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Innovation for 21st Century Conservation

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Sturt Desert Pea. ©Photo: DEWNR

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Foreword

Julia Marton-Lefèvre Director General, IUCN

The International Union for Conservation of Nature (IUCN) has had a proud history of global leadership in shaping conservation thinking and action, mobilising the expertise of government, non-government and academic member bodies and of the individual experts within its six Commissions.

In September 2012, IUCN held its fifth World Conservation Congress, building on the 64-year history in which it has convened 19 General Assemblies, four World Conservation Congresses, and five World Parks Congresses.

The theme of the 2012 Congress was *Nature+*. This simple slogan aims to capture the fact that nature is not only intrinsically of immense value but is the fundamentally important underpinning of every aspect of human life. This theme also runs through the 20 Aichi Targets of the Convention on Biological Diversity, adopted by governments in October 2010. IUCN is fully committed to ensuring that the ambitious targets for halting the loss of biodiversity by 2020 are met. As we seek new nature-based solutions to global challenges in climate change, food security, and social and economic development, effective and equitable governance of nature's use and valuing and conserving nature, a profound need will be innovative and creative thinking. We shall not succeed in achieving these vitally important goals unless we build on successful models with new mechanisms and find both the social motivation and financial means to realise these new directions.

Such outcomes require leadership and constituency building. IUCN's component parts are working to achieve both outcomes in many global forums. IUCN's National Committee for Australia, ACIUCN, has undergone a revitalisation over the last two years and is steadily building a reputation for leadership in key strategic discussions.

ACIUCN's symposium on *Innovation for 21st Century Conservation*, organized in partnership with the South Australian Department of Environment, Water and Natural Resources and The Nature Conservancy, is a timely and important contribution. The symposium, held in Adelaide, South Australia on 20 and 21 March 2012, examined excellent examples in conservation and aimed to encourage further creativity through partnerships.

The case studies from the symposium, presented in this publication, highlight how conservation has changed over the last few decades, becoming more inclusive and more socially conscious. The systematic expansion of the National Reserve System, guided by the scientific principles of comprehensiveness, adequacy and representativeness, has made Australia a world leader and the case studies in this book document new approaches to securing and managing conservation lands. The increasing emphasis on 'connectivity conservation' and 'landscape-scale conservation' is illustrated by the examples of multiple partners achieving outcomes on many land tenures under various governance and financing models.

The studies also reflect the impact of climate change on conservation thinking. We no longer try to protect healthy ecosystems simply for their biodiversity and sustainable use values, but also address the need to both retain these rich carbon sinks and add to the resilience of natural systems in the face of actual and anticipated threats posed by climate change. It is encouraging to see Australia reflecting this nature-based solutions approach.

I note that many studies illustrate initiatives to integrate the culture, rights and aspirations of Australia's Indigenous peoples into conservation, consistent with IUCN's deep commitment to equity in all our work. IUCN has admired the commitment of Australia to developing Indigenous Protected Areas and Indigenous land and sea management. It is excellent that this commitment is continuing to evolve through the engagement of private land trusts and philanthropic organisations.

IUCN will continue to strongly support innovative thinking and effective and equitable partnerships in the global effort to preserve the richness and diversity of life on our planet which sustains all species, including our own.

Temperate wet sclerophyll forest in Liffey Valley Reserves in Tasmania, owned by Bush Heritage Australia. ©Photo: Wayne Lawler

Innovation in conservation

Penelope Figgis AO

The 'perfect storm' of ever increasing population growth, unprecedented urbanisation, huge increases in resource use and climate change's growing impacts, has massively impacted on the natural ecosystems and species of the earth. The Global Outlook (CBD 2010) spelt out the consequences:

The action taken over the next decade or two, and the direction charted under the Convention on Biological Diversity, will determine whether the relatively stable environmental conditions on which human civilization has depended for the past 10,000 years will continue beyond this century. If we fail to use this opportunity, many ecosystems on the planet will move into new, unprecedented states in which the capacity to provide for the needs of present and future generations is highly uncertain.

The theme for this book, and for the symposium that preceded it – 'Innovation for 21st Century Conservation' – was chosen by partners from various sectors who hold that the only way forward is innovation – creating new models, new partnerships and new ways to manage and finance conservation, at scales appropriate to these challenges.

This does not mean that conservation policy to date has been a failure from which we must turn away. On the contrary, in Australia what we have done, especially the progress towards a truly 'comprehensive, adequate and representative' protected area system, remains centrally important; but it is clearly insufficient.

We are simply not succeeding in stemming the constant loss of species and ecosystems. In Australia we have a grim record of the loss of 22 mammals alone – a third of the world's recent mammal extinctions (Commonwealth of Australia 2002). This continuing loss is true, despite steady growth of protected area systems.

Even our best protected areas face serious challenges. Kakadu National Park, an Australian Government park and World Heritage Area, has suffered a decline in species abundance in recent years which has been described by scientists as 'catastrophic'. Dr Jon Woinarski and others have identified a 'cocktail' of feral cat predation, inappropriate fire regimes and over-grazing as likely causes for these dramatic declines (e.g. Fitzsimons et al. 2010).

Gondwana Rainforests of Australia World Heritage Area. ©Photo: Penelope Figgis

The Kakadu decline explains a good deal of the momentum for the fundamental change this volume discusses. We cannot manage conservation only in isolated 'islands' of nature in a 'sea' of land degradation and increased fragmentation, where inappropriate fire and grazing management and uncontrolled invasive species weaken both species and ecosystems. For many decades, scientists like Michael Soulé and other conservation biologists have argued the case for creating large-scale, 'permeable' landscapes, where management does not stop at arbitrary boundaries (Soulé and Terborgh 1999). The theme has been taken up by IUCN and other science and policy circles for several decades, becoming the key focus of the IUCN World Parks Congress 'Benefits Beyond Boundaries' in 2003 which promoted ecosystem connectivity, social inclusiveness and justice (IUCN 2005).

In the decade since the Congress, this momentum has encouraged a much richer tapestry of approaches to conservation: more varied actors, governance and management models. Change has been driven not just by the continuing downward trajectory of biodiversity but also by the alarming upward curve of the climate change temperature graphs. There are many terms for landscape-scale approaches but IUCN has endorsed 'connectivity conservation' (Worboys et al. 2010). In particular, IUCN's World Commission on Protected Areas (WCPA) has been promoting 'connectivity conservation' as a 'natural solution' – the most appropriate approach to biodiversity conservation in a time of changing climate. The approach advocates buffering and linking protected areas into large-scale mosaics of lands managed cooperatively by many owners across tenures.

As protected area policy and management practitioners have increasingly looked outside parks to the wider land and marine environments, the need to engage with, motivate, and factor in, the rights and perspectives of other land owners and managers has become a priority. Social sustainability has become a much larger discussion with the realisation that the vision of connectivity requires the willing cooperation and motivation of many elements of society. For Australia, with over 70% of its land managed by various private land owners including some 20% managed by Indigenous Traditional Owners, no strategy would succeed without models and mechanisms to bring effective conservation to these lands.

Australia has been building key components of this more diverse and inclusive approach over two decades. We have been fortunate to have a bipartisan commitment to build the core of connectivity – the National Reserve System, underpinned by a strong planning framework (the Interim Biogeographic Regionalisation of Australia – IBRA). Using IBRA, the Commonwealth, state and territory agencies, and non-government organisations have been able to develop strategies for new declarations and purchases from the data which identified gaps and then determined priorities. The funding of the National Reserve System Program was significantly boosted in 2008 with $180 million over five years as part of the Australian Government's $2.25 billion Caring for our Country initiative.

The National Reserve System funding has also been a major catalyst in building a strong private land trust sector. The key players Bush Heritage Australia, Australian Wildlife Conservancy and Trust for Nature have been able to leverage the Australian Government's two-for-one funding formula to attract major donors. State governments too have supported state-based land trusts which pursue a considerable range of models, from private protected areas to revolving funds and covenanting models (Figgis 2004). The private land conservation sector is a key source of innovation, often working with government.

A further innovation under the National Reserve System has been the development of globally significant models of conservation management by Indigenous Traditional Owners, in particular the model of the Indigenous Protected Area (IPA) – an entirely voluntary contract model between Traditional Owners and the Australian Government to manage land for agreed conservation priorities (see chapter by Rose in this publication). This concept has been dramatically successful and there are now 51 declared Indigenous Protected Areas covering 36 million hectares or 4.7% of Australia, with many more communities expressing interest in developing an IPA (DSEWPC 2012a).

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

A more recent stimulus for new models has arisen from the gradual acceptance that natural environments are critical considerations in both the adaptation and mitigation responses to climate change. The National Carbon Farming Initiative and the Biodiversity Fund both bring the reality of a biodiversity and carbon market closer. Under these measures over $26.1 million will also go towards supporting Indigenous groups for long-term biodiversity conservation and carbon storage projects. A further $21.7 million will go towards a variety of revegetation and rehabilitation projects that create additional Indigenous employment in remote communities (DSEWPC 2012b).

As we progress into the twenty-first century, Australia can therefore take considerable satisfaction that we have already achieved a good deal of diversification in our means of achieving conservation. Strategic documents, including the National Biodiversity Strategy (2010), have embraced both landscape approaches and greater socially inclusion as a key direction and in 2012 a *Draft National Wildlife Corridors Plan* was launched which is essentially a national adoption of the connectivity approach.

Despite these very substantial improvements in the way we achieve conservation, there is a dramatic 'race' underway as the scale of threats is also increasing. Severe weather events, population pressures and a massive expansion of resource extraction and related infrastructure have been added to the 'cocktail' of invasive species, inappropriate fires and land degradation. The global financial crisis has also distracted society and governments away from long-term issues into short-term 'bread and butter issues'. As in all great competitions, it will be the capacities to adapt and create appropriate strategies that will determine the outcome.

This was the focus of the symposium and is the focus of this publication. Our keynote speakers all stressed the need to think laterally and experiment while not abandoning 'what works'. A two day symposium can only capture a snapshot of the broad innovation spectrum; however there was a strong representation of some of the best current approaches to terrestrial conservation in Australia.

Chapters in this book highlight new ways in which protected areas and other conservation initiatives are established. A major emphasis is given to the galvanising power of a large-scale inspiring vision, with case studies of the connectivity initiatives of Territory Eco-link, Gondwana Link, Habitat 141° and the Great Eastern Ranges. A key value of these landscapes appears to be inclusiveness – the welcoming of all participants and contributions at all scales, from the individual property level to large-scale private, public or Indigenous lands.

State governments are also finding new models to establish conservation entities. Queensland provides examples of achieving conservation outcomes in changing native title, economic and social contexts. South Australia has applied an innovative approach to a complex issue where the geologically important pastoral lease of Arkaroola was threatened by mining.

Innovation in management is an important theme for numerous chapters in this book. While conservation estates have been growing in recent decades there has been a strong call for 'effective management' to ensure that an area established for conservation delivers conservation outcomes. Managers who are faced with 'wicked' threats which do not stop at any boundary, are exploring creative ways to use new partners, motivations and methods to be more effective. Examples provided include managing for new motivations such as carbon storage, or for traditional food for both cultural and livelihood aspirations of Indigenous Australians.

The topic of governance is high on the international agenda, often driven by concerns at the exclusion or marginalisation of traditional user groups. Important new models discussed range from government parks being run by non-government organisations, to whether private protected areas should be recognised as national parks, to the unique purchase of a large property for conservation and gifting to Indigenous people. The important role that the defence industry can play in ecosystem management is also highlighted in this publication.

The fundamental issue of adequate financing is addressed in many chapters. Many good ideas and policies have languished for want of adequate funding, and projects with community enthusiasm have withered from accumulated grant application fatigue. Hopefully the future will bring the proper incorporation of the economic values of biodiversity and ecosystems into our mainstream economies. The United Nations Environment Programme-auspiced initiative, The Economics of Ecosystems and Biodiversity, seeks this goal (TEEB 2010).

However, we are beginning to see interesting financing approaches such as the power of small but annual grants in Tasmania to bring landowners into a connectivity network. The potential of ecosystem services is highlighted in two examples, one the decision of superannuation fund investors to invest in purchasing land to enhance biodiversity and ecosystem health to increase value and then the strategy of an iconic Australian corporation, R.M.Williams, to commit to enhancing the ecosystem health, carbon and biodiversity of properties for emerging markets as a clear-headed business proposition. This area will see considerable growth in coming decades and remains one of the most vital.

A key theme which emerges from all chapters is the centrality of human relationships to improving management of land and landscapes. We have to mobilise the people who care and ensure their efforts are appreciated and rewarded so that the many sincere efforts are sustained over the long term. For partnerships to flourish we need to ensure that the narratives of all sectors are respected – that caring for the land and its health is an issue not owned by a few, but by many. We need to mobilise new communities of support who may join the effort from a variety of motives ranging from the spiritual to simple profit.

A broad community that appreciates that biodiversity and healthy ecosystems are key national assets is the critical ingredient to maintaining the momentum of inclusive, innovative conservation into the future.

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Gardens of Stone, Blue Mountains World Heritage Area. © Photo: Penelope Figgis

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Biography

Penelope Figgis AO is the Director of the Australian Committee for the International Union for Conservation of Nature (ACIUCN) and Vice Chair for Oceania of the IUCN World Commission on Protected Areas. She has been a senior member of the environment movement for over 30 years, including over 17 years as Vice President of the Australian Conservation Foundation. She has been a writer, public speaker and university lecturer on protected area policy, World Heritage, innovative nature conservation and sustainable tourism, and has served on many boards of both non-government organisations and statutory authorities.

A personal journey to innovation

Doug Humann

It is more than 40 years since I developed a consciousness of environmentalism and a concern for nature and natural resources. It is roughly the same amount of time since I developed a consciousness of Indigenous rights and awareness of the special relationship Aboriginal people have with country; this came through family association from my childhood with one of the 'stolen generation'. Our individual circumstances and experience bring strong perspectives and I have been asked to share my journey on innovation in conservation in the twenty-first century.

My mentor in conservation was a teacher-cum-dairy farmer in the Upper Yarra Valley, east of Melbourne; Dr Alec Scholes. In the 1970s, Dr Scholes had a vision for a corridor along the Yarra Valley to link farming land in the valley and adjacent state forest to the Alps beyond: integrating farming, conservation, tourism and other businesses. In 1978 this formed the subject of my geography honours thesis (Humann 1978). The linkage of conservation-focussed land management with other land uses, and the importance of collaborative rather than oppositional relationships, has stayed with me ever since.

My sense of the wider environment beyond Victoria was built through tales of my brother on summer hikes to Tasmania's South West in the late 1960s; he was lost for five days on the Cracroft River in 1972, so the impressions are vivid. Later that year my father donated money in order to have a film made of Lake Pedder for awareness-raising purposes. Sadly Lake Pedder was soon lost under the Huon-Serpentine Impoundment, and the Green political movement was founded in Australia on 23 April 1972.

In 1979, I had a formative trip around much of central, northern and western Australia, supporting a friend who was contributing to the first Atlas of Australian Birds (Blakers et al. 1984). We saw Kakadu in the year of its proclamation as a national park, visited many remote Aboriginal communities and witnessed the remarkably unspoilt landscape of the Kimberley.

Through school, university and my first career as a teacher of geography and politics, I worked in the bush and volunteered with many conservation groups observing their strategies at close quarters.

Watarru Indigenous Protected Area, Anangu Pitjantjatjara Yankunytjatjara Lands in far north-west South Australia. ©Photo: Doug Humann

The conservation arena in which we work today was largely framed during this time in the 1980s and 1990s. We saw Aboriginal land rights, resource booms, defined public policy on building the protected area estate (e.g. the Interim Biogeographic Regionalisation of Australia – IBRA) and biodiversity (e.g. the *Flora and Fauna Guarantee Act 1988* in Victoria), catchment management authorities, Landcare, a massive growth in the parks system, and various assaults on the protected area estate as well.

