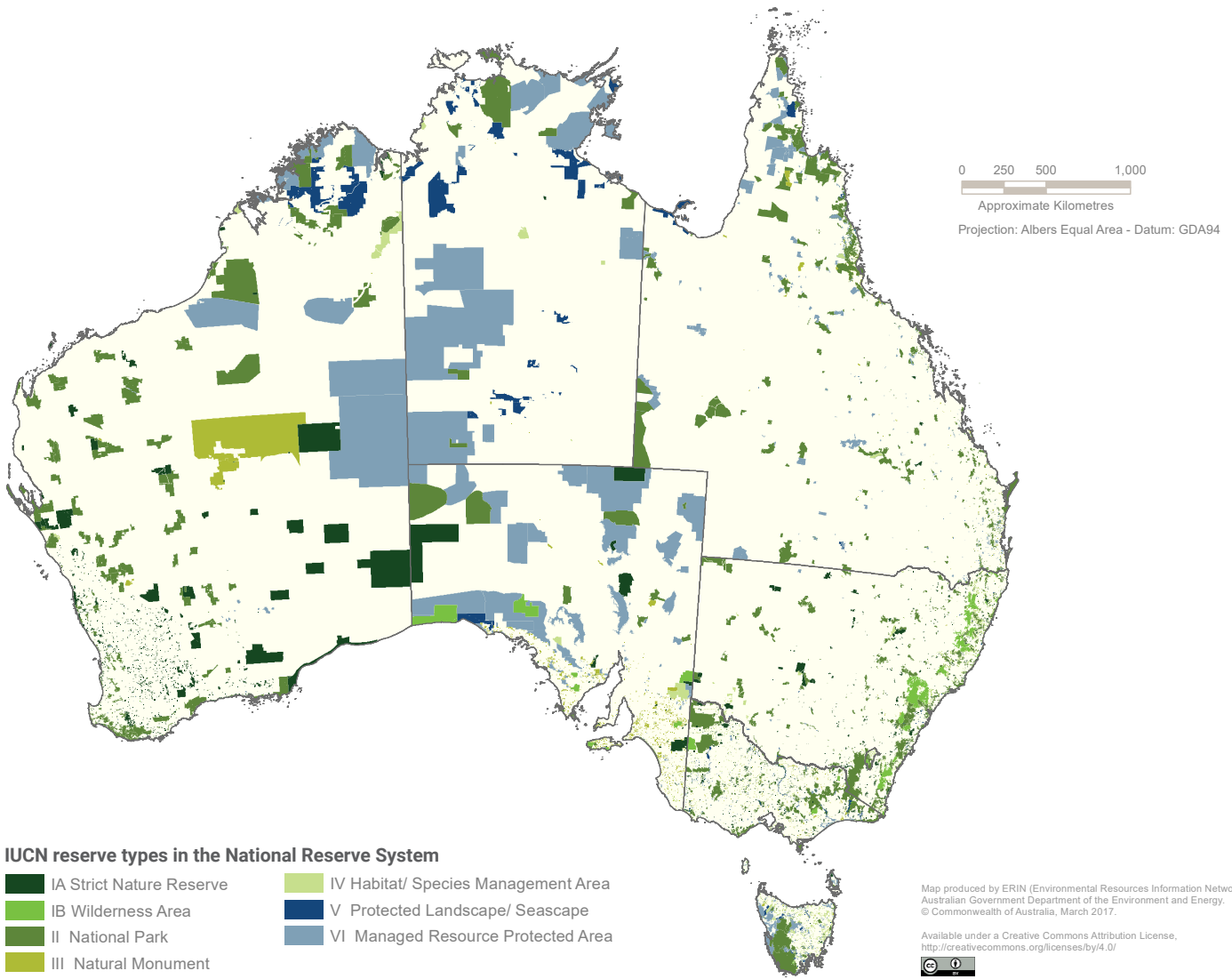
Currently there are:

- 89 large geographically distinct bioregions.
- 419 sub-regions (that are more localised and homogenous geomorphological units).
- 5,815 terrestrial ecosystems (used as a key surrogate for terrestrial biodiversity).

Goals

There are four goals to guide the identification of areas suitable for inclusion within the National Reserve System.¹³

- Goal 1:** By 2015 include examples of at least 80% of the number of regional ecosystems in each IBRA region.
- Goal 2:** By 2025 include examples of at least 80% of the number of regional ecosystems in each IBRA subregion.
- Goal 3:** By 2030 include critical habitats and core areas important for the long-term survival of rare, migratory, threatened or other priority species and ecological communities.
- Goal 4:** By 2030 include critical areas to ensure the viability, resilience and integrity of ecosystem function in response to a changing climate.



Achievements

Today, the National Reserve System is a network of more than 10,000 federal, state and territory protected areas covering more than 17 per cent (> 137 million hectares) of Australia's landscape, and all the biodiversity and natural features that reside within (Figure 1).

The issues

1. The Minimum Requirements for the National Reserve System: Aichi Target 11

Australia has fulfilled the Aichi Target 11 minimum requirement of at least 17 per cent of terrestrial areas, to be included within the protected area network.

However, it is important to understand that the targets – 17 per cent of lands and inland waters and 10 per cent of coastal and marine waters – are intended to be interim targets. There is nothing in these percentages, or the Aichi Target itself, which addresses the more essential question of what levels of protection are required to achieve the actual conservation goals. Similarly, the goals stated in both the National Reserve System Strategy (and Marine Strategy), such as inclusion of examples of at least 80 per cent of regional ecosystems in each IBRA region and subregion, and examples of each provincial bioregion, critical habitats and core areas and other ‘critical’ areas to ensure the viability, resilience and integrity of ecosystem function in response to climate change etc. do not provide guidance on how much, or how many of these features is adequate for the conservation of these features.

The real scientific and policy question is what amount of protection is necessary and sufficient to ensure that biodiversity is conserved and ecosystems maintain their integrity, including

the capacity to continue to provide necessary ecosystem services for people. To achieve this, it is likely that much more than 17 per cent and 10 per cent of terrestrial and marine landscapes, respectively, need to be included within the protected area network.¹⁵

Research and assessments undertaken over the past two decades indicate that nature may need a great deal more protection - perhaps at least half of a given eco-region (bioregion) - that also needs to be interconnected with other such areas, in order to maintain its full range of life-supporting, ecological and evolutionary processes, the long term survival of the species that live there, and to ensure the system’s resilience in the face of environmental change.¹⁶

Key points

- The percentage goals in Target 11 are negotiated, interim targets on a global scale, and are not scientifically defined endpoints.
 - In lieu of robust science to guide the actual level of protection required for biodiversity to be conserved at all scales, the figures and qualitative measures provided in Aichi Target 11 can be considered the bare minimum required for a protected area network that achieves the goal of conservation of biodiversity in the long-term.
- Focusing achievement on extent alone gives a false impression of conservation progress and jeopardises the whole point of the protected area network, which is to protect biodiversity.

Aichi Target 11. By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.



| Hooded Plover, listed as critically endangered in NSW, vulnerable in South Australia and Victoria. Photo: Ed Dunens