Non-traditional alliances were beginning to be born including through the nationalisation of Landcare with Phillip Toyne (Australian Conservation Foundation) and Rick Farley (National Farmers Federation). It was a privilege to later have Rick (until his untimely death in 2007) and Phillip (as President of Bush Heritage Australia) share their practical, no-nonsense approach on the board of Bush Heritage Australia (BHA) in the mid 2000s, as we grappled with new innovative opportunities (see chapter by Bourke in this publication).

In 1990, keen to give expression to my belief in the need for more focus on our national parks and greater community understanding in them, I left teaching and became the first full-time Director of the Victorian National Parks Association (VNPA), lobbying for more parks and better park management, but also encouraging VNPA to look beyond the parks model.

In Victoria in the 1990s we were embattled under the Kennett regime; national park after national park after natural area was targeted for development of some sort or another. Karen Alexander joined me at VNPA in 1996 to lead the campaign and develop the tactics for stopping a hotel and other developments at Wilsons Promontory National Park; including the brilliantly conceived and executed public event and photo opportunity that effectively stopped the development and Premier Jeff Kennett in his tracks on 29 December 1996. This campaign became a *cause célèbre* as it built up a range of linkages across, social, political, economic, regional and media sectors; linkages which Kennett could hardly have imagined.

It was a great reminder of the value of alliances in getting a positive outcome; enabling the hearing of others' perspectives, and building a powerful case. The victory at 'the Prom' had another reminder: we need to celebrate the wins. Having said that, it can feel that we seem to be re-fighting battles, winning some, but losing the war; for example, still today there is the umpteenth revisit of cattle grazing in Victoria's Alpine National Park (Humann 2011) and the continuing need for protection of key areas from logging and mining.

By the early 1990s, funding to public protected areas was declining and by the mid 1990s large extensions to the national park estate were slowing down – in Victoria at least. Public land protection was hard enough (and it still is), but my mind was turning to the private land estate and necessities across tenures and land uses if we were to adequately conserve biodiversity across the length and breadth of Australia. Innovations were clearly needed, to take us beyond constant reaction, and activism; important though those things are.

This is the exciting space I have been in since I commenced at Bush Heritage Australia in 1997. Bob Brown and others had seen the need and opportunity to act more widely through philanthropy, and in 1990 Bob drew on experiences he had witnessed in the United Kingdom and United States to start what is now Bush Heritage Australia. Bob's purchase of the Liffey Valley blocks in Tasmania with his $50,000 Goldman environment prize is well known (Brown 2004).

In 1991, Bush Heritage's budget was $35,000. In the same year Martin Copley started what is now the Australian Wildlife Conservancy with his own money, and on the back of inspiration from John Wamsley, whose own innovative model – Earth Sanctuaries Ltd – shortly after lost its way.

I vividly remember arriving in Hobart in 1997 to take up my role. We had a remote island to manage in Bass Strait, along with other properties scattered across Australia. The innovations that followed at Bush Heritage in subsequent years were built on a number of key factors. Most importantly, Bush Heritage's founders built a solid fundraising and marketing model that we nuanced and developed but never fundamentally changed.

Other factors differentiated Bush Heritage and gave it strength. The model was built on a simple business proposition summed up by the slogan: 'We don't beat around the bush, we buy it'. This spoke to a need and an ability to protect areas that protest and advocacy could not. As an independent entity it was not perceived as being 'from the government' so we could sit down and negotiate with landholders and offer flexibility and options often difficult for government. Our donors and supporters respected and trusted us. They still do. We kept telling stories of achievement of which they were a part, however small, in building our program.

We were aware how national trusts had become over-encumbered with property and had seen in the national parks estate instances where land management requirements exceeded management capacity. We presented ourselves as – and we were – financially competent. We operated within our means and built long-term assets for risk avoidance. This is very important for investors who want to know there is a sound strategy, and good financial management.

Finally, the National Reserve System (NRS) Program with its generous two-for-one funding model for strategic acquisitions has been a major and critical innovation in stimulating the private land conservation sector in Australia, and is unparalleled anywhere. It has inspired bipartisan support and, by the end of the 1990s, successfully moved outside of the public land protected area framework to support Indigenous Protected Areas (IPA) and private land conservation through the fantastic leverage it affords private donations. In 2002, when I was describing this program to a TNC (The Nature Conservancy) audience in Maine, New England, one gentleman couldn't get his cheque book out fast enough when he heard first, the relatively cheap price of high conservation value land in remote west Queensland, and second, that the Australian Government would match his gift two-for-one!

Initiatives at BHA which enabled us to innovate in coming years included the following.

We initiated engagement with and through key individuals associated with Aboriginal Australia and pastoral Australia to broaden our network. We established contact with the Indigenous Land Corporation (then and now the major land acquisition body for Aboriginal people), writing a memorandum of understanding in 2002. This initiative was the first in a series of developments that brought Indigenous staff and board members to BHA. Guy Fitzhardinge, a respected grazier on the Board of Meat and Livestock Australia and well-known throughout Australia, became an invaluable adviser over the next eight years as we acquired a string of pastoral leases for conservation, including more cups of tea and stories than I care to remember. Over time we re-configured the board to a broader mix, adding Rick Farley and then a number of corporate individuals with financial expertise and business networks.

We developed closer relationships with other organizations, and especially TNC. Rob McLean, Max Bourke and David Thomas were critical to bringing TNC to Australia in the late 1990s and introduced key TNC staff to Australian non-government organisations and governments. For me a new world of opportunity, optimism and audacity opened up. If there was one group being innovative globally in our space it was TNC. If there were lessons to learn, and pitfalls to avoid, TNC had seen them all.

Now of course, we have in Australia, not only a plethora of home-grown non-government organisations operating in this space including the state covenanting bodies, but also science and research institutions, and most of the BINGOs (big international environmental non-government organisations): WWF-Australia, The Nature Conservancy, Flora and Fauna International, Conservation International, together with Humane Society International, Ecotrust and Pew. This provides tremendous opportunity for innovation and collaboration, as well as some risk of duplication and confusion in our 'market-place'.

When a $1.3 million untied philanthropic gift from the John T Reid Charitable Trust landed at Bush Heritage in late 2000, the opportunity to lift our sights was immediately provided. With only 2,000 hectares under ownership at that time, larger areas and leasehold areas became of interest – as well as freehold land. We initiated a search in the Brigalow Belt of central Queensland, then subject to some of the highest rates of land clearance in the world.

Through anguished breath and fear of exposing Bush Heritage to financial ruin, the Bush Heritage Board approved the purchase of the 60,000 hectare Carnarvon Station in south-west Queensland for around $1.5 million. However, the purchase of Carnarvon Station was in fact seen as an inspiring bold statement and supporters responded to it very warmly – and, to our great relief, the funds rolled in.

This event also coincided with the secondment of Kent Wommack from TNC in the United States who joined Bush Heritage for three months. His stay was a huge learning curve for me and again encouraged audacity and ambition. Kent had just come off a US $60 million fundraising campaign in his home state of Maine; about 20 times our then annual budget.

Therefore through key partnerships at various levels – with landholders, with the NRS Program, with TNC, and with key donors and Bush Heritage's broader support base – we built momentum and a series of acquisitions occurred rapidly over several years along with engagement in our first corridor project in Gondwana Link.

Hands off Wilsons Prom. ©Photographer Jerry Galea, Fairfax Syndication

The key to each one of these projects was the creation of alliances and each was innovative in its own way. Two examples follow, firstly in a largely intact environment and second, in a fragmented environment.

1. The purchase of Charles Darwin Reserve came with a novel fundraising idea from Chris Darwin (Charles Darwin's great-great-grandson). 'Patrons' of the Reserve essentially adopt a portion of the Reserve and provide a continuing income source for management through an annual gift program. This has encouraged private, philanthropic, corporate and international funders. The patrons model, with its regular opportunities for visits and activities, has caused much thinking about alternate models that might provide better for long-term management. For this is the real nut to crack: how to build the land estate and provide adequate means for management at the same time. We have since toyed with time shares, and property trust arrangements and the like, which would give more resilience to long-term management funding.
2. In Gondwana Link a strong body of local support was inspired through the efforts of Keith Bradby and his team and in 2003 we took part in the then largest revegetation project in the region (see chapter by Bradby in this publication). Here we have also adopted the model of supporting management planning and implementation on private landholders' land.

Alongside initiatives such as these, BHA was developing a new long-term strategy. It was strongly in line with the international directions of landscape-scale conservation partnerships across a variety of land tenures and uses. BHA called the strategy 'Anchors in the Landscape': where 'anchors' referred to both the areas of high conservation value being actively managed, and the five regions around Australia where Bush Heritage was focussing. In a bid to meet an audacious goal – a target of owning and managing 1% of Australia by 2025 – it had three key elements:

1. To increase engagement of Aboriginal people in the running of BHA's business.
2. To increase ownership of land by BHA.
3. To develop partnerships where BHA could support long-term management of other people's land for conservation purposes. The focus for this work was to be on two sectors: Aboriginal and pastoral. Consideration was also given to how extensive lands held by Australia's Department of Defence, and the interests of mining companies, might also be engaged. This element became known as BHA's 'Beyond the Boundaries' program, and was a specific funding focus of The Thomas Foundation and The Nature Conservancy's David Thomas Challenge.

The ‘Anchors in the Landscape’ strategy was regionally based and targeted, with an ability to work anywhere in Australia through partnership where conservation values were sufficiently high. The strategy would involve higher-risk projects beyond the original Bush Heritage model whereby BHA was the title-holder. BHA would still undertake property acquisition and focus these in the ‘anchor’ regions of the Southwest Botanical Province, Southeast Grassy Box Woodlands, Tasmanian Midlands, Queensland Uplands and Brigalow Belt, and Gulf of Carpentaria to Lake Eyre. However working ‘beyond the boundaries’ of BHA properties and ‘anchor’ regions, conservation-based management initiatives and outcomes would be supported through mechanisms such as management agreements, covenants and contracts.

Soon after Max Bourke and David Thomas visited Ethabuka in 2004, The Thomas Foundation (TTF) joined a three-year program to support BHA. This was leveraged with funding from TNC. The Thomas Foundation and TNC supported the ‘Anchors in the Landscape’ strategy over its first three years, and have continued to do so, including through matching grants from the David Thomas Challenge. The strategy is unlikely to have gathered the momentum it did without TNC, TTF and the National Reserve System, along of course with huge public support.

With other alliances that have been created over the course of the years many innovative projects have ensued – all at landscape-scale and always based on a partnership of one form or another – usually with a mix of philanthropic, business and government support, and all backed by generous public donations. Some examples follow:

1. BHA was approached early in the Anchors strategy to support a number of Indigenous communities in their aspirations for ‘caring for country’ on their land. These communities recognised BHA’s management and administrative skills and management frameworks. BHA supported the implementation of management for the Kaanju Ngaachi Indigenous Protected Area on Cape York Peninsula, gave administrative support and encouragement to traditional ecological knowledge reporting and fire management in the Cape, management support in the Top End, and assistance in writing an application for NRS funding which led to an acquisition with the support of the Indigenous Land Corporation near Cobar. Each of these projects demonstrated BHA’s bona fides to Aboriginal communities whilst building conservation momentum. The targets for BHA became progressively more strategic as time moved on.

Carnarvon Station, Queensland. ©Doug Humann

2. Boolcoomatta and Bon Bon pastoral leases in South Australia were acquired with support from the NRS and South Australian Government, along with support from the Nature Foundation SA Inc. At Boolcoomatta the negotiations for settlement involved regional pastoralists and the seller in negotiations that government would likely have found more difficult – or impossible – without an NGO partner
3. The Midlandscapes project in Tasmania became a joint initiative of BHA and the Tasmanian Land Conservancy with support from the Myer Foundation, John T Reid Charitable Trusts, and private donors (see chapter by Males in this publication). The innovative model developed was of a conservation fund to work directly with Tasmanian graziers on the protection of landscape values.
4. Arguably the most exciting project was the development of the Kimberley-based *Wunambal Gaambera Healthy Country Plan 2010-2020* (Moorcroft et al. 2012; see chapter by Moorcroft in this publication). The release of the Plan in 2011 coincided with Native Title confirmation, proclamation of the first stage of the Uunguu Indigenous Protected Area, and the signing of a ten-year memorandum of understanding between BHA and Wunambal Gaambera to undertake conservation management. This work was supported by a matching grant from the David Thomas Challenge.

Drawing on these experiences I think the following are critical to consider in preparing for the future.

- Keeping alert to external thinking and ideas
- Taking calculated risks to test new ways of working
- Developing broad cross-sectoral partnerships and alliances
- Ensuring Aboriginal Australians are fully engaged in operating models
- Engaging within philanthropic circles to explore linkages for investors who have an interest in both environmental and Indigenous issues
- Following climate change developments and regional social, community, environmental and economic implications of climate change
- Considering other income streams to support management beyond philanthropy and government, including tourism, carbon and co-investment with business
- Increasing volunteerism in conservation and particularly increased engagement with youth and with retirees
- Identifying opportunities for landscape connectivity.
- Engaging better with whole of government, not just environment agencies; with particular focus on tax initiatives, to better support conservation (as in the United States)
- Improving community understanding of the place of fire in the landscape

- Developing a response and proposal for better engagement with the mining sector to avoid 'death by a thousand cuts' across the landscape, as we have seen with forestry
- Developing a national approach to covenanting and leasehold land conditions that provides for more transparent monitoring of management activities
- Developing more coordinated strategies for management, and methodologies for ecological outcomes reporting and management evaluation. Through Open Standards, Bush Heritage has adopted a management and reporting framework with scorecard reporting which will streamline management decisions, implementation and reporting.

I was particularly moved in the early 1990s by the collection entitled *Wisdom of the Elders* (Knudtson and Suzuki 1992) and its call to listen and act on sources of wisdom in our society and traditional cultures in particular.

It reminds me, for a network such as ours, that we are sadly lacking in Indigenous representation and in sufficient numbers of younger people to hear the stories and be part of the future. This is a challenge for us.

Across the sector we have enormous capacity and wonderful resources and networks. We represent an incredible set of networks: of NGOs; government agencies; ministerial councils; advisory boards to government; philanthropic links; and carbon-related networks, among others. This is our opportunity.

Working together will assist us meet our shared objectives and innovate.

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Biography

Doug Humann is an independent protected area specialist focusing on community engagement in natural resource management and protection of natural and cultural values. He provides advice and support to a range of groups including indigenous bodies, private enterprise, government and non-government organisations, ensuring sound strategy, governance, financing options and reporting. Doug sat on the National Wildlife Corridors Advisory Group reporting to Federal Environment Minister Tony Burke, is a member of the World Commission for Protected Areas, and a member of the South Australian National Parks and Wildlife Council and Desert Channels Queensland NRM Board.

Daunting problems, exciting prospects – a personal reflection

Peter Taylor

With an increasing awareness of the impact that climate change, droughts and floods have on our ability to sustain our way of life, it is no wonder we are seeing significant transformations in the way Australians are thinking about conservation.

In particular, the last three decades have seen the rapid expansion of Australia's National Reserve System. This extraordinary and globally significant collaboration by all Australian governments, non-government organisations (NGOs), private landholders and the scientific community has seen a great deal of innovation and adaptation by these parties in the way conservation obligations have been pursued. This work has been underpinned by two strategic mechanisms:

1. Strategic National Policy: A whole-of-government decision by the Council of Australian Governments in 1992 agreed to a strategic policy framework to establish a comprehensive, adequate and representative system of protected areas throughout Australia. Twenty years on, this remains one of Australia's key conservation policies, reflected most recently in *Australia's Strategy for the National Reserve System 2009–2030* (NRMMC 2009). This commitment was followed some years later with a decision by the Australian and New Zealand Environment and Conservation Council to pursue a National Representative System of Marine Protected Areas.
2. Scientific Underpinning: The scientific foundation that underpinned and guided this work represented more than 25 years of significant collaboration between all governments and numerous scientific bodies to establish both the Interim Biogeographic Regionalisation for Australia (IBRA – Figure 1) and Interim Marine and Coastal Biogeographic Regionalisation for Australia (IMCRA). Both have continued to be refined as new information and data becomes available. Progress in achieving the target of protecting at least 10% of the area of each of the 85 terrestrial bioregions has been impressive, with around 52 bioregions containing reservation

Cooper Creek, South Australia. ©Photo: Peter Taylor

levels above this target. The 34 or so under-represented bioregions remain as high priorities for increased protection.