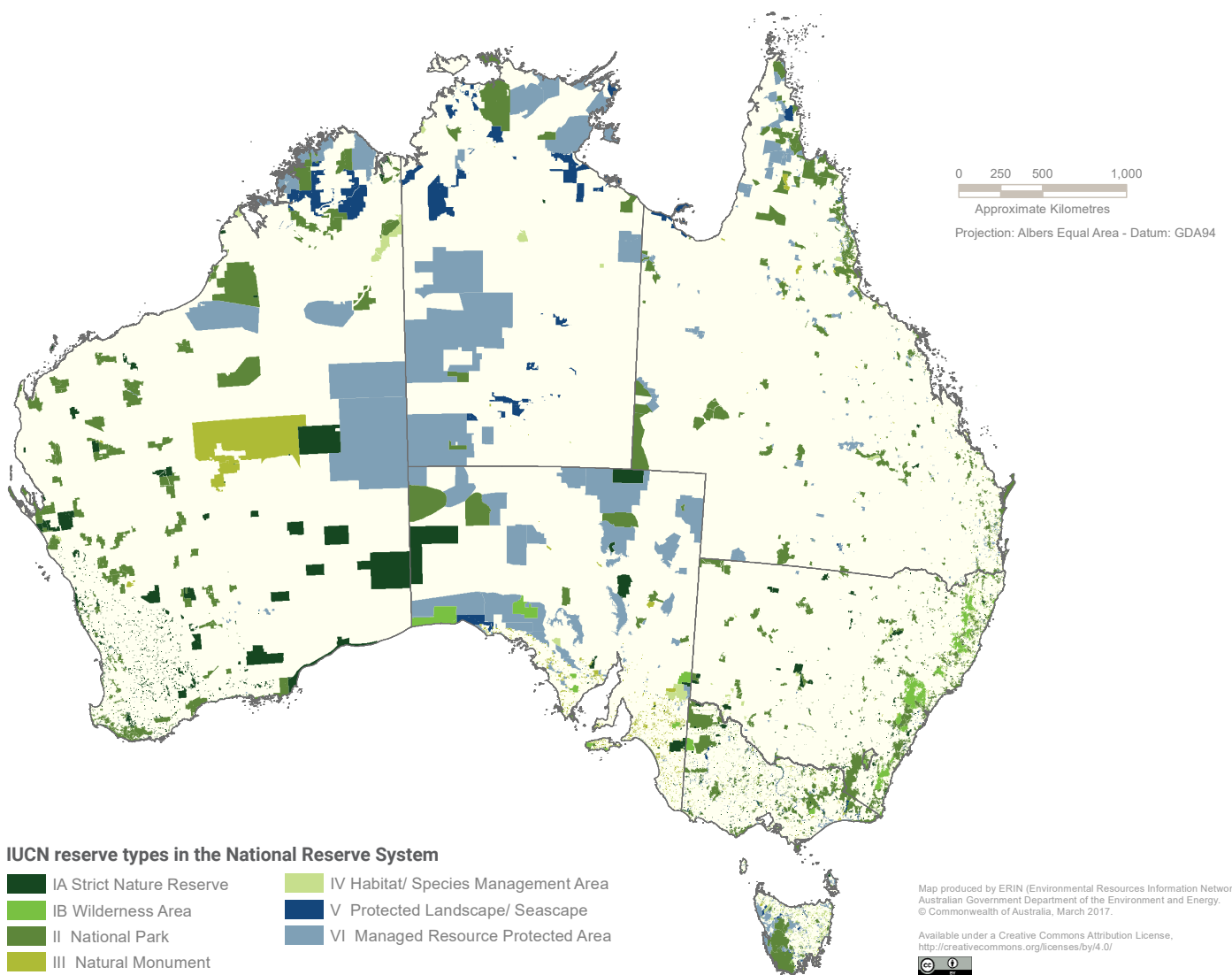
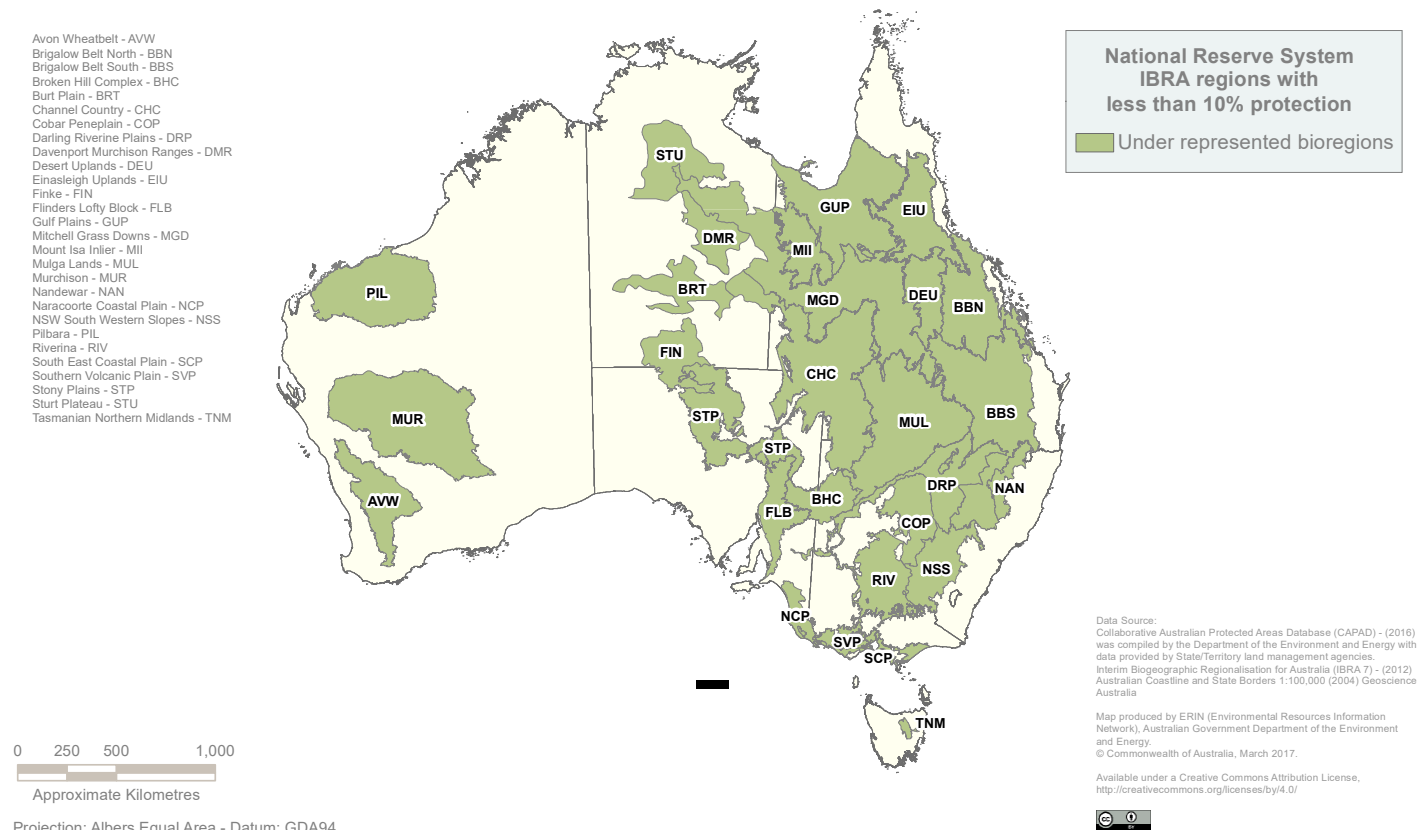


Figure 2. Under-represented bioregions within the NRS.¹⁸



- More than 17 per cent of the land will be needed to meet the multiple elements of Aichi Target 11 and to prevent extinctions.¹⁷

1.1 Bioregions

More than one-third of terrestrial bioregions remain under-represented in the National Reserve System:

- 31 (35%) bioregions have less than 10% representation in the National Reserve System.
- 14 (~16%) have less than 5% protected.

This represents a large swath of Australia's landmass (Figure 2).

1.2 Ecological Representation

As mentioned previously, no quantitative standard for what constitutes an adequate example was

provided in the National Reserve System strategy. However, based on criteria developed for the Regional Forest Agreement process, i.e. JANIS criteria, which set 15 per cent of ecosystems (with additional compensating caveats) to be protected, Taylor et al (2014)¹⁹ found that many ecosystems are not yet adequately protected:

ø 1,655 (28%) of terrestrial ecosystems had <15% of their area protected, or approximately 57 million ha³ (Figure 3).

Further, filling these gaps would require more than protection of the remaining uncleared or remnant ecosystems as many of these ecosystems, such as the Brigalow ecological community, have been excessively cleared. To achieve 15 per cent protection, 100 per cent of remaining uncleared areas, all naturally regenerating areas, and active restoration of areas that were formerly the ecological community would be needed.²⁰

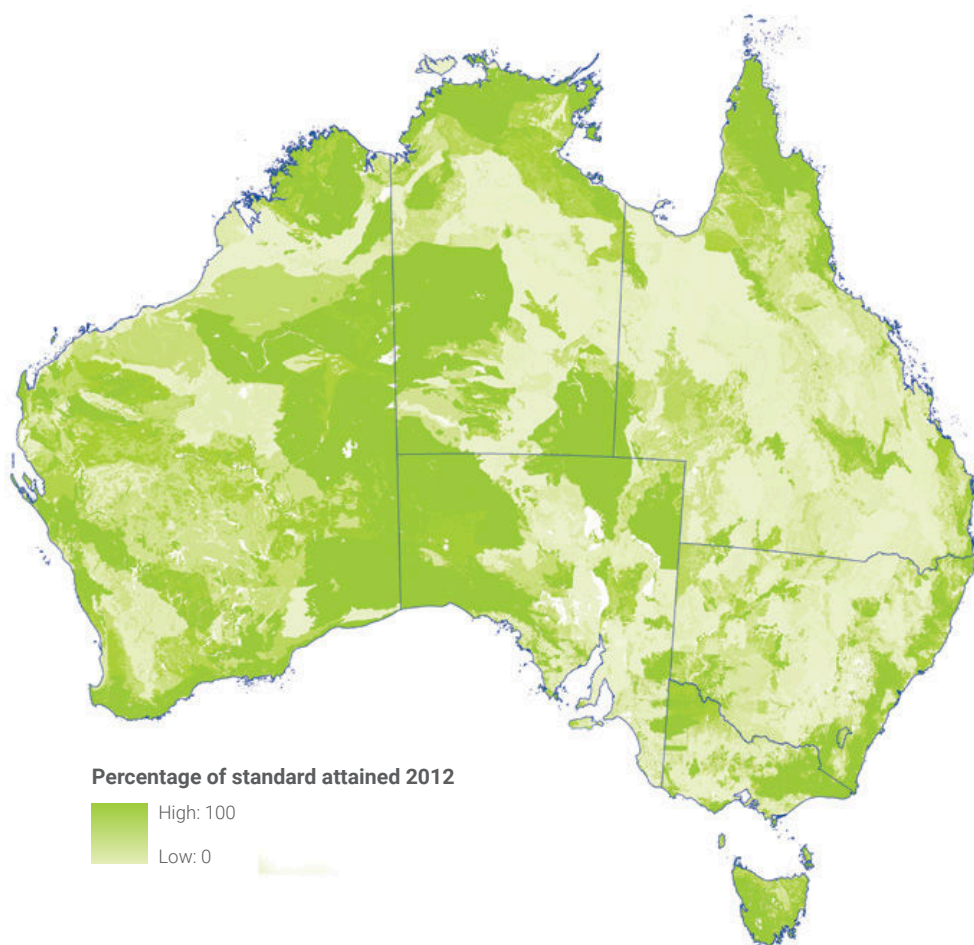


Figure 3. Ecosystem representation within the NRS.²¹

Terrestrial ecosystems of Australia, percentages (of the 15% protection standard) attained in 2012.

1.3 Areas of Particular Importance for Biodiversity and Ecosystem Services

The Convention on Biological Diversity and Aichi Target 11 do not provide guidance on what constitutes an 'area of particular importance for biodiversity and ecosystem services'. Taylor et al. (2014) used Alliance for Zero Extinction sites (AZE), Important Bird Areas (IBA) and Centres of Plant Diversity as indicators for 'areas of particular importance'. They found:

- All Alliance for Zero Extinction point locations fall within protected areas in Australia (noting this analysis was based on the publicly available point locations, not on areas).
- While almost 49% by area of all Australian IBAs are located in protected areas, the distribution is very unequal, with almost 17% (by number) of IBAs having no protection at all.

- 22% by area of Centres of Plant Diversity are protected in Australia. Other areas of special importance include refugia from climate change and other environmental stresses, and areas of the landscape managed to enhance movement in response to climate change, such as corridors (see 'well-connected and integrated into the wider landscape' below).

1.3.1. Refugia

As Reside et al. (2013) point out, 'little is known about how best to identify refugia in the landscape ... Identifying refugia that will protect most species, or large numbers of species, remains a complex and daunting endeavour due to the large variations in climatic and biotic requirements of species'.²² However, based on the areas of greatest overlap of future and transitional distributions for 1700 vertebrate species, Reside et al. (2013) concluded

that refugia are not well protected:

- Only 14% are located within the National Reserve System.

1.3.2. Threatened Species

If using a standard area requirement of at least 30 per cent of the area of 'known' or 'likely to occur' distributions for nationally listed threatened species (n = 1,613 and with compensating caveats) Taylor et al. (2014) found that most threatened species have some part of their distribution within the National Reserve System. In particular:

- 38% (616) met the standard (noting this included only 29% of critically endangered species);
- 9% (138) had no habitat within the National Reserve System, including 29 critically endangered species (mostly plants); and
- The remainder were more than halfway to attaining the standard. Threatened freshwater fish species fared worst.

1.3.3. Critical Habitat

Very little information is available to assess the extent that critical habitat is included within the National Reserve System and it needs much greater attention, in light of the known correlation between proportion of range protected and population trends.²³

1.4 Well-connected and Integrated into the Wider Landscape

Both the National Reserve System Strategy and CBD Aichi Target 11 requires the reserve system to be 'well-connected' and 'integrated into the wider landscape and seascapes'. Again, although progress is being made, no benchmarks or standards have yet been formally agreed to for measuring progress on these elements of Aichi Target 11.²⁴ A whole of landscape approach

requires adoption of sympathetic adjustments to the way land is used and managed outside of the National Reserve System, in the form of:

*"Complementary land management practices, sustainable use and property planning on a whole of landscape basis to build ecosystem resilience and protect key biodiversity assets in the face of rapid change, especially climate change."*²⁵

Taylor et al. (2014) found that although protected area connectivity has increased modestly - i.e. there has been a reduction in average distance between protected areas - intensifying land use in the intervening landscape matrix has undermined the potential benefits. Taylor et al. (2014) concluded that landscape integration remains a major challenge for the future growth of the National Reserve System.

1.5 Effectively and Equitably Managed

In Australia, management of protected areas is primarily the responsibility of the states and territories, with the exception of Indigenous Protected Areas (IPAs), which are generally co-managed, and six Commonwealth protected areas. This approach is inconsistent and does not provide assurance that management is effective for the protection or enhancement of nature.

Key points

- Australia does not yet have a National Reserve System that is comprehensive, adequate or representative, and therefore the Australian Government has not met its international or national commitments in this regard, despite its claim to this effect.
- Targeted expansion of the National Reserve System is needed to include sufficient examples of all biodiversity and their requirements, to ensure protected areas are well-connected and established in the right places, specifically those areas where they can prevent species declines

GOVERNANCE	NUMBER	TOTAL AREA (HA)	% OF AUSTRALIA	CONTRIBUTION TO NRS (%)
Indigenous Community	67	55,028,856	7.16	40.02
Government	7,295	65,685,098	8.54	47.77
Joint	1,754	9,546,681	1.24	6.94
Private	1,223	7,240,916	0.94	5.27
Total	10,339	137,501,551	17.88	100.00

Table 1. Terrestrial Protected Areas by Governance (2014).²⁸

and extinctions, and reduce biodiversity loss, thus maintaining ecosystem services.

2. Tenure

The traditional approach in Australia has been to establish protected areas almost exclusively on public land, with a significant skew towards land with the least value for extractive uses or industry, i.e. the least fertile and inaccessible areas.²⁶ One of the major disadvantages of this bias is that the species and ecosystems most associated with extractive uses and often most in need of protection continue to decline without effective intervention.²⁷

In an effort to address this, there is now a greater and growing proportion of private land, co-managed land and IPAs included in the National Reserve System. Table 1 shows the governance of the reserve system and proportion each comprises of the total.

2.1 Private Land

Many of the under-represented bioregions and ecological communities, threatened species, and critical habitats occur mainly or wholly on private land, which is not surprising given private land covers more than 60 per cent of Australia and has been the most intensively utilised and altered from its natural state, especially by clearing of native vegetation and replacement with pastures and crops. Conservation on private land is essential if adequate levels of connectivity across the

landscape are to be achieved.

Attempting to acquire these areas for conservation may not be feasible or desirable and other mechanisms for encouraging conservation on private land have been developed.³¹ For example, federal, state and territory governments provide financial incentives (e.g. tax breaks) and other support such as equipment and expert advice, with the dual aim of nature conservation and maintenance of a viable working property, to encourage private landholders to manage part of their land for conservation. The demonstrable commitment of these landholders has the added benefit of raising awareness and encouraging sympathetic land use practices by neighbouring landholders that will assist integration of the National Reserve System into the wider landscape.

Conservation covenants are the most legally binding arrangement between a landholder and the government to conserve the natural values on a property, in perpetuity (or minimum of 99 years) and in accordance with international standards of management. As part of the (now discontinued) National Reserve System program a Protected Areas on Private Land sub-program was introduced to encourage the adoption of covenants on private land that advanced National Reserve System goals. It is difficult to know the proportion of the reserve system that occurs on private land, as the federal government's Collaborative Australian Protected Area Database (CAPAD) doesn't include private land covenants for New South Wales, Victoria or Western Australia. Given this condition, the total provided in Table 1 under-estimates the

contribution private land makes to the National Reserve System.³² For example, Fitzsimons (2014) estimated there were approximately 5,000 terrestrial properties that could be considered private protected areas covering 8.9 million hectares, whereas the Collaborative Australian Protected Area Database gives a figure considerably less than this - 7,024,916 million hectares.