The terrestrially-based National Reserve System (NRS – Figure 2), has laid the cornerstone for biodiversity conservation in Australia and is recorded in a national database, the Collaborative Australian Protected Area Database (CAPAD), along with each reserve's classification in accordance with the management categories of the International Union for Conservation of Nature (IUCN). CAPAD is updated every two years and provides the official record of progress for reporting against numerous national and international obligations, making it quantifiable and open to public scrutiny and accountability (DSEWPC 2010).

A separate strategic policy was established by the Australian Government, within the National Reserve System policy framework, to provide opportunities for Indigenous landholders to declare part, or all of their land, as Indigenous Protected Areas (IPAs – see chapter by Rose in this publication). This work has led to around 35 million hectares being added to the NRS over the last decade (representing around a quarter of the total area in the NRS). The unprecedented success of this program can in part be attributed to the socio-cultural and economic benefits Indigenous communities gain from looking after country. The recognition by the Australian Government of the critical role that traditional knowledge plays in managing remote areas of Australia forms a unique partnership between communities and government that was highlighted recently by the Australian National Audit Office (ANAO 2011).

Strong Australian Government leadership for establishing the National Reserve System has inspired and encouraged engagement from high wealth individuals, corporations and non-government organisations to also make contributions to the NRS. This leverage factor from the private sector relies on strong incentives which include a cost-effective means of achieving more with philanthropic funds through the shared financing model created by the Council of Australian Governments' backing for the policy framework.

While the NRS has rapidly expanded over the last two decades, attention has inevitably grown regarding the effectiveness and sustainability of resourcing for management for the system. The NRS has been criticised for adopting what some perceive to be a narrow, so-called 'lock-it-up' mentality that is often considered as a threat to landholders and resource companies. This myth needs to be dealt with as firstly, protected areas are not 'locked up', but highly productive lands, not of commodities, but for cultural, ecosystem and biodiversity outcomes. They can also often generate economic values through ecosystem services and visitation. Secondly, there are many opportunities to strengthen conservation outcomes in rangelands and highly productive lands if models of partnership with landholders are developed.

Meanwhile, on the broader natural resource management scale, a commensurate rise and expansion of local regional and state-based organisations and groups responding to local and landscape-scale conservation and resource management priorities over the last decade has been evident. The funding available under the Australian Government's Natural Heritage Trust and subsequently Caring for our Country programs have also helped to build capacity and leadership for some of this work. More recently, the Biodiversity Fund and carbon-related initiatives have evolved and promise to support and promote landscape-scale solutions to conservation priorities.

Unfortunately, much of the government funding support, while achieving important outcomes, has tended to be short-term, inflexible and, most worryingly, has failed to strategically garner the extraordinary goodwill, capacity and knowledge of landholders. The 'drip feed' of funding programs can exhaust this critically important social capital.

The sectorally-based nature of policy and funding programs also fail in assisting regional groups to effectively integrate their socio-cultural and economic imperatives with environmental outcomes. The strongest limitations to effective landscape-scale conservation will always be people, and their capacity and willingness to share vision and collaborate. Shared vision, collaboration and integration are central to any successful large-scale conservation initiative.

Southern Tanami Indigenous Protected Area in the Northern Territory: Bruce Rose (Manager of the Australian Government's IPA Program) and Madeleine Dixon (Traditional Owner and Senior Ranger) discussing the CyberTracker survey work being undertaken by rangers. ©Photo: Peter Taylor

The NRS is one of the very few truly all-of-government conservation commitments that is collaborative with a clear and simple vision understood by all. And yet despite these attributes, there are signs that the national support for maintaining or building on the NRS has been declining. The historic Ministerial Council network of government officials that steered protected area policy and collaboration across the states on the scientific underpinning for the NRS was disbanded in 2009. The recent Natural Resources Management Ministerial Council document *Australia's Strategy for the National Reserve System 2009–2030* (NRMMC 2009) effectively has no dedicated network monitoring or steering of its actions. In my view this downgrading of policy capacity and overall attention to implementation unfortunately reflects elements within various governments who overtly embrace 'landscape-scale conservation'. However, they distort the meaning, as championed by international bodies like the IUCN World Commission on Protected Areas and WWF, which emphasises protected areas as the essential core lands upon which larger landscapes are built, to a policy which gives priority to conservation on agricultural or grazing land and relegates protected areas to irrelevance.

This perspective perpetuates a 'siloed approach', and limits much needed integration between the protected area and natural resource management sectors.

Despite declining leadership there are some extraordinary innovations occurring across the country that are often being led through partnerships by communities, some governments and the private sector. These include:

- An initiative being led by state-based conservation covenanting organisations to coordinate reforms in covenanting nationally to ensure consistency and flexible approaches to supporting long-term conservation on productive land.
- Private and public discussions on sustainable financing models for Indigenous Protected Areas.
- The reform of state-based legislation to enable protection of conservation values across different private land tenures (e.g. freehold and pastoral leases).
- Some specific private models looking at the potential of 'carbon farming' as a both a source of income for conservation and a mechanism to encourage new land to come under conservation management.

Figure 1. Bioregionalisation of Australia: The product of 25 years of collaboration between science, government and the private sector. Source: DSEWPC.

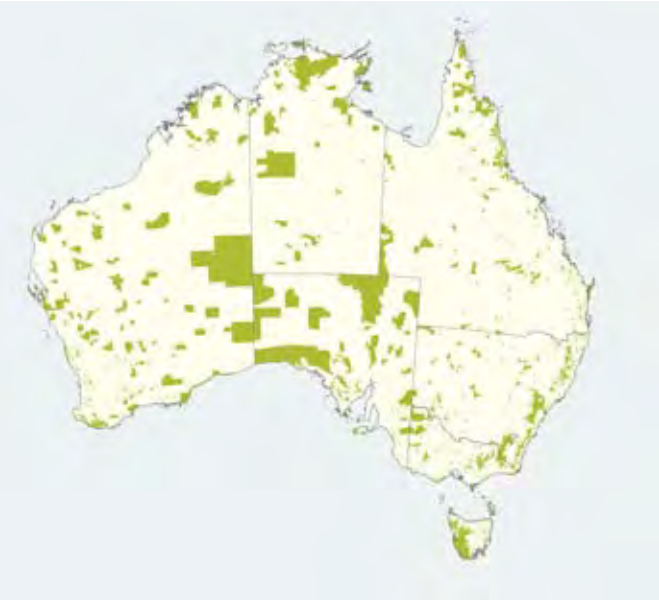

Figure 2. Australia's National Reserve System at 2010: A need now exists to think of new models, paradigms and partnerships to ensure we achieve in perpetuity protection of samples of key bioregions. Source: DSEWPC.

As government leadership and resourcing capacity continues to diminish, strategies for 'innovation for twenty-first century conservation' become even more essential. There is a need to re-think a number of the policy strategies and leadership models we tend to take for granted. New paradigms need to be debated urgently and can be divided into three categories of need as described below.

Enduring national approaches to conservation

As indicated above, the NRS provides a critical cornerstone in Australian conservation. It is world-leading, fully accountable and conforms to international standards, is collaborative, and science-based. *Australia's National Reserve System Strategy 2009–2030* provides the mandate to reform the direction of this work to be more relevant and applicable on productive private land.

Conservation covenanting provides a secure and potentially significant vehicle for NRS reform – with flexible approaches to addressing conservation on productive private land. An innovative project has commenced through an alliance of Australia's covenanting organisations to explore these options – the Australian Land Conservation Alliance. This work needs support and stronger linkages with governments and private landholder networks. An urgent debate is needed among these sectors to explore how best to connect the NRS with a matrix of private land conservation mechanisms, from covenanting through to short-term conservation outcomes. The documentation of these outcomes will enable managers and policy makers to explore issues around accountability and national consistency.

Leadership

The once-vibrant national network of state and Commonwealth officials that provided leadership on NRS policy and maintained the scientific collaboration necessary for the continual updating of IBRA and IMCRA no longer exists. The NRS Strategy has a number of specific actions and challenges to address over the next 20 years. There is no dedicated network responsible for the specific implementation of this Strategy. Although it does fall within the domain of a broad Ministerial Council Working Group (along with the Biodiversity Strategy and the Native Vegetation Strategy), there is no specialist group responsible for the NRS Strategy.

It appears that the momentum of the NRS leadership has slipped. With increasing pressures on the NRS from mining, and groups wanting to open up areas for incompatible uses, leadership at this time becomes critical. A new leadership model is needed – one that considers new paradigms for the NRS and its application on private land in addition to the protection and maintenance of what has already been gained. Leadership options such as an institute, a network of private and public experts, or a Wentworth Group-type equivalent should all be considered. What is important is that it should be a public/private leadership model, recognising that enduring conservation outcomes will increasingly need to involve landholders.

Social capital

Indigenous Australians see healthy country as an intrinsic virtue for healthy culture and society. The Australian Government now recognises the importance of this special relationship between country and people, notably through the Indigenous Protected Area model. While more work is needed to secure this extraordinarily important model, its successes are important when considering the broader conservation debate. The principles we now understand in relation to what is making IPAs successful could be actively considered in the broader private land conservation landscape. There seems to be a perception among many that production and conservation are incompatible and that landholders are not good managers. To varying degrees, landholders across Australia are passionate about looking after country and recognise the importance of high production and healthy land. The knowledge and expertise built over many generations of landholders has ensured that in many areas ecosystems are still intact. This intergenerational knowledge base, while perhaps lacking structure and organisation, does represent capacity in regional Australia that will be essential in helping to lead innovative models for enduring conservation on private land.

Conclusion

At the core of this chapter is the extraordinary and globally significant progress Australia has made in protecting representative samples of our diverse ecosystem types in an enduring National Reserve System. Leadership and collaboration across all governments has been the key ingredient to the success so far. This leadership and collaboration is now lacking, leaving any consistent approach to the NRS 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. While Australian Government leadership is essential, completely new paradigms for conservation will only be achieved with substantial engagement and collaboration from the private sector. The most substantial challenge will be to integrate science, policy and knowledge paradigms to design solutions for conservation. This will require great humility by all parties.

Disclaimer

The views in this paper are my own and not necessarily a reflection of those of my current employer, The Nature Conservancy, or past employer, the Department of Sustainability, Environment, Water, Population and Communities.

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Biography

Following nearly 30 years working with the Australian Government mainly in protected area policy, Peter Taylor commenced work in 2011 with The Nature Conservancy as their Canberra-based Director of External Affairs. Peter's work within the Australian Government spanned Indigenous, marine and private land conservation policy.

Why we need Rick Farley now more than ever

Max Bourke AM

I want to begin by tracing a personal life trajectory and my interest in what I have learned to call 'biodiversity conservation' in that time. I do this not to 'credential' myself but just to point out how quickly ideas and ideology changes. My 50 years in the field is not even a nano-second in 'biodiversity time'.

As a young person, I truly believed that *good* science, *good* laws, and *good* administration would 'save the environment'.

Fifty years ago as a young agricultural scientist working in far western New South Wales, I was persuaded by three radical environmentalists – The Duke of Edinburgh, (Sir) Garfield Barwick, and Malcolm Fraser – that the collapsing farming landscape I was working in required rapid changes in management. I joined their (and Francis Ratcliff's) new organisation, the Australian Conservation Foundation.

Forty years ago with a researcher in the Parliamentary Library, Peter Ellyard, I helped organise a tour by two European intellectuals, Aurelio Peccei and Alexander King to promote their then radical new book *Limits to Growth*[1]. Despite unrelenting hostility from much of the media we managed to get them in front of various politicians and ministers to consider the possibility that the planet had finite resources. Recent research by Dr Graham Turner of CSIRO seems to show that the forecasts of the Club of Rome were, very unfortunately in many respects, quite correct (Turner 2008).

1 This best-selling ever environment book has now sold over 12 million copies in 30 translations.

Ephemeral billabong in a prior stream of the Warburton Creek, with desert coolibah riparian woodland in dunefields. Kalamurina Station Wildlife Sanctuary, South Australia.

Thirty-five years ago, as Director of the Australian Heritage Commission, I contracted Henry Nix to assist us in defining the idea of wilderness places. We believed identifying such places for the Register of the National Estate could preserve what was just beginning to be called 'biodiversity' (a term first used in 1971 – see Farnham (2007)). Sadly we were wrong: the age of the Anthropocene means that there is no wilderness *except in our minds*. Also at that time, along with David Yencken and John Mulvaney, I was involved in setting up the World Heritage Convention, drafting several of the first nominations and representing Australia on the Committee at various times.

Fifteen years ago I teamed up with a long-time friend David Thomas, one of Australia's relatively unknown environmentalists, to assist him in trying to do something about biodiversity loss. David is not a biologist but he is passionate about biodiversity, the threats to it, and what might be done about it. He represents in many ways the great goodwill that exists for Australians to put their own funds to use in biodiversity conservation; but for that to be realised, people in the land management business will have to think like business people. It will require a big change of attitude.

The Thomas Foundation has been one of the largest single investors in biodiversity conservation in the private sector over the last 15 years. Aware of the work of the Trust for Nature, Bush Heritage Australia and the Australian Wildlife Conservancy, Thomas assisted in bringing The Nature Conservancy to Australia. Why? Because 62 years ago it tried, driven solely by ecologists initially, to do something big – really big – for conservation. To some extent its work has influenced all of the organisations I mentioned. But The Nature Conservancy still searches for innovation and has pulled off a number of great initiatives we have not yet tried in Australia.

Democratic capitalism created the environmental issues we have in the United States, Australia and other Western countries, and we have to fully use the tools of our polity to repair and better manage the environment.

There is actually a long history of public, intertwined with private, conservation of biodiversity in Australia. I cite some of the many precedents in a recent paper (Bourke 2011). To move from private land conservation pioneers like Thistle Stead in New South Wales and Reg Sprigg in South Australia, to Bob Brown in Tasmania and Martin Copley in Western Australia, is a leap in scale but not process.

Private philanthropists hope and expect that the private land managers might do as well as or better than public land managers, though the jury is still out on this. As a director of a large investor in private land conservation and as an investor myself, I know that we approach the business of what we do differently from the public sector, *because our constraints are not political, but economic.* Essentially we look, through philanthropic means, for the same indicator we look for in business, namely return on investment: what is the likely bang for the buck? We expect to see evidence of that return before actions, and reporting that reflects the investment as a form of biological balance sheet or profit and loss statement. This is something still not fully understood by the recipients of the funds. Private philanthropists are different from public investors in that way.

Public expenditure on conservation land management (currently greater than one billion dollars) is likely to keep reducing for some time to come. Governments are cutting outlays, not increasing them. Private expenditure on land conservation is likely to be tough over the next five to ten years – the so-called Global Financial Crisis is not over or even halfway through.

In other words, I can see nothing discernible on the horizon, and I include the famed 'wealth' flowing from carbon offsets, that is going to enable a doubling or trebling of the protected area estate over the next ten years.

But is more private and public investment in biodiversity conservation, 'wilderness', landscape-scale conservation or even specific habitat protection, a good investment? Writing a few years ago about the salinity issue, the economist Alastair Watson (2001) said, "When the 'salinity tree' is given a shake, many proposals to tackle problems of dryland salinity fall out, ranging from recommendations based on well-researched scientific and economic analyses to the more common, apparently simple solution from salinity fixers that could be summarised as: 'Dear Taxpayer, Send Money'".

I think the same might now be said about protected areas, at least in so far as new acquisitions go.

While private and public land managers have secured some very large areas for conservation, 73% of land (plus a significant percentage of Indigenous-owned land) is in private management and may not be managed for conservation outcomes now or into the future.