Currently, conservation on private land is voluntary and involves an agreement between the private landholder and the governing body. Conservation covenants provide the most secure form of protection, but there are numerous other mechanisms that encourage conservation, though they are less secure and therefore cannot be considered part of the National Reserve System (see section 3.2 below). Typically more substantial incentives are required to persuade landholders involved in production to enter into long term conservation agreements compared with those not

using their land for primary production.³³

2.1.1. Standards for Including Private Land in the National Reserve System

The inclusion of private land within the National Reserve System is governed by the requirement for that land to qualify as a protected area under the World Conservation Union (IUCN) definition³⁴, i.e.:

An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

Although this definition can include sites that are not legally gazetted, it does require that nature conservation be the primary management objective. Aichi Target 11 is broader still by including 'other effective area-based conservation measures', acknowledging that significant conservation benefits can be obtained through

Land Clearing – Habitat Loss and Fragmentation

The pressures of landscape fragmentation and the pressing need to enhance capacity to adapt to climate change are major factors in the ongoing decline of Australia's biodiversity. Indeed, fragmentation of habitat is one of the two most frequently cited pressures for species listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The other is invasive species. Fragmentation of vegetation is particularly apparent west of the Great Dividing Range in eastern Australia (NSW and Queensland), across much of southern Australia and in the south-west, corresponding to the area of Australia that was originally under forest or woodland and, as indicated above, corresponds with the highest numbers of threatened species.²⁹

During 2009-2014 land clearing in Queensland tripled to approximately 296,000 hectares as a direct result of a weakening of vegetation laws in the state.³⁰ Similar retrograde moves regarding the protection of native vegetation were made in Victoria and Western Australia in 2013.

sympathetic management of the landscape, including on private land. However, these criteria are not clear-cut, and although seemingly self-explanatory, the definition of 'other effective means' is ambiguous, requiring analysis and clarification.

The determination as to whether the protected area status for private land meets this definition involves an assessment of the strength of the legislation and/or legal agreements that protect that land (security), the length of time those agreements are in place (permanence), management intent and obligations to manage the land.³⁵ An analysis undertaken by Fitzsimons (2006) found that not all private land mechanisms for the conservation of biodiversity are robust or rigorous enough to be considered part of the National Reserve System. Much depends on the nature of the agreement. For example, state legislation may not offer security for land managed for conservation, such as a Land Management Cooperative Agreement or Trust for Nature Reserves (non-National Reserve System funding) in Victoria to satisfy the World Commission on Protected Areas (Australian and New Zealand Region) criteria.³⁶

2.1.2. Mining Laws

State and territory governments have the primary responsibility for mining laws and regulations. Security on private land, whether a conservation covenant is in place or not, is questionable - all protected areas on private land are subject to state mining laws that do not exempt private land under any circumstances from the interests of mining, which is only prohibited in highly protected areas (e.g. national parks).

2.1.3. Pastoral Leases

State and territory governments have the primary responsibility for the management of pastoral leases (this includes grazing leases), and vary

across jurisdictions. Federal legislation pertaining to native title, mining, and native vegetation also affects the operation of pastoral leases.³⁷

Pastoral lease arrangements can prevent landholders from managing their land for the conservation of wildlife (and any other non-pastoral land use). Pastoral leases exist on approximately 44 per cent of Australia's mainland area – or two-thirds of all privately managed land (freehold and pastoral lease). These leases are characterised by extensive and prescriptive legislation and regulation that constrain the non-pastoral use of land, including management of land for biodiversity conservation. In addition, pastoral lease arrangements may create perverse incentives to maintain pastoral activities, and increase the relative costs and risks of managing land for non-pastoral land uses and thus may be a disincentive for those landholders who may wish to use their land for other purposes. Consequently, progressive land use practices, that could benefit land managers and the wider community, may be inhibited.³⁸

Activities not within the terms of the lease, such as biodiversity conservation initiatives, may be subject to government approval. Some state and territory governments have the power to resume pastoral leasehold land for a wide range of purposes, including the establishment of national parks. This was recently illustrated by the Western Australian government, which, with assistance from the Australian Government, purchased 48 pastoral leasehold properties, converting the land tenure to unallocated Crown Land for the primary purpose of biodiversity conservation. Also, formal reservation or other tenure change for areas where native title claims are pending, or where there is overlap, require compliance with the future act provisions of the Native Title Act 1993.^{39, 40}

2.2 Indigenous Protected Areas

The IPA Program was first proposed by the

Australian Government in 1997 to provide effective mechanisms for Indigenous landholders to manage country in a sustainable manner and in accordance with the objectives of the National Reserve System. There are currently more than 67 IPAs covering 7.2 per cent of the Australian land mass and representing more than 40 per cent of the National Reserve System (Table 1). A further 170,000 km² is either jointly managed Indigenous land or co-managed by traditional owners on state land, including some national parks. Most IPAs (>90%) are dedicated IUCN categories V and VI, which promote a balance between conservation and other sustainable uses to deliver social and economic benefits for local Indigenous communities, including improved social, cultural and economic benefits, particularly in remote Australia.⁴¹

It is important to recognise that much of this land, particularly in central and northern Australia, is among the most environmentally intact and biodiverse terrestrial and freshwater environments in Australia⁴², and its conversion to IPAs has been extremely cost effective: the Australian Government has spent approximately \$26 per hectare on average, which includes management costs.⁴³

Federal, state and territory government support for Indigenous land management has grown but hasn't kept pace with growth in Indigenous participation in natural resource management and aspirations to live on their ancestral lands, to be actively engaged and adequately remunerated for land and sea management work, reflecting an 'investment deficit' in IPAs. For example, Indigenous rangers are under-resourced and are too few to be able to effectively undertake management actions. Furthermore, there is no security in current funding: it is possible that existing IPAs will lose funding and capacity as available funds are stretched with the addition of more IPAs.⁴⁴

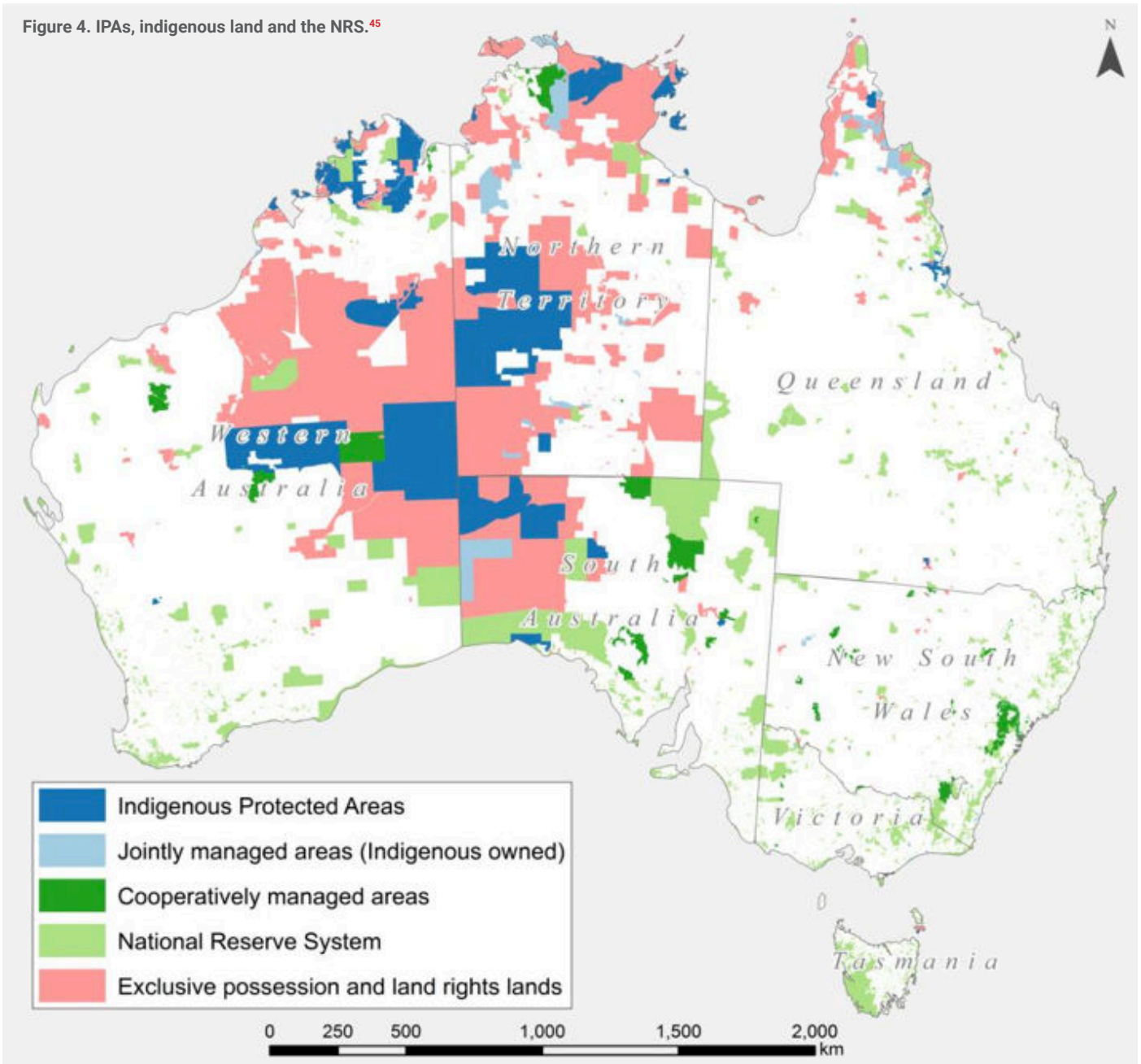
As can be seen from Figure 4, there is potential for

much more Indigenous land to be included in the conservation estate if traditional owners so wish. However, much of this land is found in bioregions that are already adequately represented within the National Reserve System, with only some overlap with under-represented bioregions (e.g. Central Amhem, Gulf Fall and Uplands bioregions' in the Northern Territory) and ecosystems.