When Harvey Locke, champion of the US-Canada connectivity initiative Yellowstone to Yukon, was visiting Australia as The Thomas Foundation lecturer a few years ago, I was certainly convinced that we had to think more broadly. On the last night of the 'Linking Landscapes Summit' at Kingscliff, New South Wales, in October 2009, at which Harvey spoke provocatively, all of us with scientific training in land management or ecology know that what he said was right – that ten or 20 or even 50% of the land protected will not protect sufficient biodiversity to keep ecosystems going. The area of the National Reserve System is of course important as both an exemplar of what might be possible and as the core refuge for many species. But the huge majority of the continent that is in private ownership or management seems to me where we really need to innovate.

There may still be ways of uniting the activities of private land owners (Indigenous and non-Indigenous) in better conservation outcomes, but it will take a lot more goodwill and effort than currently exhibited, hence I believe a new 'Rick Farley'[2] is needed.

We live in a robust capitalist democratic society, but the gulf between some sectors (e.g. farmers and conservationists), private entrepreneurs, and the public sector still seems wide.

The *Draft National Wildlife Corridors Plan* (NWCPAG 2012) clearly offers one way of dealing with this as the Hon Bob Debus AM wrote in his letter of transmittal to the Minister:

> *The draft Plan reflects our conviction that biodiversity conservation and sustainable land uses can be better integrated across Australia's landscapes in ways that will improve the connectivity and resilience of our natural ecosystems. It recommends a framework for conservation planning, investment and management which, we believe, can bring enduring benefits to our natural environment. Natural resource land managers, local communities and government at all levels can work together with industry to harness resources in ways that strengthen the social and economic fabric of our regions.*

This is good stuff but can it be sustainably funded for a decade or more?

I keep reading about 'foreigners' and 'corporates' taking over Australian farmland, though that is a story that goes back to the nineteenth century. It might just be that a true large-scale takeover of agricultural land by the feared (but not actually present) corporate or large private conglomerates, could be the best thing for conservation going around. Small landholders make up the vast majority of Australia's land owners (and still do despite recent media stories), but they are also largely undercapitalised, cash poor, unable to attract further investment and, like me, elderly. Yes, I worked in corporate agriculture but we probably did much more work on biodiversity conservation than any private farmers I know and the pressures on corporates to do so are much stronger and robust than widely acknowledged. For instance, the Australian Securities and Investments Commission's reporting requirements, plus the pressure of shareholder expectations and the input of more sustainability-conscious younger staff, combine to promote more environmental accountability than is required of most private landholders.

2 Rick Farley (1952–2006) was a major figure in the 1980s and 1990s in Australian land management. Rick Farley had many public roles, from head of the National Farmers' Federation to campaigner for Aboriginal land rights, and is credited with bringing together the agricultural sector with conservationists to successfully argue for the Landcare movement.

A robust, whole-of-farm, externally verified environmental management system might also be a major new direction in sustainable land management. I think the implementation of a system like this could be the most important 'innovation' for the conservation of biodiversity in Australia. This might sound 'out of left field' but unless the 'licence to farm' into the future is secured there will be many more urban/rural disputations. The public are increasingly demanding demonstrable accountability in the food chain for clean, healthy and importantly for livestock producers, humanely managed farms. Farmers would do well to actually see that the majority of Australians want well-managed land for food and fibre production as well as its products.

At a recent meeting of people interested in the work of the Australian Land Management (ALM) Group its CEO, Tony Gleeson (2011) said that, "we need to think about land management as the management of our impacts rather than it being the management of the resources themselves. Second, we need to recognise and reward individual land managers for improving verified environmental performance."

Gleeson went on to describe what underpins the ALM Group's Certified Land Management System: "...(it) ensures environmental considerations are an integral part of the business rather than necessarily being solely restricted to a particular conservation or remedial goal. It is a way to form close links between conservation and production, and it is a way to focus on people and what they can do to improve environmental outcomes" (Gleeson 2011).

I think a widely adopted conservation management system that covers total land management (and incidentally picks up animal welfare), not specific crop production such as we have at present, could be an important mode of 'securing' better land conservation outcomes. Incidentally, it could lead to people believing that farmers are environmental stewards rather than the farmers asserting that they are.

IUCN could play an exemplary and promotional role in promoting such a system, which would give us gains of orders of magnitude greater than we might otherwise achieve through protected areas alone.

My other positive suggestion for the twenty-first century is to encourage greater and better covenanting systems than we have at present. Here too The Thomas Foundation has been assisting in establishing the newly-formed Australian Land Conservation Alliance. This could be a hugely important initiative if we can get appropriate legal systems operating in all jurisdictions. The Trust for Nature (Victoria) is an outstanding exemplar but there may be other models that work.

Off-reserve conservation is absolutely crucial too if we are going to make any headway with invasive species. We cannot make the country a sterilised zoo but we do need to tackle everything from cats and foxes to gamba grass on private and leasehold land.

Conclusion

The thesis of the symposium which preceded this publication was that 'the future of conservation in a changing world will require innovative thinking and inclusive approaches'. Thinking outside the square seems to me to be about thinking of ways to link what is outside the reserves with them.

There now seems to be a body of serious data emerging that suggests farmers need to be much more cognisant of what city people think, even if they do not want to do so. Both the results of the recent saga about exports of live cattle to Indonesia and more level-headed academic studies of attitudes point to this.

The Thomas Foundation has been a major investor in privately-owned reserves and has been very pleased with the outcomes. But in this chapter I look to the future.

I really did not know Rick Farley at all well.[3] But I read a lot about what he did and we had many mutual friends. It seemed to me that he was forging and had forged something that was truly outside the square. Not every farmer in Australia believed or followed what he did, but boy was he on the right track.

3 The Thomas Foundation contributed to the Rick Farley Award set up by Bush Heritage Australia some years ago.

Mesas at a stormy dawn, Ethabuka Reserve, northern Simpson Desert/Channel Country, southwest Queensland. ©Photo: Wayne Lawler/AUSCAPE All rights reserved

Andrew Campbell in his recent review of the biography of Rick Farley asked the questions: “Where are the national leaders of industries and other sectoral interests who can challenge our sense of what is possible, and appeal to our enlightened self-interest, to our better selves, with a clear moral sense of what’s right? When did we last see a peak representative body deliberately and strategically reach out to its perceived opponents, seek to understand their position fully, and commit to work together to find a way through?” (Campbell 2012).

Perhaps I give no answer to the thesis of the symposium, and of this publication, other than asking another question. I hope though that a homage to Rick Farley might provoke someone to take up the challenge. I believe a mighty alliance is called for between those of us who want better environmental outcomes and those of us who manage most of the land in the country. I hope I have suggested that we need more focus on the more than 75% of Australia that is in private management to truly make big leaps of significance in biodiversity conservation.

We have the tools to do the job, you need to look no further than Hugh Possingham’s work to see what we should be preserving, and you need to look no further than David Lindenmayer’s work to see how we might do it on the majority of Australia’s farmlands; we have the smarts, this is a rich country and a biodiverse one. Let’s find that one good person to bring it all on.

Acknowledgements

Two scientists have nurtured, though they do not know it, my thinking about these issues over the last decade; they are Professors David Lindenmayer and Hugh Possingham. I have been listening to what they said.

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Biography

Max Bourke has been a jackaroo, agricultural scientist (who studied history at university), science broadcaster, senior public sector manager, chairman of a large farming company and involved in environmental management and philanthropy for many decades. He was recently Executive Director of The Thomas Foundation (www.thomasfoundation.org.au), Advisory Board Member of The Nature Conservancy's Australia Program and Director of The Australian Environmental Grantmakers' Network.

Innovation in conservation and the Convention on Biological Diversity

Peter Cochrane

In 2005, Sir George Cox, the chair of the UK Design Council, presented a report to the UK government on the importance of creativity to business success and national prosperity. Cox defined 'creativity' as the generation of new ideas – either new ways of looking at existing problems, or of seeing new opportunities, perhaps by exploiting emerging technologies or changes in markets.

"'Innovation'," Cox wrote, "is the successful exploitation of new ideas. It is the process that carries them through to new products, new services, new ways of running the business or even new ways of doing business. 'Design' is what links creativity and innovation. It shapes ideas to become practical and attractive propositions for users or customers. Design may be described as creativity deployed to a specific end." (Cox 2005, p. 2).

Rather than straitjacket these important concepts with definitions however, I will focus on some key sets of attributes of these processes and illustrate them with quotes with a tenuous biodiversity flavour.

Firstly there is Imagining – curiosity, wondering, ideas, and dreams. Walt Disney said, "If you can dream it, you can do it. Always remember that this whole thing was started with a dream and a mouse."

Secondly there are the aspects of Challenging – unorthodoxy, fresh eyes and perspectives, crossing boundaries, testing and if necessary jettisoning assumptions and 'business as usual' mentality, and flexibility.

A number of quotes illustrate this theme. Albert Einstein said, "If at first the idea is not absurd, then there will be no hope for it." W.C. Fields said, "Remember, a dead fish can float down a stream, but it takes a live one to swim upstream." John Steinbeck said, "Ideas are like rabbits. You get a couple and learn how to handle them, and pretty soon you have a dozen." And from another famous American, George W. Bush, "Our enemies are innovative and resourceful, and so are we. They never stop thinking about new ways to harm our country and our people, and neither do we."

This highlights both the novelty and the need for caution in thinking innovatively.

Kalka-Pipalyatjara Indigenous Protected Area in South Australia. ©Photo: Parks Australia

Thirdly there is a bundle of concepts around **Doing** – translating ideas into new applications, products, services, approaches, and their delivery. I found many insightful quotes around a common theme that there is no success without failure.

And lastly **Education** and **Research**, together with close relationships with those who have problems and potential applications (e.g. managers) are important elements of innovation. Of course, innovation is clearly not the sole preserve of academia as Eric Hoffer said: "In times of change learners inherit the earth; while the learned find themselves beautifully equipped to deal with a world that no longer exists."

Impetus for innovation

Let me turn to the impetus for innovation, and in particular for innovation in conservation.

Some key drivers are external factors such as change, intensifying pressures on natural resources, land, water, the atmosphere, habitat loss, resource constraints that lead us into active debates about triage and prioritisation, as well as those internal, human factors that I believe we all share such as a passion for the natural world in which we and others live, and a deep concern and curiosity about the world.

There are myriad opportunities in front of us: an active and intelligent research community, a history and acceptance of innovation in both the public and private sectors, technology, the internet, social media, philanthropy, and a willingness and interest in working in and finding new partnerships. And everywhere where there is a problem to solve, an issue to address, there is an orthodoxy to challenge.

Let me now draw heavily on some great work from a guy called Steven Johnson. Many of you will be familiar with TED talks (www.ted.com) and if you aren't, I encourage you to dip into this fascinating resource of ideas and thinkers. Googling 'where good ideas come from' will lead you to a Steven Johnson book, and two talks: one illustrated which is entertaining as well as insightful, and a longer, very thoughtful exploration of the environments in which good ideas emerge.

His key thesis is that good ideas emerge and evolve though connected minds. He argues that the advent of coffee and tea houses in Europe was a significant impetus for the Enlightenment – where the effects of a stimulant, and an environment where people could meet to discuss and test ideas – marked a significant break from an alcohol-dominated social world. Johnson, while admitting that stochasticity is important for idea generation, argues that chance favours the connected mind.

The scientist credited with the world wide web, Tim Berners-Lee, did not have the eventual concept as his goal. It started with a side project to better organize his own data. After a number of dead ends and abandoned attempts, and discussions with colleagues, his ideas evolved and became the underlying framework for the internet.

The genesis of Global Positioning Systems arose from two scientists curious about the first Soviet satellite – a great novelty at the time. In their spare time they discovered they could pick up its radio signals. They detected a pattern and wondered if they could use that to predict and describe its orbit. After a bit of work they discovered they could. A later conversation with a colleague who was grappling with the problem of locating and positioning nuclear submarines so they could launch and target missiles accurately, inverted the problem – could they use a stationary satellite to track a moving object? They figured they could, and we now have the network of fixed satellites that provide the signalling that gives us our location information and an ever-growing array of applications, products and services – like using your iPhone to find the nearest coffee shop.

Australia's record of innovation in conservation

Australia has a great and well-deserved reputation for innovation, particularly in conservation.

Firstly, I restate my standard key messages: we have nearly 10% of global species diversity, 80% of this endemic, and as we are a developed and wealthy nation, we have a responsibility and a capacity to act to safeguard this rich natural heritage.

But we don't have unlimited resources.

However we do have many very smart, dedicated people; good institutions; a preparedness to try new approaches, be flexible, to take risks; and a preparedness to adopt, adapt, and adjust what we and others have done.

Australian Alps National Landscape. ©Photo: Parks Australia

There are a number of innovations that we can justly be proud of.

Indigenous Protected Areas – breaking the orthodox mould for protected areas being the preserve of public sector agencies, respecting and supporting Indigenous peoples' knowledge and responsibilities for looking after country, investing significantly and working in new partnerships, and formally acknowledging the outcomes as significant contributions to the national conservation estate (see chapter by Rose in this publication).

The 'Healthy Parks Healthy People' initiative from Parks Victoria – an agency with a well-deserved reputation for breaking out of orthodox thinking, and trying to engage and enlist new constituents and collaborators to help with their mission. Reaching out so effectively to the health and medical profession to articulate the synergies and mutual benefits of working together has been inspirational and attracted world-wide interest and increasing adoption in other countries (see chapter by Walker in this publication).

Indigenous carbon farming – starting in an ambitious way with the West Arnhem Land Fire Abatement project where science, traditional burning, the aspiration to re-establish and support people looking after their country for cultural and ecological reasons, and the opportunity to reduce carbon emissions for a large industrial project created a compelling case for a significant investment by a major resource company. This subsequently formed the basis for two government programs, the first to test the concept, and the second to support the implementation of Indigenous carbon farming more broadly.

Some different Australian innovations include initiatives where investments have been conditional on collaborations across boundaries such as the Cooperative Research Centres program, and more recently the National Environmental Research Program. These approaches create bridges and opportunities for researchers and research users to collaborate and work more closely together.

The Convention on Biological Diversity

Finally, let me outline, given all of this, how I think the Convention on Biological Diversity (CDB) offers a great framework for innovation in conservation.

The Convention has the following three key objectives:

- Conservation of biological diversity
- Sustainable use of its components
- Fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

To deliver these objectives, seven thematic programmes of work have been established (listed below) which correspond to some of the major biomes on the planet. Each programme establishes a vision for, and basic principles to guide, future work. They also set out key issues for consideration, identify potential outputs, and suggest a timetable and means for achieving these.

- Agricultural Biodiversity
- Dry and Sub-humid Lands Biodiversity
- Forest Biodiversity
- Inland Waters Biodiversity
- Island Biodiversity

- Marine and Coastal Biodiversity
- Mountain Biodiversity.

There are also key matters of relevance to all thematic areas. These 19 cross-cutting issues provide bridges and links between the thematic programmes:

- Aichi Biodiversity Targets
- Access to Genetic Resources and Benefit-sharing
- Biodiversity for Development
- Climate Change and Biodiversity
- Communication, Education and Public Awareness
- Economics, Trade and Incentive Measures
- Ecosystem Approach
- Gender and Biodiversity
- Global Strategy for Plant Conservation
- Global Taxonomy Initiative
- Impact Assessment
- Identification, Monitoring, Indicators and Assessments
- Invasive Alien Species
- Liability and Redress
- Protected Areas
- Sustainable Use of Biodiversity
- Tourism and Biodiversity
- Traditional Knowledge, Innovations and Practices
- Technology Transfer and Cooperation.

Work under the Convention on communication and education recognises seven major stakeholder groups:

- Business
- Local Authorities
- Parliamentarians
- Universities and the Scientific Community
- Children and Youth
- The Green Wave for Schools
- Non-Governmental Organisations.

This is a complex framework – but it is global and provides an opportunity for (virtually) all countries of the world to participate. Importantly much of the practical implementation of the Convention is transacted and framed in meetings, workshops and networks, that are focussed on training, capacity building and experience sharing. Ideas that are tested in one place or context are considered and tested in other places and contexts. The Convention Secretariat acts as a clearing house for ideas, tools and learning that can be adopted, adapted and used in different ways. The thematic programmes, the cross-cutting issues and the stakeholder groups, provide important ways of linking across disciplines and interests to foster new collaborations and ideas.

Nagoya Protocol

The most recent elaboration of the CBD is the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits, which sets out the international agreement on how to approach the third objective of the Convention. At its heart lie two key principles: prior informed consent and mutually agreed terms.

The Protocol establishes that a person or institution seeking access to genetic resources in a foreign country should seek the prior informed consent of the country in which the resource is located. Moreover, the person or institution must also negotiate and agree on the terms and conditions of access and use of this resource with the resource owner. This includes the sharing of benefits arising from the use of this resource with the provider as a prerequisite for access to the genetic resource and its use.

Conversely, countries, when acting as providers of genetic resources, should create conditions to facilitate access to their genetic resources for environmentally sound uses and not impose restrictions that run counter to the objectives of the CBD.

Genetic resources, whether from plants, animals or micro-organisms, are used for purposes ranging from basic research to the development of products. Users of genetic resources include research and academic institutions, and private companies operating in various sectors such as pharmaceuticals, agriculture, horticulture, cosmetics, and biotechnology.

In some cases, traditional knowledge associated with genetic resources that comes from Indigenous and local communities (ILCs) provides valuable information to researchers regarding the particular properties and value of these resources and their potential use for the development of, for example, new medicines or cosmetics. According to Article 8(j) of the CBD: "Parties shall respect, preserve and promote the knowledge, innovations and practices of ILCs relevant to biological diversity, with the approval and involvement of the holders of such knowledge and encourage the equitable sharing of benefits arising from its use."

So the Nagoya Protocol is setting a framework within which diverse interests must cooperate – including research institutions, pharmaceutical and biomedical companies, governments, land owners, and Indigenous and local communities where they own natural resources or contribute their knowledge.

Australia has recently initiated a series of Biodiscovery Forums in the South Pacific, jointly funded by AusAID and the German overseas aid delivery agency. The first one of these forums is underway in Nadi, Fiji. The aim of these forums is to share ideas and experiences on the Nagoya Protocol from countries such as Australia that have a lengthy experience in making these arrangements work. A key area of interest is exploring the potential for local conservation and economic outcomes from investigations and studies into the economic potential of biodiversity.

The CBD therefore provides a framework for meeting, sharing, exchanging and growing ideas, connecting people from diverse cultures, capacities, and political, economic and social contexts. It creates a valuable framework for people to cooperate and learn.

The history of ideas suggests that innovation can be particularly fruitful in circumstances where people with ideas meet others with problems to solve, in an environment where new ideas are invited and respected, assumptions tested, and the constraints of past thinking do not limit future possibilities.

Much like the opportunities provided by IUCN, and more particularly the Australian Committee for IUCN.

Nantawarinna Indigenous Protected Area in South Australia.
©Photo: Parks Australia.

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Biography

Peter Cochrane was first appointed Director of National Parks in 1999. His priorities include building relationships with Traditional Owners of jointly managed parks, the tourism industry and other stakeholders. He has also focussed on improving agency performance and reporting, corporate governance, risk management and working with partners at a broad landscape scale. He is a member of the IUCN World Commission on Protected Areas and an inaugural member of the World Protected Areas Leadership Forum. Peter has worked for the oil and gas industry and as a Ministerial adviser on environment and natural resources issues.

A collaborative future for conservation: lessons from connectivity conservation

Carina Wyborn

While past conservation efforts focused on conserving sites and species, we have seen an increasing emphasis placed on managing landscapes and processes. Ecological processes do not respect our socially constructed boundaries of tenure and jurisdiction, so adequate management of the landscape as a whole requires a collaborative approach. Collaboration is central to the future of conservation and has in fact been part of much mainstream conservation practice for the last 30 years. The Australian Landcare program demonstrated that, by working together, collectives of people can be inspired to achieve more than they could individually. However, despite a long history of collaborative land management, groups still face significant challenges in aligning efforts to meet a common goal.

This chapter discusses findings from interdisciplinary social research on two case studies of connectivity conservation, Habitat 141° in Australia and the Yellowstone to Yukon Conservation Initiative (Y2Y) in North America. The quotes below were taken from qualitative interviews with staff members, partners and affiliates of the two initiatives between 2010-2012. The interviews focused on the governance and science of connectivity conservation and frameworks to support collaborative conservation across large spatial scales.

Originating from an alliance between scientists and activists, Y2Y is an advocacy-based environmental non-government organization (ENGO) focused on habitat connectivity for Grizzly Bears (*Ursus arctos horribilis*) that began in the early 1990s. Y2Y covers five US states, two Canadian provinces, two Canadian territories, and the traditional territories of 31 First Nations groups. Recognised as an international leader in large landscape conservation, Y2Y provides inspiration to connectivity efforts around the world. Habitat 141° is an emerging effort in south-eastern Australia focused on fostering collaboration between various government agencies, ENGOs and community stewardship groups working in the region. The area includes three states and five natural resource management bodies.

Glacier National Park, a core protected area in the Yellowstone to Yukon Conservation Initiative. ©Photo: Jason Irving

Connectivity conservation aspires to enable local groups and communities to make decisions in their region while working towards a landscape-scale vision. Connectivity conservation is a conservation philosophy distinct from, but related to, the concept of ecological connectivity. Two key factors distinguish connectivity conservation from previous conservation efforts. First, the spatial scale of their vision – these initiatives often cover hundreds to thousands of kilometres – and second, the explicit commitment to social values, aspirations and collaborative land management (Worboys et al. 2010; Wyborn 2011). To achieve the overarching goal of improving landscape-scale ecological connectivity, connectivity conservation requires different actors across a vast landscape to align and coordinate their programs. This presents a significant challenge for collaboration as the organisations or actors are often guided by diverse aspirations, values and mandates.

From collaborative vision to collaborative practice?

Having a guiding, long-term vision is a central pillar of connectivity conservation. The vision of connectivity focuses on people connecting and restoring landscapes and serves to captivate audiences and rally support from the community, landholders and funding agencies. The role of the vision is to both inspire and align: the articulation of a vision for the future landscape is intended to motivate different actors to coordinate towards a particular goal. In the case of Y2Y, the vision plays on the magnificent scenery and wildlife of Yellowstone National Park and the Yukon Territories while incorporating the scientific principles of the initiative (Chester 2006). In contrast, Habitat 141° draws heavily on the idealisation of collaboration among local communities. Both Y2Y and Habitat 141° strongly emphasise the central role the vision plays in the initiative. As the Y2Y executive director states:

> *"I think the vision itself, it's so compelling, that's what's allowed us to be successful because it resonates with lots of folks and they want to get engaged in…organic initiatives as a result of the power of the vision. All kinds of folks in organisations have become engaged and done various pieces of the work that needs to be done because the vision's so exciting." (Y2Y Executive Director)*

The vision is critical to collaboration, as it serves as the direction, inspiration and touchstone in the difficult process of negotiation among diverse actors. However, collaborative conservation requires action beyond the inspiration: turning a big vision into action can be very challenging. A shared vision is one thing; learning to work together is completely different:

> *"In hindsight why wouldn't you subscribe to that vision?…It's a bit like saying I'm going to form a football team and then win the grand final…it's easy to have the vision…it's actually winning the premiership that is the hard bit…" (Participant Habitat 141° Governance Working Group[1])*

A vision cannot substitute for open communication about both the goals of a collaboration and how the collective will work together. Miscommunication over simple language is common in the early days of a collaboration – words like 'partnership', 'leadership' or 'ownership' can embody a range of meanings for different people. This is particularly prevalent in collaborations of diverse actors who tend not to share terminology or modes of operation (Wondolleck and Yaffee 2000; Huxham 2003). Overcoming differences in language or ways of working together have to be built over time.

In collaborative conservation it can be useful to separate the 'task list' from the collaborative process. The 'task list' compromises the projects or programs delivered by a group, while the process is the dialogue that produces the task list and sustains the collaboration (G. Burnett pers. comm. 2012). Projects and programs will be initiated and completed but the dialogue is ongoing. Open and unstructured gatherings at the outset of a collaboration can allow participants to get to know one another, building trust and shared understanding of the different perspectives in the group (Imperial 2002). From this platform, projects and ideas often organically emerge. Trust is a vital ingredient in successful collaborations; we know that without it collaborative endeavours are likely to fail, yet there is no magic recipe for building trust (Wondolleck and Yaffee 2000). Trust is shaped by previous expectations and perceptions of the behaviour of the different actors and these perceptions can be difficult to overcome (Huxham 2003):

1 Quotes referenced to 'Habitat 141°' are taken from members of a working group formed to develop governance arrangements for Habitat 141°. Cited quotes come from a range of participants, however personal particulars are removed for sake of anonymity.

"Trust is a fundamental issue…can we trust government? They haven't worked with us before, they told us what to do before, we don't agree with them." (Habitat 141°)

Again, this issue is more challenging among collaborations of diverse groups working in complex partnership arrangements. This can be overcome by starting with small wins – the low hanging fruit – to build and strengthen trust and gradually increase willingness to take risks (Huxham 2003). Collaborative capacity will not happen instantly:

"I think collaboration has to be practiced, and it has to be learnt and practiced to be demonstrated." (Habitat 141°)

Collaboration is a skill that can be improved over time through practice. In the early days, working on tangible projects can be more productive than focusing too much on discussing governance structures:

"I think one of the things we forgot early in the piece is that collaboration actually involves people…we were trying to get structures in place when really what we wanted was people…engaging with each other…once they get to know each other, they are going to start developing projects together anyway." (Habitat 141°)

Discussing governance is an important element of establishing collaboration but it is important to recognise that building successful collaborations requires more than simply outlining the structural principles of governance. The success of a collaboration also depends on the more intangible and informal norms and values guiding and shaping the culture of practice.

Principles for practice

What then are some principles to foster an effective culture of collaborative practice? The foundations of good governance and collaboration are well established: trust, integrity, inclusivity, transparency, accountability, reciprocity and communication (see, for example, Folke et al. 2005; de Loe et al. 2006; Lebel et al. 2006; Lemos and Agrawal 2006; Lockwood et al. 2009). These basic principles should not be lost in the excitement about innovation and new models conservation. Beyond those general principles, the following principles for collaborative practice have been observed from the experiences of Y2Y and Habitat 141°.

Compromise

"They are afraid that when you…collectively work through solutions, that everything gets compromised…but it's not about everybody losing, it's about trying to find a solution that addresses a mix of things, in a way so you don't necessarily get everything you want but the trade-offs are such that you can see it all working." (Y2Y Partner)

Compromise does not have to be about watering down a deal to satisfy the lowest common denominator. It is also about coming to the negotiation table with a willingness to listen to others and to shift your position to work towards common ground. This has been coined the '80/20 rule' by the Blackfoot Challenge, a collaborative conservation initiative in Montana. The 80/20 rule is about working towards solutions all agree to rather than clashing on hotly contested issues that divide the group. Building trust through working on the '80%' enables the group to address more contentious issues through a platform of trust (G. Burnett, pers. comm. 2012).

Humility

"Giving up control, and somehow being less concerned about who gets credit for what…[you] do have to give up certain aspects of control to be successful in the long term." (Y2Y Partner)

This capacity to compromise comes with fostering a culture of humility: having the willingness to accept the position of another group or individual or to enable somebody else to take the credit for work that is done. Collaborative practice should support and enable people to carry out conservation actions at all scales. Enabling groups or individuals to take ownership over the work they have completed is important. In a collaborative context it is important to negotiate fair allocation of credit where credit is due, and ensure that more powerful actors do not receive the accolades for work conducted by smaller groups less able to capture the spotlight.

Wetland within productive landscape in Habitat 141°. ©Photo: Ben Carr

Learning

> *"If you are trying to build on what is happening… whether it is putting stuff on the ground or the way you run it…you need to be…evaluating yourselves to keep learning from experience." (Habitat 141°)*

Humility also extends to the ability to reflect on and learn from past practices. It means conceptualising collaborative practice as an ongoing process of learning from both success and failure across many levels: from adaptive management in project implementation, social learning between participants, through to formal evaluation mechanisms and processes within governance.

Patience

> *"Hasten slowly! There needs to be…progress but we need to pull back and make sure that everyone is on board, use the touchy-feely stuff, there is no doubt about it that it's about relationships…to hasten is about communicating the message that there is progress, slowly…[is about] making sure that everyone is keeping up with the process." (Habitat 141°)*

Building trust and collaborative capacity takes time, resources and energy. The early days of collaboration are often plagued by 'collaborative inertia', whereby the initial outputs take longer than expected as the group learns to work together (Huxham 2003). Even successful collaborations later reflect on the mismatch between initial expectations of progress and the time it takes to demonstrate progress. This takes time, and patience…lots of patience.

Flexibility

The culmination of these principles suggests a need for flexibility across many elements of collaborative practice. Flexible decision-making structures enable a program to adapt to changed social, ecological or political context: allowing groups or individuals to opt in or out of specific projects or elements of a project due to changed circumstances or desires, or conversely, respecting the desire of an actor to pursue an agenda that may only tangentially be related to the overall vision. Flexibility is essentially about embodying the principles of adaptive management in collaborative practice through a willingness to experiment with different approaches and learn from experience over time.

Conclusion

Around the world we are seeing an increased emphasis on partnerships and collaboration as central to supporting healthy communities and landscapes. As one manifestation of this approach, connectivity conservation faces both challenges and opportunities for collaborative practice. Building and nourishing collaborative capacity is not an easy task, particularly when bringing together diverse groups of people. It requires effort beyond simply outlining the formal structural relationships of governance to include building relationships and fostering trust in an initiative. The principles outlined in this chapter – compromise, humility, learning, patience and flexibility – provide a framework of values to consider when working in or establishing collaboration. It is hoped that these principles can contribute to creating a culture of collaborative practice to sustain healthy, vibrant communities and landscapes into the future.

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Biography

Carina Wyborn is a PhD student from the Australian National University in Canberra. She is an interdisciplinary social scientist with a research focus on the social dimensions of environmental change and collaborative approaches to connecting science with policy and practice. Carina's doctoral research examines the implications of up-scaling collaborative conservation in landscape-scale connectivity conservation in Australia and North America. She teaches in the Human Ecology program at the Fenner School of Environment and Society and holds a scholarship from Land and Water Australia and the CSIRO Climate Adaptation Flagship.

Indigenous Protected Areas – innovation beyond the boundaries

Bruce Rose

The Australian Government's Indigenous Protected Area (IPA) Program has been in place since 1997/98. The Program is a mechanism to increase the representativeness of the National Reserve System through the voluntary inclusion of Indigenous estates and by supporting the development of cooperative management arrangements.

In its development over nearly 15 years it has been a story of ongoing innovation. The concept of the IPA Program was a response to the growing international and national recognition of Indigenous rights in conservation and sustainable development in the 1980s and 1990s. It was also a pragmatic recognition that a large area of land in natural condition was under Indigenous ownership and Australia's commitment to a comprehensive, adequate and representative reserve system was not possible without including Indigenous lands (Boden and Breckwoldt 1995). However, Indigenous land title under Australian law had often been hard-won and so models that required loss of title or even shared title were unlikely to succeed.

The IPA Program has been the main source of funding to Indigenous interests[1] to work through the consultation and planning steps leading up to an IPA declaration and for the implementation of management activities on declared IPAs. IPAs are planned, voluntarily declared as protected areas and managed by Indigenous interests over the land and sea areas where they have custodial responsibilities.

1 The term 'Indigenous interests' is used in this chapter to refer to the Indigenous groups, organisations or individuals that have or would assert rights and interests over a particular area of land or sea. These might include one or all of Indigenous Traditional Owners or Native Title holders (or claimants), Indigenous communities or families, Indigenous corporations or associations, or representative organisations such as land councils.