Key points

- Completion of the National Reserve System will rely increasingly on partnerships between a variety of land managers, including all levels of government, conservation agencies, community groups, the indigenous community and private landholders.
- As it is voluntary, conservation on private land offers an ad hoc approach to enhancing the comprehensiveness, adequacy and representativeness of the National Reserve System – and thus many priority ecosystems and threatened species found on private land will remain unprotected.
- A consistent approach to the inclusion of private conservation areas across Australia is lacking and further analysis of the eligibility for including private land in the National Reserve System is needed.
- The contribution of private land to the National Reserve System ought to be provided by the Australian Government's Collaborative Australian Protected Area Database.
- Landowners who may wish to convert their leases to protected areas may not be able to do so because the law may not provide a means of declaring protected areas over such leases.
- Less prescriptive and more 'neutral' leasing arrangements would likely lead to better long term management of Australia's rangelands – economically, ecologically and socially.

Figure 4. IPAs, indigenous land and the NRS.⁴⁵



- Private land under conservation covenants should be protected from mining interests.
- IPAs provide an invaluable contribution to the National Reserve System and contribute to improving Indigenous circumstances, particularly in remote areas, and reducing the

vast differences in social outcomes between Indigenous and non-Indigenous Australians.

- The capacity of this program to fill many of the major gaps in high priority bioregions to achieve a CAR National Reserve System is limited given IPAs are largely confined to Indigenous owned

land, which is found largely in central and northern Australia where areas protected are very large and relatively intact and the targets for bioregions and ecological communities have been met.

- The long term security of funding for IPAs, including increased funding to support management as well as capacity building for Indigenous landholders, is an issue of growing concern in light of the rapid, recent growth of this component of the National Reserve System.⁴⁶
 - Capacity building support and links to initiatives to address Indigenous disadvantage will be crucial if biodiversity outcomes are to be achieved on IPAs.
 - Without assured funding for on-going management, the status of IPA land as part of the National Reserve System is questionable.
-

3. Financing

There is a prevailing perception that parks and reserves are a very expensive approach to conservation. However, contrary to this belief, parks are a very cost-effective conservation option. The National Reserve System Program has cost the Australian Government an average of \$44.40 per hectare to buy and protect land forever (and almost half this amount for IPAs – see above), an investment that leveraged up to six times that amount in state or territory government funds both for acquisition and capitalised in-perpetuity management.⁴⁷ The aggregate annual investment by all Australian governments has been ~\$72.6 million a year on protected area growth and ~\$1.21 billion a year on recurrent management costs. This financial commitment was a significant factor in increasing private philanthropic investment in protected area growth over the past two decades.⁴⁸ Although other government and non-government agencies have continued investing in protected

area establishment, their investment now achieves less in the absence of the critical stimulus of Australian Government co-investment. Government conservation spending is generally directed at short-term land management activities with little regard to long-term security of investments made. Such investments are at risk of reversal in the absence of permanent protection (for example, through conservation covenants on the land title that binds all future landholders). By investing in new or existing protected areas, including conservation covenants, governments can ensure long-term security of such conservation investments, while advancing progress to national goals and targets.⁴⁹

3.1 How Many Hectares and How Much Money?

Taylor et al (2014) concluded that the National Reserve System would need the inclusion of a minimum of an additional 25 million hectares of strategically placed land to reach the targets of ‘comprehensiveness’ and ‘ecological representativeness’. Given the terrestrial ecosystem protection gap has closed by 20 million hectares over the past decade, this required expansion is feasible contingent on a major boost in investment and renewed attention and commitment to pursue the vision.

A mix of purchases and other methods of inclusion would be required, including increasing IPAs and conservation on private land via secure and adequate conservation covenants.

To estimate the scale of the investment required, Taylor et al. (2014) used the following values: 12 million hectares of the gap filled via purchase at \$44.40 a hectare; another 10 million hectares filled via new IPAs, at an average of \$25.77 a hectare, and the remaining three million hectares filled via new covenants at a nominal \$20 a hectare, in the form of incentives offered by the Australian

Government, as a highly achievable goal and based on approximate patterns of recent growth of the National Reserve System. If implemented, the Australian Government need only invest approximately \$283 million a year over three years to 2020⁵⁰ to achieve an ecologically representative National Reserve System that covers at least 17 per cent of Australia AND meets both Aichi Target 11 and the reserve system strategy comprehensiveness and representativeness targets.⁵¹

3.2 Economic Benefits Generated by the National Reserve System

Protected areas secure ecosystem services that provide economic benefits for human communities including water, soil and beneficial species conservation, climate moderation, social, cultural and health benefits. On land, these benefits are estimated to be worth more than \$38 billion a year.⁵² (Nb. a much larger figure is estimated to have been secured by marine protected areas in the form of moderation of climate and impact of extreme events by reef and mangrove ecosystems). While these estimates have not been verified by studies specific to Australia, they are indicative of an enormous – almost inestimable – economic contribution of protected areas to the nation. All these economic benefits taken together greatly exceed the aggregate annual protected area expansion and management spending by all Australian governments.

Key points

- Australian Government investment and policy settings have played a leading role in strategic growth of the National Reserve System in Australia. They provide a critical stimulus for non-government investment, attracting six-fold the amount input by the Australian Government, in terms of co-investments by state government in purchases and in-perpetuity management.

- With dedicated investment by the Australian Government, the completion of the National Reserve System is an entirely feasible prospect, without it, it is unlikely Australia will achieve its long-standing commitments to a CAR National Reserve System, and prevent major biodiversity loss.
 - Australian society is benefiting far greater than its governments' investment in strategic growth and maintenance of the National Reserve System: a fraction of this amount is needed to complete the reserve system.
-

Role of the Australian Government

A comprehensive, adequate, representative and well-managed National Reserve System is a central responsibility of Australian governments - the reserve system is critical for the conservation of biodiversity and an important public good, securing ecosystem services that have important economic and social benefits for the Australian community.

There is no doubt that protecting biodiversity is a huge task requiring good science, expertise and strategic investments. The resources required will necessarily be ongoing and increasingly important with the mounting pressures of climate change. However, given the significant economic benefits - the National Reserve System providing an estimated economic benefit of \$38 billion – achieving a CAR National Reserve System network is worth pursuing: it is extremely cost effective and is an investment that will continue to reap dividends.⁵³ It is therefore essential that adequate government financing for the expansion, establishment and ongoing management of the system is provided to secure these benefits for Australian society, prevent loss of Australian biodiversity, and fulfill Australia's national and international commitments to establish a terrestrial protected area network that is comprehensive, adequate and representative. Long-term provision of adequate resources is just one critical element needed to progress the National Reserve System and its effective management in perpetuity, strong leadership at the national level is another. Leadership and collaboration across all governments has been the key ingredient to success so far.

In the past, strong Australian Government leadership in progressing the National Reserve System inspired and encouraged high wealth individuals,

corporations and non-government organisations to contribute towards securing land for inclusion within the reserve system. This leverage factor relies on strong incentives and security in the form of maintaining that national vision and commitment – a common goal with significant benefits for all.⁵⁴ These critical components - leadership and collaboration - are now lacking, leaving any consistent approach at risk. The pressures of global economic uncertainties, diminishing resources for environment programs, the impacts of climate change and the unparalleled resource exploration interests in Australia – all make the timing critical for a leadership model to establish new national conservation paradigms.⁵⁵ With regard to the National Reserve System Strategy, it has a number of specific actions and challenges that need addressing over the next 20 years. However, without a dedicated network of suitably qualified people responsible for its specific implementation it is unlikely the goals will be achieved. A new leadership and delivery model is needed, one that develops and implements innovative ways to engage and incentivise private landholders, in addition to the protection and maintenance of the existing network.⁵⁶

The following considers the roles the Australian Government could take with regard to progressing and revitalising the momentum to continue to invest and lead the nation towards establishing and maintaining a National Reserve System that is truly comprehensive, adequate and representative.