Ranger Leon Wallis on Giangurra Beach in the Yanyuwa Indigenous Protected Area in the Northern Territory, being trained in marine debris cyber tracking by Tangaroa Blue. ©Photo: Parks Australia

IPAs do not have a formal legal framework in place as is the case for legally gazetted protected areas such as national parks. They rely instead on the Indigenous interests having declared or dedicated their land and/or sea for a conservation purpose in line with deeply held cultural commitments to the health of wildlife and the environment. Governments are then invited to recognise IPAs as a part of the National Reserve System, consistent with the "legal or other effective means" phrase within the IUCN definition of a protected area.[2] IPAs are required to have a plan of management before they can be recognised by the Australian Government. The plan of management identifies the values of the area, the threats to those values and the management goals, including the relevant IUCN protected area category or categories (there may be more than one) for which the area will be managed.

The lack of a legal framework has been argued as a weakness of the IPAs as there is nothing to stop an Indigenous community from changing its view and effectively 'un-declaring' an IPA. However, government protected areas can also be de-gazetted, albeit through a legal and publicly accountable process. It is also likely that the lack of a formal Western legal basis for IPAs has been vital for their acceptance and popularity with Indigenous interests. This has ensured they remain Indigenous-owned, has allowed communities to observe the benefits to their communities, and thus could be the key to their future success, strength and security. It has also made it possible for IPAs to work over different forms of tenure depending on the circumstances at the local and regional level, because they are not constrained by legislation.

The expanding IPA network

There are now 51 declared IPAs in Australia covering a total of 36.5 million hectares of land and and sea country. This constitutes over 30% of Australia's National Reserve System. A further 43 IPA projects are underway across Australia working through the planning and consultation steps leading up to the point at which the Indigenous interests will make a decision whether or not they wish to declare an IPA. These 'consultation' projects cover land and sea areas exceeding the total area that is already declared under IPAs. This means that there is the potential through the IPA projects that are currently underway to more than double the size of the declared IPA estate.

There are other Indigenous land owners not currently involved with the IPA Program that have expressed an interest in exploring IPA development. The Australian Government's $50 million commitment to IPAs through the Caring for our Country program is fully committed to the existing IPA projects, so there has been no capacity within the existing funding allocation to initiate new projects over the last two years. Some potential IPA projects have sought funding from other sources to assist them to develop plans for country and to consult over their future management aspirations. It is likely that these groups will come forward in the future with IPA plans and a mandate from their Indigenous custodians seeking recognition from governments as IPAs.

The reason why there is a high demand for IPAs are varied. Culturally, communities value their land and sea country above all and wish to see it healthy and productive, especially of native food species. Declaration of an IPA can attract funding from government and other partners for desired management activities and for ranger jobs. Significantly these jobs value and incorporate traditional knowledge alongside Western science and enable Indigenous people to have employment within their community and stay on country. Another element of considerable importance is that there is increasing evidence that working on land management has real benefits to health, education, employment and social cohesion (Hunt et al. 2009).

While the IPA Program has been the primary source of funding for IPAs this may not be the case in the future. IPAs have been very successful in accessing funds from the Australian Government's Working on Country Indigenous rangers program. Increasingly, IPAs are embracing a wide range of partnerships with other tiers of government, non-government organisations, private industry, philanthropic donors and research agencies. IPAs are also generating their own income from activities including tourism, the sale of permits, and contracting the provision of natural resource management services.

2 A protected area is a "clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (Dudley 2008).

Recent developments on existing protected areas and multi-tenures

The IPA Program began by supporting Indigenous land owners to develop and declare IPAs on their land and sea areas. The Program also included a co-management stream which supported Indigenous interests to work with existing protected area managers to progress cooperative or joint management arrangements over existing government-declared protected areas that were within their traditional estates. Recently these two separate streams of the IPA Program have begun to coalesce with some state and territory protected area agencies recognising IPA declarations over existing protected areas.

One example is Mandingalbay Yidinji IPA near Cairns in Queensland which covers a range of conservation tenures (national park, forest reserve and local government reserve) over which co-existing Native Title has been determined by the Federal Court. The IPA also includes an environmental reserve where Native Title was extinguished by an earlier tenure, as well as part of a state marine park where exclusive Native Title has been recognised above high tide (see chapter by Leverington in this publication).

The IPA consultation process for the Mandingalbay Yidinji IPA used a 'country' based approach. This approach looked at the the Mandingalbay Yidinji people's conservation and cultural aspirations from the perspective of understanding the traditional totality of their sea/land country which underlies different formal tenures. Mandingalbay Yidinji were able to work with the relevant management agencies for the different tenures to agree a set of arrangements that recognised both the management purpose for the area and the Mandingalbay Yidinj management and cultural aspirations. IPA status over the existing protected areas recognises the continuing Indigenous values of the country and complements the existing management arrangements[3].

The Mandingalbay Yidinji saw this process as putting their country 'back together' through the recognition of an overarching framework of Indigenous values and management arrangements across different tenures. The IPA framework also enables the government conservation agencies to better manage the Indigenous cultural values of their respective protected areas (by providing mechanisms which were not there previously for Indigenous engagement on these issues).

This development, whereby IPA status is recognised over an existing protected area by state/territory and federal governments, has also been implemented in the Northern Territory with the declaration of the Yanyuwa IPA over Indigenous-owned lands and Barranyi (North Island) National Park in the Gulf of Carpentaria. Here the underlying legal arrangements for the National Park are established through a joint management arrangement between Traditional Owners and the Northern Territory Government. The recognition and integration of Indigenous values and management objectives into the formal park management arrangements is being given effect through a revised plan of management for the park with ownership of the land returned to Indigenous interests and a lease-back arrangement for the ongoing management.

In the case of Barranyi National Park, joint management is being progressed as part of the broader Northern Territory approach to joint management on national parks. The potential to overlay this arrangement with an IPA was recognised through the IPA planning process. The IPA aspirations and the joint management arrangements were part of the same outcome, recognising Indigenous values and interests in the ongoing management of the area. In this way the IPA and the joint management arrangements can recognise and reinforce each other.

IPAs have been developed on Indigenous-owned[4] areas where the land owners can choose the purpose for which their land or sea is managed. They have also been recognised over existing conservation tenures as in the examples above. In both cases the designated purpose for the management of the land (as designated by the land owners or through the gazettal of the protected area) is for conservation with varying levels of sustainable resource use depending on the IUCN protected area category assigned to the area.

There is increasing interest from Indigenous groups in whether IPAs might be developed on land and sea areas that are neither Indigenous-owned nor gazetted for conservation. This would mean that the development of an IPA would change the purpose for which the area is managed, with the agreement of the land owner or any other interests that might be affected. An example

3 Further information on the Mandingalbay Yidinji IPA can be found at www.djunbunji.com.au/ipa

4 Indigenous owned areas over which IPAs have been declared include different forms of tenure such as freehold land, Aboriginal Land Trusts or pastoral leases. The key requirement is that the tenure arrangements in place enable the Indigenous community to determine that the land be managed primarily for conservation in line with IUCN protected area guidelines.

of this approach would be the establishment and recognition of IPAs over the sea (where there are generally non-exclusive Indigenous rights) or on other non-Indigenous land tenures.

IPAs on Sea Country

Coastal Indigenous interests who have been involved with developing IPAs have expressed the view that they want to manage both their land and sea country as IPAs. For these groups the separation of land and sea is incompatible with their view of country and their cultural responsibilities to care equally for their customary land and sea estates.

The Australian Government's IPA Program has supported a number of groups to undertake planning and consultation around their aspirations to develop sea country IPAs. Interestingly there has been no policy framework in place relating to what sea country IPAs might entail and whether, if they are declared by Indigenous interests, they would be recognised by state/territory and federal governments.

Previously land and sea have been treated quite differently in the IPA Program. Apart from some small areas of the sea over which Indigenous interests have the ability to exercise control over access[5], IPA declarations in the sea have not proceeded. The view has been that where an area of land or sea is not Indigenous-owned then there is no capacity to decide how the area is managed, so it cannot be managed as an IPA.

A model is emerging where Indigenous aspirations to care for their sea country are driving the development of a range of partnerships and collaborative work with other sea country interests, governments and researchers with a view to being able to deliver a conservation and sustainable use outcome. At its core are the aspirations of the Traditional Owners to maintain their cultural connections and to continue to use and to care for their sea country. The Indigenous groups conducting this activity hope that governments will be able to recognise these arrangements as IPAs in the sea.

Negotiation and partnership-building with all of the other interests is resulting in respect for the wishes of the Traditional Owners and progressing discussions over how the sea country may or may not be used. This model is not proposing changes to the rights of other sea country users but it is seeking agreement about exercising those rights in ways that are compatible with the objectives of the Traditional Owners. The resulting collaborative arrangement would establish an agreed management area in the sea based on negotiations between parties rather than legal gazettal of a protected area.

The challenge for coastal and island Indigenous groups is to develop and negotiate a package of 'legal and other effective means' that can deliver conservation and sustainable use outcomes that meet the threshold of the IUCN definition of a protected area and hence can be recognised by governments.

Sea country IPAs could make a contribution to reconciliation through recognition of 'country' as an enduring cultural scale for managing Australia's environments. The integration of terrestrial and marine areas under a single IPA framework could contribute to better management of the interdependent marine and terrestrial environments and the many important species that depend on both. The multi-stakeholder partnerships inherent in sea country IPAs could also broaden the support base for managing such areas.

A challenge for governments is whether to recognise sea country IPAs (or the marine components of integrated land and sea IPAs) as part of the National Representative System of Marine Protected Areas (NRSMPA). Internationally there is increasing recognition of Locally Managed Marine Areas (LMMAs) – non-gazetted community-managed areas managed for sustainable food security and biodiversity. Currently in Australia marine areas are only added to the national system if they are legally gazetted as protected areas, which is a higher threshold than the IUCN protected area definition and a higher threshold than for terrestrial areas to be added to the National Reserve System.

The emergence of IPAs based on country rather than tenure is analogous to the way designation of a World Heritage Area can provide a multi-tenure framework for managing places of global significance. Country-based IPAs represent a new phase in the evolution of the IPA concept and provide a new Indigenous-led pathway to collaborative management of existing protected areas and other areas (including marine areas) in which no management framework currently exists.

5 The Dhimurru IPA, declared in 2000 near Nhulunbuy in Arnhem Land in the Northern Territory, includes a portion of sea country over which the Traditional Owners can control access by all other parties under the provisions of the sacred site legislation in the Northern Territory. This ability to control access was seen as enabling the Traditional Owners to control the use and management of the area in line with their IPA aspirations.

Yanyuwa Indigenous Protected Area in the Northern Territory. ©Photo: Parks Australia

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Biography

Bruce Rose has a background in biology with over 20 years experience working with Indigenous organisations and governments on land use, management and conservation issues. For the last 14 years Bruce has been working with the Australian Government's environment departments on the establishment and management of Indigenous Protected Areas across Australia. Bruce is currently the Director of the Indigenous Protected Area Program with the Australian Government Department of Sustainability, Environment, Water, Population and Communities.

Innovation in public policy for conservation of biodiversity

Martin Wardrop and Charlie Zammit

This chapter looks at possible areas of innovation in public policy for biodiversity conservation over the next ten years. Innovation in public policy is strongly determined by the political and community climate in which the policy operates. It also draws on the generation of new knowledge through research and initial testing in the community.

Experience over the past decades shows the influence of ideas first generated from research in ecology and other sciences, including the social and economic sciences, which are then integrated into public policy. Many of the new ideas and approaches that shape public policy are generated outside of government. Change in public policy is often slow, since it usually requires sufficiently broad agreement in the community over the need for and directions of change. New approaches to public policy over the coming decade are therefore likely to be based on ideas that are already being debated or experimented within the community.

Possible areas of innovation include more use of ideas based in systems theory (non-linear interactions, complexity, resilience), greater recognition of the need for policy and management actions to operate simultaneously at multiple scales (ecosystem and landscape-scale management), increased use of experimental approaches to policy and management (adaptive management, monitoring, acceptance of risk, and recognition of failure), better integration of new knowledge into policy development (science-policy linkages, monitoring) and increased partnerships with the community (experiments in governance and structure). Tools to assist policy innovation are likely to include scenario-building, modelling, foresighting techniques, and interactive planning using scenarios and modelling. All of these depend on having improved monitoring across a range of biophysical and socio-economic indicators and sufficient capability among a broader group of actors to intelligently interpret more complex analytical tools in the public interest.

River Red Gums in Yanga National Park. In 2008, the New South Wales Government assisted by National Reserve System funding purchased the property 'Yanga', fronting 170 kilometres of the Murrumbidgee River in south-west New South Wales. ©Photo: D. Finnegan/OEH NSW

Introduction

Knowledge of Australia's environment has changed greatly over the last 50 years. In the early 1960s understanding of the continent and its Gondwanan origins was limited, the evolutionary history of Australia's plants was unclear, the horizon of human occupation of the continent was less than 10,000 years BP (Jones 1979) and there was little appreciation of the extent of Aboriginal modification of the landscape through use of fire. Management approaches were also much more restricted, being limited mainly to setting up national parks, the protection of endangered species by legislation, and reducing soil erosion or impacts of invasive species.

Since that time we have come a long way in our understanding of the scope and complexity of Australia's natural systems, and their social and economic context. Over the same time, the scope and scale of the environmental problems that public policy needs to address also shifted substantially and in the direction of more threats, more urgency and more complexity in dealing with them.

If we now look forward 50 years, what changes in understanding might we anticipate? Forecasting is a risky activity, but in considering innovation for public policy for biodiversity conservation over the next few decades, it is reasonable to assume that there will be changes of similar magnitude and importance to those we have seen over the last 50 years in our understanding of the linked natural and social/economic systems for which we are developing policy.

The scope of this chapter is limited to thinking about possible changes or trends in conservation policy over the next decade, but it is useful to start by recognising the great influence of innovative ideas and concepts and their impact on even the most practical of activities.

What is innovation in public policy for biodiversity conservation, and why do we need it?

Innovation has many definitions but the core of them all is the introduction of new ideas, goods, services, or practices into practical use. Innovation in public policy has many similarities to innovation in other sectors, such as manufacturing and services, but it also has some important differences. While there is a wide range of research and scholarship on innovation, until recently it has tended to focus on innovation in the private sector. Now a broader recognition that innovation is essential to a productive public sector is prompting new research and literature focusing on public sector innovation.

Why do we need innovation in policy for conservation? The most obvious reason is that biodiversity is in decline and there is clear evidence that current approaches are not stopping that decline (State of Environment 2011 Committee 2011). The extent and rapidity of environmental change is unprecedented and almost all indicators point to profound pressures on biodiversity – to the extent that there is strong evidence that the Earth is entering the sixth great wave of extinction in the geological record.

To respond to the major pressures on biodiversity and conservation it is therefore essential that we develop innovative policy responses. We need innovation in ideas and tools to support better knowledge of systems, improved analysis of past practices, and development of new policy and management approaches.

Many environmental policy problems involve 'public goods' (biodiversity, clean air and water, etc) and governments have a responsibility to act in the public interest to protect those goods – whether as regulator, manager, partner, provider of incentives and information, or as market shaper or participant. There is therefore a particular need for governments to be effective innovators in environmental policy.

According to Eggers and Singh (2009, p. 5), innovation in government typically happens in one of two ways: "Either innovation intrudes itself on a public sector organization in response to a crisis, or some individual (or small group of individuals) champions a specific innovation. In either instance, the benefits of the innovation are limited. Once the crisis has passed or certain individuals responsible for the innovation have moved on, the organization is left with no lasting capacity for ongoing innovation."

The task for innovation in public policy for conservation is not only to generate new ideas and approaches and to bring them into practice; it is also to establish lasting processes and structures which continue to support innovation through design, delivery, monitoring, and review.

Sources of innovation for public policy

Innovation is a continuous process that can lead to new concepts, new policy or administrative approaches, and new systems. Innovation is commonly viewed as a cycle with five stages: idea generation, idea selection, idea implementation, sustaining new approaches, and diffusing new approaches.

It is important to recognise that each of these five stages interact at various times; it is rare that there is a simple linear progression from new idea to application. Ideas often need to be tested through feedback cycles with potential users, refined, practical examples tested, language and concepts developed for effective communication and marketing, and commitment, agreement and support developed with key groups.