1. Leadership

According to the Department of Environment, the National Reserve System continues to be a Federal Government priority, with funding available to ‘...



| Much of Australia's iconic wildlife is found nowhere else in the world. Photo: Alison Hetherington



| The Brolga is one of Australia's largest flying birds. Photo: Chris Tzaros

areas with low levels of protection ... continuing investment in IPAs; plus a new National Reserve System strategy identifying priorities and actions to be taken over the next 20 year". The new strategy needs to:

- Be developed as soon as possible, and involve input from all conservation stakeholders and experts in protected area identification and establishment on both public and private land.
- Be a public/private leadership model, acknowledging that enduring conservation outcomes will rely on the involvement and commitment of all landholders.
- Re-establish strong and effective partnerships between the federal, state and territory governments constituted under the Council of Australian Governments (COAG), and, given the significant and growing investment in growth and maintenance of the National Reserve System from non-government partners, this partnership should be complemented by a broader working group that includes land trust, covenanting and IPA representatives.
- Include the establishment of a specialist National Reserve System planning and implementation taskforce - an institute, a network of private and public experts, or a Wentworth Group-type equivalent should be considered, or this could be under the umbrella of a broader independent environment agency that provides the government with expert advice on environmental issues. It would be tasked with:
 - Implementing and updating National Reserve System strategies in partnership with state and territory jurisdictions, Indigenous and private protected area sectors.
 - Establishing, promoting and implementing policies, standards and strategies for protected areas under a whole of landscape or seascape approach, including international obligations under Convention on Biological Diversity Aichi Targets.

- Coordinating marine and terrestrial reserve system planning and management.
- Advising the Department of Environment on how best to deliver the strategy, including developing/strengthening institutional capacity to deliver the new National Reserve System strategy.
- Develop novel and effective ways to encourage protection of high conservation values on private land (see below).
- Re-establish a dedicated protected area program.

2. Priorities

- In building the National Reserve System, priority needs to be given to ecological representation and coordination through effective bioregional scale planning focused on priority bioregions (i.e. bioregions that have less than 10 per cent of their remaining area protected in reserves).

Other priorities include:

- Key habitats for nationally-listed threatened species or migratory species and/or Ramsar sites or wetlands of national importance.
- Areas that contribute to whole-of-landscape conservation outcomes, such as places that offer refuge and/or contribute to connectivity and the adaptation of biodiversity to changing climate.
- Focus should be given to under-represented conservation values occurring in areas at most risk from land clearing.

3. Private Land

Much of the land needed to fulfil the CAR objectives for the National Reserve System is held privately and the outright purchase of this land may not be an option.

- Focus efforts to find ways of overcoming this barrier to completing the National Reserve System, for example:

- Revitalise the national covenanting program.
- Improve tax treatments for private initiatives that have long-term, secure conservation benefits.
- Provide greater incentives and prioritise investments to landholders whose land contains priority ecosystems, species, and/or are important for enhancing landscape connectivity.
- Capitalise on the growing demand for permanent private land conservation by providing for more secure, private protected areas in legislation. For example:
- Designate land covered by an in-perpetuity conservation covenant as Matters of National Environmental Significance.
- Prioritise conservation funding toward securing and maintaining enduring conservation agreements that integrate protected area covenants with high environmental performance standards for agriculture in surrounding landscapes.

4. Financing

Adequate government financing is needed if Australia is to fulfil its commitments to establish a CAR terrestrial protected area network.

- The Australian Government has budgeted approximately \$400 million a year over the next five years (2013-2018) under the National Landcare and related programs.
- This funding program should give high priority to delivery of national protected area commitments by providing a distinct National Reserve System funding allocation.
- Completing the National Reserve System will cost approximately \$220 million a year over three years (2017-2020).⁵⁷
- This could be met by reallocating existing departmental resources or new money could

be allocated for delivery (see the example 'Biodiversity Fund' below, for additional revenue raising opportunities see Appendix A), sourced primarily from the tax base, trusts and environmental levies rather than 'user pays' approaches like visitor fees and commercialisation of reserves.

- For example, visitors to national parks and nature reserves generate existing tax revenue in the order of \$2.3 billion a year; this could be reinvested into expanding and managing the protected area network.

The budget should be used to:

- Help state, territories and non-government partners complete the strategic acquisition to the National Reserve System.
- Improve the capacity of indigenous people to manage IPAs, and where strategic to expand the IPA network.
- Incentivise, establish and manage private land conservation covenants.
- Compensate the fishing industry if needed and as required.
- State, territory and local governments, private and Indigenous partners would likewise need to boost financial commitments to both expand and maintain new protected areas to meet the agreed National Reserve System strategic objectives.
- Program delivery can be achieved through existing departmental expertise, supplemented by state and territory national parks and fisheries agencies.

5. Biodiversity Fund

Additional money through wise investment has the potential to raise additional revenue for progressing and managing the National Reserve System.

- The Australian Government could manage a dedicated Biodiversity Fund with all investments guided by good scientific advice, regional on-ground experience and prudent financial management. The investments would be delivered at a regional level.
- The source of resources could come from several places, for example:
 - Centralising current expenditure into a single fund.
 - Bringing all 'offsets' required under various planning regimes into a consolidated fund.
 - A moderate additional tax that could come through a variety of sources – via developers, stamp duties, or incomes.

Endnotes

- 1 IUCN Worlds Parks Congress (2014). A Strategy of Innovative Approaches and Recommendations to Enhance Implementation in the Next Decade. Sydney, 2014.
- 2 Australian Government Department of Environment (2016). History of the National Reserve System. Viewed June 15, 2016.
- 3 United Nations Environment Programme (2004). Seventh Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 7). 9 - 20 February 2004 - Kuala Lumpur, Malaysia.
- 4 Convention on Biological Diversity's 2011-2020 Strategic Plan (CBD), Aichi Target 11. Viewed June 15, 2016.
- 5 Australian and New Zealand Environment and Conservation Council (1996). National Strategy for the Conservation of Australia's Biological Diversity. Commonwealth of Australia, Canberra.
- 6 Natural Resource Management Ministerial Council (2010). Australia's Biodiversity Conservation Strategy. Australian Government Department of Sustainability, Environment, Water, Population and Communities, Canberra.
- 7 Commonwealth of Australia (2009). Australia's Strategy for the National Reserve System 2009-2030. Commonwealth of Australia and each of its States and Territories, 2010.
- 8 Natural Resource Management Ministerial Council (2005). Directions for the National Reserve System – A Partnership Approach. Department of the Environment and Heritage, Canberra.
- 9 Taylor MFJ, Fitzsimons JA and Sattler PS (2014). Building Nature's Safety Net 2014: A decade of protected area achievements in Australia. WWF-Australia, Sydney.
- 10 Australian Government (2012). One Land – Many Stories: Prospectus of Investment 2013-2014. Department of Sustainability, Environment, Water, Population and Communities, Canberra.
- 11 Joint Press Conference with Hon Greg Hunt, Minister for the Environment and Hon Julie Bishop MP, Minister for Foreign Affairs (2014). Thursday, 13 November 2014. Viewed 15 June, 2016.
- 12 Australian Government, Department of Environment. National Reserve System Scientific Framework. Viewed June 15, 2016.
- 13 Commonwealth of Australia (2009), loc. cit.
- 14 Department of Environment (2014). Collaborative Australian Protected Area Database (CAPAD). Australian Government. Viewed 20 June, 2016.
- 15 Woodley, S, Bertzky, B, Crawhall, N, Dudley, N, Londono, JM, MacKinnon, K, Redford, K. and Sandwith, T (2012). Meeting Aichi Target 11: What Does Success Look Like for Protected Area Systems? Parks 18(1).
- 16 Nature Needs Half (2016). Viewed 5 June, 2016.
- 17 IUCN Worlds Parks Congress (2014), loc. cit.
- 17 Taylor et al, loc. cit.
- 18 Department of Environment (2014). Collaborative Australian Protected Area Database (CAPAD). Australian Government. Viewed 20 June, 2016.
- 19 2012 data, not likely to have changed significantly.
- 20 Taylor et al, loc. cit.
- 21 Taylor et al, loc. cit.
- 22 Reside, AE, VanDerWal, J, Phillips, BL, Shoo, LP, Rosauer, DF, Anderson, BJ, Welbergen, JA, Moritz, C, Ferrier, S, Harwood, TD, Williams, KJ, Mackey, B, Hugh, S, Williams, YM and Williams, SE (2013). Climate change refugia for terrestrial biodiversity: Defining areas that promote species persistence and ecosystem resilience in the face of global climate change. National Climate Change Adaptation Research Facility, Gold Coast.
- 23 Taylor et al, loc. cit.
- 24 Woodley, loc. cit.
- 25 Woodley, loc. cit.
- 26 Scott JM, Davis FW, McGhie RG, Wright RG, Groves C and Estes J (2001). Nature reserves: do they capture the full range of America's biological diversity? Ecological Applications 11: 999–1007; Joppa LN and Pfaff A. (2009). High and far: biases in the location of protected areas. PLoS ONE 4(12), e8273.
- 27 Pressey RL, Hager TC, Ryan KM, Schwarz J, Wall S, Ferrier S, Creaser PM. (2000). Using abiotic data for conservation assessments over extensive regions: quantitative methods applied across New South Wales, Australia. Biological Conservation 96: 55–82.
- 28 Department of Environment (2014). Collaborative Australian Protected Area Database (CAPAD). Australian Government. Viewed 20 June, 2016: <https://www.environment.gov.au/land/nrs/science/capad/2014>
- 29 Australian Government Department of the Environment, Water, Heritage and the Arts. Assessment of Australia's terrestrial biodiversity 2008. Canberra: DEWHA, 2009.
- 30 Maron, M, Laurance, B, Pressey, B, Catterall, CP, McAlpine, C, Possingham, H, Watson, J, Rhodes, J, Wilson, K & Hockings, M (2016). Queensland land clearing is undermining Australia's environmental progress. The Conversation, February 22, 2016.
- 31 Taylor et al, loc. cit.
- 32 Fitzsimons, JA (2006). Private Protected Areas? Assessing the suitability for incorporating conservation agreements over private land into the National Reserve System: A case study of Victoria. Environmental and Planning Law Journal, 23:365-385.
- 33 Moon, K and Cocklin, C (2011a). A Landholder-Based Approach to the Design of Private-Land Conservation Programs'. Conservation Biology 25(3): 493-503; Adams, V, Pressey, R and Stoeckl, N (2014). Estimating Landholders Probability of Participating in a Stewardship Program, and the Implications for Spatial Conservation Priorities.' PLoS ONE, 8; Moon, K and Cocklin, C (2011b). Participation in biodiversity conservation: Motivations and barriers of Australian landholders. Journal of Rural Studies 27(3): 331-342.
- 34 Department of Environment (2016). Standards for Inclusion in the National Reserve System. Caring for Country, Australian Government. Viewed 23 June, 2016.
- 35 Fitzsimons (2006), loc. cit.
- 36 Fitzsimons (2006), loc. cit; World Commission on Protected Areas Australia and New Zealand Region (2000). Application of IUCN Protected Area Management Categories: Draft Australian Handbook (WCPA ANZR, 2000). Viewed 15 June, 2016.
- 37 Productivity Commission (2002). Pastoral Leases and Non-Pastoral Land Use. Commission Research Paper, AusInfo, Canberra. Viewed 15 June, 2016.

- 38 *ibid.*
- 39 Department of Parks and Wildlife (2013). Background Paper: Management of Former Pastoral Properties Purchased for Nature Conservation in the Southern Rangelands. Government of Western Australia.
- 40 In Australia, where applicable, changes to existing land use need to be consistent with native title.
- 41 Gilligan, B (2006a). The Indigenous Protected Areas Program – 2006 Evaluation. Department of the Environment and Heritage, Australian Government; Taylor et al, *loc. cit.*
- 42 Altman, J and Jackson, S (2014). Indigenous land and sea management. Ten Commitments Revisited: Securing Australia's Future Environment: Part 3: Cross-cutting Themes, pgs. 207-216. Lindenmayer, D, Dovers, S and Morton, S (eds). CSIRO Publishing, Victoria.
- 43 Taylor et al, *loc. cit.*; Gilligan (2006a), *loc. cit.*
- 44 Altman and Jackson, *loc. cit.*
- 45 Altman, J (2014). The political ecology and political economy of the Indigenous land titling 'revolution' in Australia. *Maori Law Review*, Indigenous Law Speaker Series 2014. Viewed 21 June, 2016.
- 46 Gilligan, B (2006b). The National Reserve System Programme, 2006 Evaluation. Australian Government, Department of the Environment and Heritage. Viewed 20 June, 2016.
- 47 Taylor et al, *loc. cit.*
- 48 *ibid.*
- 49 Taylor et al, *loc. cit.*
- 50 This an adjusted approximate figure based on Taylor et al's (2014) figure of \$170 million per year, over five years to 2020.
- 51 Taylor et al, *loc. cit.*
- 52 By applying data collated by the Ecosystem Services Partnership
- 53 Taylor et al, *loc. cit.*
- 54 Taylor P (2012). Daunting problems, exciting prospects – a personal reflection. In: Figgis P, Fitzsimons J. and Irving J (eds). *Innovation for 21st Century Conservation*. Australian Committee for IUCN, Sydney.
- 55 Taylor et al, *loc. cit.*
- 56 Taylor et al, *loc. cit.*
- 57 Just over 50% of the amount presently budgeted on Landcare and conservation; Places You Love (2016). *An Implementation Plan for Strong National Environmental Laws, Policies and Institutions*. 6 April 2016.

References

- Adams, V, Pressey, R and Stoeckl, N (2014). *Estimating Landholders Probability of Participating in a Stewardship Program, and the Implications for Spatial Conservation Priorities*. *PLoS ONE*, 8.
- Altman, J (2014). *The political ecology and political economy of the Indigenous land titling 'revolution' in Australia*. *Maori Law Review, Indigenous Law Speaker Series 2014*. Viewed 21 June, 2016.
- Altman, J and Jackson, S (2014). *Indigenous land and sea management. Ten Commitments Revisited: Securing Australia's Future Environment: Part 3: Cross-cutting Themes, 207- 216*. Lindenmayer, D, Dovers, S and Morton, S (eds). CSIRO Publishing, Victoria.
- Australian Government (2012). *One Land – Many Stories: Prospectus of Investment 2013-2014*. Department of Sustainability, Environment, Water, Population and Communities, Canberra.
- Australian Government Department of Environment (2016). *History of the National Reserve System*. Viewed June 15, 2016.
- Australian Government, Department of Environment (2016). *National Reserve System Scientific Framework*. Viewed June 15, 2016.
- Australian and New Zealand Environment and Conservation Council (1996). *National Strategy for the Conservation of Australia's Biological Diversity*. Commonwealth of Australia, Canberra.
- Commonwealth of Australia (2009). *Australia's Strategy for the National Reserve System 2009-2030*. Commonwealth of Australia and each of its States and Territories, 2010.
- Convention on Biological Diversity's 2011-2020 Strategic Plan (CBD). *Aichi Target 11*. Viewed 15 June, 2016.
- Department of Environment (2014). *Collaborative Australian Protected Area Database (CAPAD)*. Australian Government. Viewed 20 June, 2016.
- Department of Environment (2016). *Standards for Inclusion in the National Reserve System. Caring for Country, Australian Government*. Viewed 23 June, 2016.
- Department of Parks and Wildlife (2013). *Background Paper: Management of Former Pastoral Properties Purchased for Nature Conservation in the Southern Rangelands*. Government of Western Australia, Australia.
- Fitzsimons, JA (2006). *Private Protected Areas? Assessing the suitability for incorporating conservation agreements over private land into the National Reserve System: A case study of Victoria*. *Environmental and Planning Law Journal*, 23:365-385.
- Gilligan, B (2006a). *The Indigenous Protected Areas Program – 2006 Evaluation*. Department of the Environment and Heritage, Australian Government.
- Gilligan, B (2006b). *The National Reserve System Programm - 2006 Evaluation*. Australian Government, Department of the Environment and Heritage. Viewed 20 June, 2016.
- IUCN Worlds Parks Congress (2014). *A Strategy of Innovative Approaches and Recommendations to Enhance Implementation in the Next Decade*. Sydney, 2014.
- Joint Press Conference with Hon Greg Hunt, Minister for the Environment and Hon Julie Bishop MP, Minister for Foreign Affairs (2014). *Thursday, 13 November 2014*. Viewed 15 June, 2016.
- Joppa LN and Pfaff A. (2009). *High and far: biases in the location of protected areas*. *PLoS ONE* 4(12), e8273.
- Maron, M, Laurance, B, Pressey, B, Catterall, CP, McAlpine, C, Possingham, H, Watson, J, Rhodes, J, Wilson, K & Hockings, M (2016). *Queensland land clearing is undermining Australia's environmental progress*. *The Conversation*, February 22, 2016.
- Moon, K and Cocklin, C (2011a). *A Landholder-Based Approach to the Design of Private-Land Conservation Programs'*. *Conservation Biology*, 25(3): 493-503.
- Moon, K and Cocklin, C (2011b). *Participation in biodiversity conservation: Motivations and barriers of Australian landholders*. *Journal of Rural Studies*, 27(3): 331-342.
- Natural Resource Management Ministerial Council (2005). *Directions for the National Reserve System – A Partnership Approach*. Department of the Environment and Heritage, Canberra.
- Natural Resource Management Ministerial Council (2010). *Australia's Biodiversity Conservation Strategy*. Australian Government Department of Sustainability, Environment, Water, Population and Communities, Canberra.
- Nature Needs Half (2016). Viewed 5 June, 2016.
- Pressey RL, Hager TC, Ryan KM, Schwarz J, Wall S, Ferrier S, Creaser PM. (2000). *Using abiotic data for conservation assessments over extensive regions: quantitative methods applied across New South Wales, Australia*. *Biological Conservation*, 96: 55–82.
- Productivity Commission (2002). *Pastoral Leases and Non-Pastoral Land Use*, Commission Research Paper, AusInfo, Canberra. Viewed 15 June, 2016.
- Reside, AE, VanDerWal, J, Phillips, BL, Shoo, LP, Rosauer, DF, Anderson, BJ, Welbergen, JA, Moritz, C, Ferrier, S, Harwood, TD, Williams, KJ, Mackey, B, Hugh, S, Williams, YM and Williams, SE (2013). *Climate change refugia for terrestrial biodiversity: Defining areas that promote species persistence and ecosystem resilience in the face of global climate change*.
- National Climate Change Adaptation Research Facility, Gold Coast.
- Scott JM, Davis FW, McGhie RG, Wright RG, Groves C and Estes J (2001). *Nature reserves: do they capture the full range of America's biological diversity?* *Ecological Applications*, 11: 999–1007.
- Taylor MFJ, Fitzsimons JA and Sattler PS (2014). *Building Nature's Safety Net 2014: A decade of protected area achievements in Australia*. WWF-Australia, Sydney.
- Taylor P (2012). *Daunting problems, exciting prospects – a personal reflection*. In: *Innovation for 21st Century Conservation*. Figgis P, Fitzsimons J. and Irving J (eds). Australian Committee for IUCN, Sydney.
- United Nations Environment Programme (2004). *Seventh Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 7)*. 9 - 20 February 2004 - Kuala Lumpur, Malaysia.
- Woodley, S, Bertzky, B, Crawhall, N, Dudley, N, Londono, JM, Mackinnon, K, Redford, K. and Sandwith, T (2012). *Meeting Aichi Target 11: What Does Success Look Like for Protected Area Systems?* *Parks* 18(1).
- World Commission on Protected Areas Australia and New Zealand Region (2000). *Application of IUCN Protected Area Management Categories: Draft Australian Handbook (WCPA ANZR, 2000)*. Viewed 15 June, 2016.