Innovation draws new ideas and perspectives from a wide range of sources. The general public, technical experts, the business sector, community and non-government organisations, and the research community can provide new perspectives and new approaches that government could never generate on its own.

In considering innovation in public policy it is important to understand that under the Westminster system of government, Ministers are accountable to Parliament for policies and programs; the role of departments and officials is to advise on and follow those policies. Of course in practice there is an interactive relationship between Ministers and officials, and officials are able to help shape and develop policy. Ministers have a great strength in their direct representation of and connections to the community and stakeholders while officials can be constrained in such relationships. Development of public policy therefore requires a combination of internal policy analysis and thinking, coupled to considered and managed relationships with external sources of ideas and innovation. Broad sources of innovation within government are shown in Figure 1.

Employees of government can be a direct and internal source of new ideas for government policy. Two examples of innovation in conservation ideas are the development in the late 1980s of the Interim Biogeographic Regionalisation of Australia (IBRA) classification system (Thackway and Cresswell 1995) and the scientific framework for systematic conservation planning (Margules and Pressey 2000). Some government conservation agencies have their own research arms or agencies to support such innovation. More generally, the Australian Public Sector Innovation Toolkit is evidence of the commitment by the Australian Public Service to support innovation within its activities. The Toolkit has been developed to help individual public servants, work teams and agencies to increase their innovation efforts by providing tools and practical advice on fostering innovation.

However, while individual officials have been originators of new ideas and innovations in biodiversity conservation, most of the new approaches which shape public policy are generated outside of government. The most fertile sources of new ideas have been researchers, non-government organisations, and individuals. This is to be expected because research groups have innovation as the focus of their work and non-government bodies or individuals have fewer constraints on their experiments or actions and fewer requirements of accountability. Innovation in public policy therefore requires a flow of new ideas and methods already developed or tested in other settings.

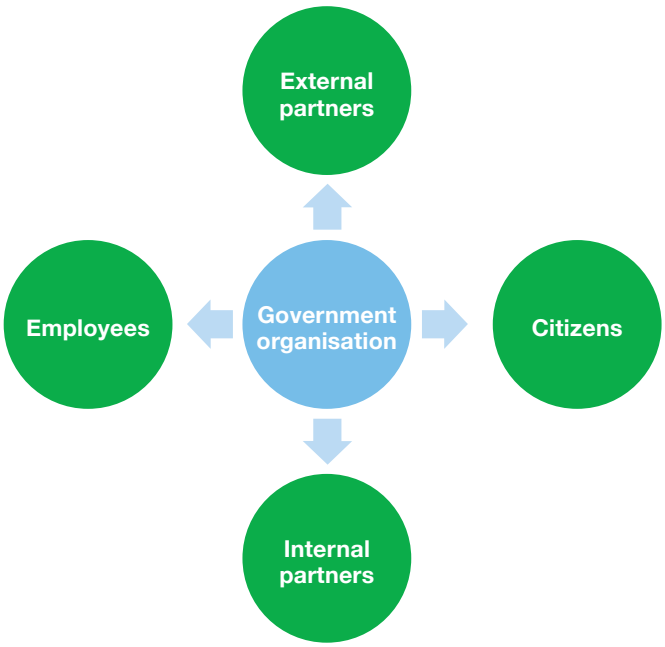

Figure 1: Sources of innovation in government (modified from Eggers and Singh 2009).

Neds Corner Station, a 30,000 hectare private protected area purchased by the Trust for Nature (Victoria) with assistance from the Australian Government's National Reserve System Program and The Nature Conservancy, adjoins the recently-expanded Murray-Sunset National Park on the banks of the Murray River in north-west Victoria. ©Photo: James Fitzsimons

Partnerships – whether across departments or agencies (internal partners) and with external non-government partners – are a source of new ideas and can help to overcome resource constraints, make conservation management arrangements more effective, and help to manage risk.

Effective relationships by government and government agencies with the community are particularly vital to innovation in public conservation policy. Individual citizens have had a powerful influence on the shape of conservation policy in Australia and community-based organisations continue to be influential (Mulligan and Hill 2001). Non-government organisations are often able to explore techniques (e.g. Conservation Action Planning) and management methods which would be difficult for government agencies to implement before they had been tested and proven.

There are also some powerful barriers which have a specific impact on public sector innovation, in particular political risk and public accountability and scrutiny. Governments and ministers are judged on their success and, in seeking to avoid criticism or failure, they can sometimes be cautious about innovative approaches with high uncertainty and risk. Political risk also contributes to risk-averse attitudes among public servants, and innovation is inherently risky.

Change in public policy is therefore often slow, since it usually requires broad agreement in the community over the need for and directions of change. New approaches to conservation policy over the coming decade are therefore likely to be based on ideas which are already being debated or experimented within the community. It is useful therefore to consider the sorts of changes which have occurred in public conservation policy before looking at what the future might bring.

Experience with public policy for conservation over recent decades

The decline in biodiversity and the causes of this decline are generally well understood. Public policy has tended to take the form of reducing those drivers or pressures or preserving samples of 'undisturbed' species, habitats, or landscapes.

The first public policy responses to conservation concerns in the 1960s and 1970s were in the form of direct actions, primarily through the creation of publicly-owned protected areas, and legislation to protect endangered species or communities. Over time, the scale and complexity of the problem of biodiversity decline has meant that policy has increasingly recognised the important roles played by private landholders and the community (through actions to support information and awareness raising, covenants on private land title, stewardship payments, and other incentives).

Conventional economics sees loss of biodiversity occurring as a result of a market failure through failures in information, valuation, and property rights. Environmental accounts, ecosystem services credits, and pseudo-markets are attempts to correct these market failings and have emerged as complementary approaches to regulation and direct intervention (Costanza et al. 1997).

Government conservation policy is now emphasising the system aspects of biodiversity even more through landscape-scale and ecosystem-based management, partnerships with non-government organisations, regional planning and action, and devolved administration.

Concepts such as resilience, connectivity, ecosystem services, and valuation through market-based mechanisms are influencing public policy as part of a whole-of-landscape approach to conservation. These concepts are discussed below.

Resilience. Resilience refers to the capacity of a system to withstand shocks and to rebuild itself if damaged or disturbed. So far, resilience approaches have mainly been used in planning (for example in regional planning by catchment planning authorities). Resilience is helping to provide a new perspective in which conservation policy and planning can be viewed as part of one social-economic-biophysical system. While resilience thinking offers opportunities, particularly for cooperative approaches, it also carries complexities and sometimes difficult implications.

Connected landscapes. Connectivity approaches emphasise a particular set of ecosystem attributes (system linkages, particularly for vegetation and water). Maintaining connectivity is part of a landscape-scale approach and is used widely, for example in wildlife corridors, government biodiversity strategies and non-government and community corridors such as Gondwana Link (see chapter by Bradby in this publication). Connectivity actions are central to all adaptation strategies for climate change. Building corridors in highly modified landscapes will require large-scale restoration and revegetation, but planning such actions raises difficult questions about the reference states for restoration, desired goals and indicators of achievement.

Valuing biodiversity. Biodiversity policy has been expanding to include non-regulatory approaches. Many policy issues are linked to problems of valuation – or a lack of it. Market-based approaches are non-regulatory and may offer efficiencies and greater effectiveness for policy under certain conditions. Markets require valuation and trading mechanisms. Ecosystem services provide one approach; national environmental accounts reinforce valuation. Coherent markets for biodiversity-related services or credits will help to drive innovation.

These changes in policy approaches are summarised in Table 1, which characterises more recent approaches through greater emphasis on system features (resilience, tipping points) and linked multiple spatial scales (landscapes).

Focus	Existing or past approaches	Landscape- and resilience-based approaches
Biodiversity conservation	• threatened species and habitats • protected areas considered the highest priority • limited private land involvement	• ecosystem functions • critical/keystone species • linked whole-of-system • species distribution and abundance management across whole of landscape regardless of tenure or land use
Science input	• static ecosystem structures • models of predictable change • optimization and economic tools	• non-linear dynamics and complex systems • shocks, feedbacks, thresholds • cross-scale interactions • complex social-ecological systems
Policy tools	• mix of approaches • short-term objectives • fixed reference states and targets	• changed mix of approaches • longer term objectives • adaptive/flexible targets • managing multiple temporal and spatial scales
Management models	• rigid institutional structures • whole-of-government coordination • managed community engagement	• integration across institutions • integrated planning across multiple scales • adaptive governance structures • devolved/shared decision-making

Table 1. Changing focus of themes in conservation policy.

Examples of innovations in biodiversity conservation policy over the last two decades include:

- Establishment of a bioregional approach (IBRA) to support the concepts of comprehensiveness, adequacy, and representativeness in reserve system design
- Systematic conservation planning and associated tools (e.g. Marxan)
- Resilience framework for strategies and regional planning
- Market-related concepts for valuation and grant allocation
- Captive breeding programs and species reintroductions
- Landscape and ecosystem based approaches
- IT and GIS based data analysis, modelling and scenario building tools
- Foresighting techniques
- Links and sources in social sciences and humanities (understanding landholder motivations, communication techniques, ecological economics, history).

Areas of possible change in conservation policy over the next ten years

New approaches to conservation policy and management will require greater recognition of the need for policy and management actions to operate simultaneously at multiple scales (species, habitat, ecosystem and landscape-scale management). Possible areas of innovation for the next decade include:

- New and emerging concepts – more use of ideas based in complex system theory (non-linear interactions, thresholds, resilience)
- Better integration of new knowledge into policy development (science-policy linkages, greater contribution from social sciences, monitoring)
- Development of new technologies, offering both benefits and risks (genome techniques for managing invasive species, novel life forms, advances in non-linear mathematics and modelling, remote sensing)
- New or updated goals to deal with change, particularly climate change

- Increased use of experimental approaches to policy and management (adaptive management, monitoring, acceptance of risk and recognition of possible failure)
- Greater use of policy approaches based on valuation of ecosystem services
- Increased partnerships with the community (experiments in governance and structure)
- Tools to assist policy innovation such as scenario-building, modelling, improved foresighting techniques (e.g. Sutherland et al. 2008) and interactive planning using scenarios and modelling.

For changes in policy and management to be effective, it will be necessary to improve information management and systematic monitoring across a range of biophysical and social or economic indicators. The consequences of not having adequate biodiversity baseline data and trend information for policies and programs are well understood (e.g. State of the Environment 2006 Committee 2006). They include: weaknesses in policy development and program planning; slowness in responding through adaptive management (since response information is lacking); inability to monitor and evaluate program outcomes adequately; and reduced ability to meet reporting requirements. Lack of the most basic tool in dealing with a complex system – information about its key features – severely reduces the capacity of managers to understand and deal with the system.

Private and not-for-profit groups have recognised the importance of biodiversity monitoring as an essential part of adaptive management and for wider purposes, including demonstrating the achievement of desired outcomes for management. These groups value monitoring and have been willing to invest their own money into gathering data and monitoring biodiversity (Bush Heritage Australia 2011).

The greatest potential for major environmental policy change is a correspondingly major environmental shock, such as a rapid acceleration in climate change or the risks of irreversibly crossing important environmental thresholds. Remarkable conceptual developments – such as plate tectonic theory in geology – can also lead to major rethinking of policy. However, revolutions in ideas are often slow to be adopted within the research world and even slower to be translated into policy or management changes. As an example, 'resilience' emerged as a scientific concept in the 1970s but took 30 years to achieve some policy influence, but often in competition with other paradigms. Unexpected shocks are by their nature difficult to plan for, but resilience thinking tells us that major shocks also create great opportunities.

Between shocks it is likely that policy development will continue essentially on the basis of existing practice, through a process known as 'disjointed incrementalism' or 'muddling through', a term first used by Charles Lindblom in 1959 (Lindblom 1980). The best that can usually be done when trying to anticipate policy change is to scan the research horizon for new ideas and understanding, and to extrapolate trends in policy change based on leading-edge practices, whether inside government or outside.

Looking ahead for the next decade, and extrapolating from trends, most concepts likely to be used in new conservation policy are probably already with us. A major requirement therefore is to maintain and build relationships between various fields of research and policy developers. Initiatives such as the National Environmental Research Program and the International Platform for Biodiversity and Ecosystem Services are important mechanisms, but there is room for further action within government such as increased use of foresighting techniques (as recommended in the review by Alan Hawke of the *Environment Protection and Biodiversity Conservation Act 1999* (Hawke 2009) and supported in principle by the Australian Government).

Major policy changes require matching efforts to find the right ideas and language to motivate such change. One of the most difficult tasks for achieving and implementing change is to communicate across sectors and interests to find common interests in conserving biodiversity. This 'mainstreaming' of biodiversity conservation is likely to remain central to biodiversity policy over the next decade – and also one of the most likely sources of innovation through partnerships.

Disclaimer

The views and opinions expressed in this paper are those of the authors and do not necessarily reflect those of the Australian Government.

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Family involved in the Environmental Stewardship Program protecting Box-gum Grassy Woodland on private land, Yeoval, New South Wales. ©Photo: Andrew Tatnell

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Getting results in conservation

Martin Taylor

Innovation is important in conservation, to extend the scope of conservation outcomes beyond protected areas to entire landscapes and seascapes, as recognised in the existing strategy for the National Reserve System.

Whatever the innovation, a fundamental question to answer is: are we getting value for money? Conservation funding is typically limited. The Australian Government's entire funding for conservation and the environment is 0.5% of the total budget. Getting value for money is not only about getting the most conservation result out of a limited budget, but also to make a good case for increased investment.

Knowing costs of conservation actions and specified conservation objectives, it is theoretically possible to derive an optimal spatial distribution of investment that achieves the objective for least cost. However such global solutions can be difficult to implement. A given property might be top priority for protection, but what if the land owner does not want to sell or put a covenant over it? Should we still invest in short-term actions? Some areas like state forests are already in government ownership but are also encumbered by many overlapping interests that can take many years to resolve. Climate change makes the task more complex again, since we now have to consider not just current, but future habitats and corridors to connect them.

Different conservation approaches

This chapter does not go into these complexities, but briefly examines several major types of conservation actions and their advantages and disadvantages including cost: (1) direct regulation, (2) government parks and reserves, (3) non-government protected areas, (4) conservation contracts, and (5) certified sustainable resource use.

Bon Bon Station Reserve, South Australia. A private protected area owned and managed by Bush Heritage Australia. ©Photo: Bush Heritage Australia

Direct regulation

The staple of conservation advocacy is to seek legally binding restraints on resource use to reduce negative biodiversity impacts. Examples include land clearing legislation, and the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999*. Regulation has the advantage of protecting the most habitat at least cost, typically extending some level of protection to specific habitats over entire jurisdictions regardless of tenure.

Evidence suggests that regulation does work. For example, species listed under the United States *Endangered Species Act 1973* which had single-species recovery plans or designated critical habitats, were more likely to be stable than those that did not (Taylor et al. 2005). Equivalent evidence is lacking for recovery plans in Australia, although land clearing laws are linked to stabilised threatened species (Taylor et al. 2011a).

Regulation also has disadvantages, primarily opposition from affected resource users, but also including the following:

- Getting regulation through Parliament often requires political deals to pay for 'structural adjustment' in the wake of changes to resource access. For example, the ban on broadscale land-clearing in Queensland was also accompanied by $150 million in rural assistance
- It is often politically easier for governments to weaken broad vegetation or wildlife legislation than to abolish a specific national park
- Regulation is usually 'negative' in nature, prohibiting certain activities, rather than requiring beneficial (positive) actions to take place
- Most regulation entails some sort of assessment and approval process with many exemptions, loopholes, mitigations and offsets. Apart from individual national parks, broad biodiversity protection laws rarely give any strong guarantee that a particular habitat patch will not be destroyed or degraded.

Government parks and reserves

Government protected areas (herein parks and reserves) are generally protected in perpetuity without the uncertainties of broad regulations mentioned above. Consumptive uses are typically prohibited. Moreover parks and reserves are managed by a publicly accountable and professional corps of rangers.