Appendix 1

Appendix A: Additional Revenue Opportunities⁵⁸

The Grattan Institute and The Australia Institute have identified a significant number of opportunities to improve the equity and sustainability of the Commonwealth Budget.

	2016-17	2017-18	2018-19	Period
	\$m	\$m	\$m	\$m
Phase out of fuel tax credits scheme	3,231	3,340	7,044	13,615
Phase out of concessional rate on aviation fuel	700	750	1,580	3,030
Removal of accelerated depreciation/statutory effective life caps			1,650	1,650
Savings	3,931	4,090	10,274	18,295

Benefits

The International Energy Agency estimates that eliminating subsidies would cut global greenhouse gas emissions by 10%, save about US\$550 billion and provide an immediate boost to global growth, create jobs, build resilience and improve government budgets. The International Monetary Fund believes that eliminating fossil fuel subsidies would save US\$2 trillion and cut greenhouse gas emissions by a similar amount. The recent fall in oil prices provides the Australian Government with an opportunity to phase out the fuel tax credits scheme, with minimal impact on industry (as the Indonesian and Malaysian Governments did recently). The expenditure proposed in this paper would have very significant financial, social and environmental benefits. To take one example, the existing terrestrial National Reserve System ('national parks') secures 'ecosystem services' (or benefits of nature) valued at about \$38 billion a year and the marine reserve system secures even larger benefits. Visitors to national parks, for example, spend more than \$23.6 billion a year in Australia, generating tax revenue for state and territory governments of over \$2.36 billion. The Great Barrier Reef contributes \$5.7 billion to the Australian economy a year and employs 69,000 people (FTE). Environmental legislation conserves water and soil quality and quantity, moderates regional climate, protects beneficial species that control agricultural pests, and conserves threatened species. Numerous economic reports have quantified these benefits.

Phase out of fuel tax credits scheme

The fuel tax credits scheme provides eligible businesses with a credit for the excise or customs duty included in the price of fuel used in their business activities. Fuel tax credits are only available to certain industries. This provides a financial advantage to those businesses over other businesses, and over households. The Abbott Government's decision to reintroduce fuel excise indexation will lead to increases in claims under the fuel tax credits scheme by eligible businesses. The scheme should be phased out by reducing the credit available to eligible businesses by 50% for the period 2016-2018 and then 100% from 2018-2019 onwards. The phase out of fuel tax credits would promote economic growth, by allowing resources to flow to the most

economically efficient businesses and sectors of the economy, be equitable and reduce greenhouse gas emissions.

	2015-16	2016-17	2017-18	2018-19	Period
	\$m	\$m	\$m	\$m	\$m
Budget expenditure: fuel tax credits scheme	6,230	6,461	6,679	7,044	27,918
Savings		3,231	3,340	7,044	13,615

Phase out of concessional rate of excise levied on aviation gasoline and aviation turbine fuel

Aviation gasoline and aviation turbine fuel are subject to a lower rate of excise than the benchmark rate identified by the Taxation Commissioner. This provides eligible businesses with a financial advantage over other businesses, and over households. The concessional rate of excise should be phased out until it reduces the benchmark rate identified by the Taxation Commissioner, by reducing the concessional rate by 50% for the period 2016-2018 and then 100% from 2018-2019 onwards. The phase out of the concessional rate would promote economic growth, by allowing resources to flow to the most economically efficient businesses and sectors of the economy, be equitable and reduce greenhouse gas emissions.

	2015-16	2016-17	2017-18	2018-19	Period
	\$m	\$m	\$m	\$m	\$m
Tax expenditure: concessional rate of excise	1,310	1,400	1,500	1,580	5,790
Savings		700	750	1,580	3,030

Removal of statutory effective life caps/ accelerated depreciation

The effect of 'statutory effective life caps' is that the life of the asset for tax depreciation purposes is shorter than the actual economic depreciation of the asset ('accelerated depreciation'). Statutory effective life caps are only available to certain industries. Assets with statutory effective life caps generally have very long effective lives such that even a statutory effective life cap of 15-20 years is a concession in some cases. This confers a significant economic benefit on those industries. The Review of Business Taxation chaired by Mr John Ralph in 1999 ('Ralph Review') recommended changes to business taxation in Australia including the elimination of accelerated depreciation and a reduction in the company tax rate from 36% to 30%.

National Parks Australia Council

The National Parks Australia Council (NPAC) is a national body that represents state and territory organisations concerned with protecting the natural environment and furthering national parks. It has six member organisations, representing all states and territories except Western Australia and the Northern Territory.

Victorian National Parks Association

The Victorian National Parks Association (VNPA) shares a vision of Victoria as a place with a diverse, secure and healthy natural environment cared for and appreciated by all.

Website: www.vnpa.org.au

Email: vnpa@vnpa.org.au | Phone: (03) 9347 518



National Parks Association of NSW

The mission of the National Parks Association of NSW (NPA NSW) is to protect, connect and restore the integrity and diversity of natural systems in NSW and beyond, through national parks, marine sanctuaries and other means.

Website: www.npansw.org.au

Email: npansw@npansw.org.au | Phone: (02) 9299 0000



National Parks Association of Queensland

The National Parks Association of Queensland (NPAQ) is dedicated to promoting the preservation, expansion, good management and presentation of National Parks in Queensland.

Website: www.npaq.org.au

Email: npaq@npaq.org.au | Phone: (07) 3367 0878



National Parks Association of the ACT

The National Parks Association of the ACT (NPA ACT) was established in 1960. The Association works to promote national parks and the protection of fauna and flora, scenery, natural features and cultural heritage.

Website: www.npaact.org.au

Email: admin@npaact.org.au | Phone: (02) 6229 3201





| Royal National Park, Australia's first national park. Photo: M Eckert | Flickr | CC BY-NC-ND 2.0

Tasmanian National Parks Association

The mission of the Tasmanian National Parks Association (TNPA) is to preserve the integrity of, and expand, the Tasmanian national park system, and to ensure appropriate management of their natural and cultural values.

Website: www.tnpa.org.au

Email: info@tnpa.org.au | Phone: 0427 854 684

**Tasmanian
National Parks
Association**



Nature Conservation Society of SA

The primary objective of the Nature Conservation Society of South Australia (NCSSA) is to foster the conservation of the State's wildlife and natural habitats.

Website: www.ncssa.asn.au

Email: ncssa@ncssa.asn.au | Phone: (08) 7127 4630



National Parks Australia Council



CONTACT US

Victoria: www.vnpa.org.au

New South Wales: www.npansw.org.au

Queensland: www.npaq.org.au

South Australia: www.ncssa.asn.au

Tasmania: www.tnpa.org.au

Australian Capital Territory: www.npaact.org.au