Parks are usually opened to public access and represent the fundamental asset of an economically important nature-based tourism industry. However this also presents a risk that visitor pressure can become excessive and harmful to protected values.

Evidence suggests that strictly protected areas (that is, in IUCN protected area management categories I to IV) whether state or privately owned, show a strong positive correlation with stabilisation of threatened species (Taylor et al. 2011a).

Despite well-documented value for protecting wildlife and attracting tourism, governments are generally reluctant to invest heavily in strategic growth of parks and reserves. Despite a fivefold increase in the National Reserve System (NRS) Program budget in 2008, it still represents only 8% of the Caring for our Country budget. Queensland in the same year committed to increase the parks estate 50% by 2020, but only delivered a very modest capital budget two years later.

There is a prevalent perception that parks and reserves are a very expensive approach to conservation. Political enthusiasm is often restricted to 'iconic' or scenic parks, despite several decades now of government policy commitments to a more strategic approach to biodiversity conservation. Evidence suggests however, that parks are a very cost-effective conservation option. The NRS Program has only cost the Australian Government $47 per hectare of land purchased, an investment that leveraged four to five times that amount in state or territory government funds both for acquisition and capitalised in-perpetuity management (Taylor et al. 2011b). Buying land for parks is not free of controversy: acquisitions such as Toorale and Yanga Stations in New South Wales have also faced local opposition.

Of concern is the 'shoe-horning' of areas that lack any real change in fundamental land or sea use into the 'protected area' definition under IUCN category VI, perhaps contrary to the IUCN guidelines for that category: for example, the 'general use' zone of marine parks.

Unfortunately there is no independent arbiter to scrutinise protected area designations against agreed standards and guidelines. Perhaps we need one.

Non-government protected areas

Non-government protected areas fall into several groupings:

- Conservancy-owned and run lands
- Conservation covenants on land owned by private individuals
- Indigenous protected areas.

Non-government protected areas should be much more cost-effective than government protected areas (from the government's point of view!), particularly for covenants with an existing landholder.

On Indigenous land, there is no purchase option. The Commonwealth's Indigenous Protected Area Program is an example of government investment in non-government protected areas that also brings very substantial cross-portfolio benefits of employment, health, social and cultural revival for the land owners and managers – the Indigenous communities (see chapter by Rose in this publication).

The issue of 'shoe-horning' is also evident in private protected areas, but it does not need to be. For example, in Queensland, Nature Refuges are generally classified as protected areas, even if they allow activities such as commercial cattle grazing, which ordinarily would not be considered appropriate in a protected area. A more flexible approach would see the Nature Refuge internally zoned to define areas primarily for conservation (which would be considered protected areas) and those that allow grazing (which would still be Nature Refuges, but not protected areas).

Private investment, goodwill, energy and knowledge are put to work in private protected areas free of many of the pressures of public ownership and access that are faced by government protected areas (Figgis 2004).

The major drawback of non-government protected areas is that under most state legislation, mining is not prevented, unless, like Arkaroola in South Australia, they have their own Act (see chapter by Irving in this publication). It should be remembered though that most states have protected area types other than national parks, which likewise are open to mining.

Like some government protected areas, some non-government protected areas – Nature Refuges in Queensland in particular – may be commercially grazed as well, raising a question of their fit to IUCN category VI guidelines.

It is not yet possible to form a coherent picture of this sector, with diverse programs operating and differing objectives without a coordinated approach to reporting on effectiveness (Fitzsimons and Carr 2007). However this shortcoming is also shared to some extent by the government protected area sector, despite the advances made with the adoption of the National Reserve System Strategy by the Commonwealth, states and territories in 2009.

Conservation contracts

A great deal of conservation investment goes toward short-term conservation agreements or contracts in the absence of any covenant, or even simply management actions in the absence of any contract. Under the stewardship concept the funder pays landholders to do certain works to improve habitat condition or abate threats. A covenant is not mandatory.

Such approaches make it easier to engage landholders, precisely because no enduring encumbrance is put on the land title. Such approaches may be justified when no other option is available as landholders may be unwilling either to sell or to enter into covenants (see chapter by Males in this publication).

Covenants may be less needed where prevailing legislative protections of habitats is already strong and the priority is simply to improve or maintain habitat condition.

The critical question with this approach is the low level of security: to what extent will gains achieved in habitat recovery or condition be reversed without penalty when payments stop, contracts end, the property changes hands, or profitability goes down?

A second critical question is to do with value for money: at what point is it cheaper to covenant – or buy and hold – or buy, covenant and resell a property – than persist with open-ended stewardship payments? One conservation tender program has cost more per hectare for short-term agreements with no covenant, than the average asking prices of similar properties in the area. It is difficult to establish relative cost-effectiveness in such cases.

There is as yet no national scale evidence of outcomes from this approach despite much investment (Taylor et al. 2011a), nor any national effort to show that the conservation agreement approach is having a net positive, and enduring, biodiversity effect. Perhaps we need one.

Certified sustainable resource use

A certified sustainable resource use approach does not attempt to directly protect or conserve species or habitat, although this may be an outcome of meeting a performance standard.

The general approach involves the formation of a supply chain roundtable, including industry, conservation and consumer sectors. The roundtable then develops and agrees on environmental performance standards and sets up a framework for certifying resource users as meeting the standard. Once a product can be identified to consumers or retailers as certified to be compliant with the standard, consumers can choose to prefer that product or indeed, retailers can decide to only source those suppliers. These kinds of decisions provide a so-called 'market driver' for widespread uptake of the improved practices needed to meet the standard.

Such an approach can be truly win-win as long as retailers and consumers prefer to buy products that are certified, without the need for any public investment. Fortunately, consumer expectations for food safety, environmental safety and animal welfare do not regress very readily.

Any process of development of a certified standard needs to include a plan and process to collect the evidence to show that it is producing measurable biodiversity outcomes. Evidence to date is scanty.

Conclusions

Highly protected areas and regulation work to protect biodiversity and there is little evidence that much else works as yet. Obviously there is an urgent need to fill that knowledge gap and acquire appropriate data to do so.

The big surprise is that highly protected areas even involving purchase of land may be cheaper per hectare than short-term approaches.

Highly protected areas on private land do not enjoy the same protections as national parks. Despite best intentions of the owners, they may not be able to keep mining out. A category of private protected area which precludes commercial consumptive uses including mining would be a valuable reform.

There is a need for clearer standards and a trusted umpire for what should be designated a protected area and what IUCN category is appropriate. In particular, areas with commercial resource use, particularly livestock, need to be reviewed for conformance with IUCN guidelines.

It is legitimate and valuable to promote standards and practices for low impact production as part of a whole of landscape approach. But this can be done without trying to 'shoe-horn' such areas into the protected estate.

Much conservation funding has gone to short-term actions without a secure and enduring change in primary land use. A critical question to answer is if all this good work could be reversed without enduring agreements and covenants.

Commonwealth funding should perhaps go primarily toward supporting existing or new covenants and protected areas, or driving uptake of certified sustainable resource use standards.

At the very least, funding decisions must be underpinned by rigorous analysis of enduring biodiversity outcomes achieved for money invested, and a process of comparing alternative approaches using the same metrics.

Eubenangee Swamp National Park in North Queensland with Bartle Frere. The swamp's water was secured through an addition purchased with NRS funding.
©Photo: Campbell Clarke

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Biography

Martin Taylor completed a BSc Hons in Environmental Studies at Griffith University and a PhD at University of Queensland before pursuing an academic career in the United States. He is now back in Australia as conservation scientist with WWF and has published analyses of the Endangered Species Act in the US, threats to international whale habitats, and the effectiveness of conservation actions in Australia including protected areas for threatened species. He has served on the Scientific Committee of the International Whaling Commission and as a NGO observer at CITES. He is a member of the IUCN World Commission on Protected Areas.

Territory Eco-link: large framework, small budget

Andrew Bridges

Territory Eco-link is an exciting and innovative conservation initiative in line with global biodiversity and climate change response strategies to pursue conservation at scale across tenures (Worboys et al. 2010). It aims to deliver more than 2,000 kilometres of linked conservation areas in the Northern Territory through encouraging and facilitating a 'whole of community' partnership effort (DCM 2012). The corridor runs from the Arafura Sea in the north, through Arnhem Land and down the western side of the Territory before passing through the MacDonnell Ranges and down to the South Australian border (**Figure 1**).

It is also part of the Trans-Australia Eco-Link which is a joint initiative between the Northern Territory and South Australian Governments to establish a wildlife corridor extending more than 3,500 kilometres from Arnhem Land in Northern Territory to Port Augusta in South Australia. The Trans-Australian Eco-Link will be one of the world's first transcontinental wildlife corridor (DENR 2012).

The Territory initiative supports, rather than replaces, the need for a comprehensive protected area system. However, national parks and reserves are rarely large enough on their own to hold self-sustaining populations of all the plant and animal species they contain. In many cases they may not provide enough room for species to move in response to climate change or other environmental changes, or for populations to recolonise after local extinctions from fires and other disasters. Linking parks across the landscape with other lands and tenures that are also managed for conservation outcomes, is an essential 'whole of landscape' strategy to protect the integrity and resilience of ecosystem function and reduce the potential for species extinction (NRETAS 2012).

Territory Eco-link is the primary means of achieving the Northern Territory Government's *Territory 2030* strategic target: "By 2030, the Territory will have a comprehensive set of connected systems protecting the terrestrial environment, making up 20% of the Territory's land area" (DCM 2012).

Southern Tanami Indigenous Protected Area. ©Photo: Peter Taylor

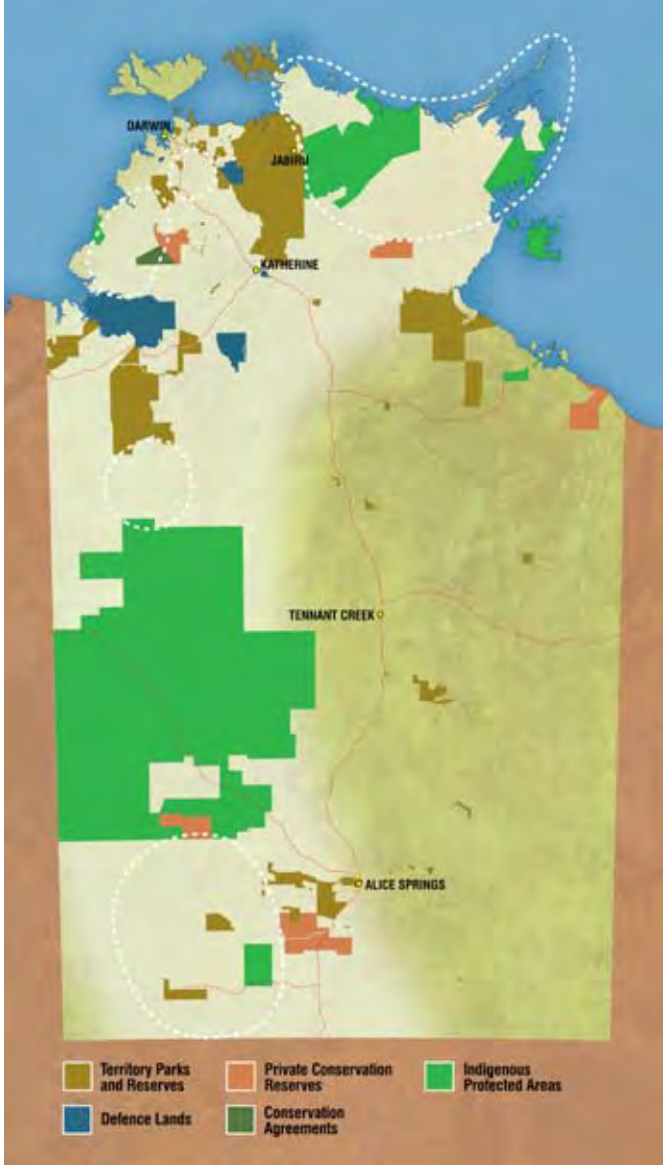

Figure 1. Territory Eco-link – dotted circles represent priority linkage areas.

The initiative commenced in July 2009 with modest annual funding of $600,000. It provides a large framework and an inspiring idea. With a small budget the framework has been developed with the understanding that it will only be successful by leveraging contributions from many other sectors of the community to protect and conserve the Northern Territory's unique biodiversity.

The goal of establishing a wildlife corridor from the north to south of the Territory is an ambitious but achievable target which will be guided by an Expert Reference Group and a Stakeholder Reference Group; both groups were established to ensure Territory Eco-link progressed in line with other community and conservation initiatives. In working to achieve this target, Territory Eco-link works at a number of levels, and aims to:

- Increase the area of land within the National Reserve System
- Improve integration of conservation with other land uses
- Increase community understanding of biodiversity and connectivity
- Encourage a 'whole of community' effort
- Provide opportunities for all Territorians to get involved.

In building the network, major priorities will be sites with high biodiversity values, underrepresented bioregions, and endangered species habitats – and seeking opportunities to have these areas included in the National Reserve System (NRETAS 2009). At this level Territory Eco-link is working with the Australian Government, conservation-focussed non-government organisations, Indigenous land owners, and private companies like R.M.Williams Agricultural Holdings to increase the area of private reserves and Indigenous Protected Areas in the Northern Territory. In all areas, the Northern Territory Government is looking to find and encourage innovative partnerships.

Considerable progress has been made since the initiative commenced. The Henbury Conservation Project is one such exciting and innovative initiative. R.M.Williams Agricultural Holdings purchased Henbury Station for inclusion in the National Reserve System with funding assistance from the Australian Government. Henbury, located to the south of the West MacDonnell and Finke River National Parks will help protect several under-represented bioregions and 100 kilometres of the Finke River, the world's oldest river whose waterholes are key freshwater refuges in an arid land. This 'for profit' company is now working towards establishing a model for carbon farming in the arid rangelands that will deliver a company profit while at the same time delivering long-term biodiversity conservation outcomes (see chapter by Pearse in this publication).

Territory Eco-link also includes Australia's largest protected area, the Southern Tanami Indigenous Protected Area, at over ten million hectares. Its northern boundary joins with the Northern Tanami Indigenous Protected Area. Its southern boundary connects with the Haasts Bluff Aboriginal Land Trust as well as the private Newhaven Reserve owned by the Australian Wildlife Conservancy and managed in cooperation with BirdLife Australia.

Conlon's Lagoon. ©Photo: NRETAS

Much of the Haasts Bluff ALT land is managed for conservation by the Papunya Indigenous Ranger Group, and it borders West MacDonnell National Park, which connects with Owen Springs Reserve which in turn connects with Henbury. The result is a connected conservation corridor from Lajamanu in the north to Henbury in the south, a distance of nearly 900 kilometres and covering over 20 million hectares, about the size of Victoria. In the north of the Link, the recent acquisition of Fish River Station and nearby conservation initiatives has helped to 'fill a gap'in the Link south of Litchfield National Park (see chapter by Fitzsimons and Looker in this publication).

Conservation Agreements, while not always meeting National Reserve System standards, also play an important role in the connectivity approach to biodiversity conservation. Alice Springs Shooting Complex Inc has an agreement over 170 hectares of land it manages which protects Conlon's Lagoon and its immediate surrounds. Conlon's Lagoon is an ephemeral claypan that fills with water after periods of significant rain and supports a diverse group of wetland plants providing important food, shelter and nesting areas for a variety of animals and birds. The claypan also includes a number of plant species that have not been found anywhere else in the Alice Springs region, including Nitre Goosefoot (*Chenopodium nitrariaceum*) a drought-tolerant shrub that provides a good habitat for small birds, mammals and marsupials.

Under the agreement, native vegetation within the conservation area will not be destroyed or removed, non-indigenous animals will not be introduced, natural water flow will not be interrupted, soil will not be removed, and the use of vehicles will be restricted to use for approved management actions only.

While the primary use of the shooting complex is as a shooting range, the agreement to protect the important biodiversity values on part of this land is due to the interest of club members to pursue their sport in a manner that is consistent with achieving biodiversity outcomes. This serves as an example of how a willingness to explore possibilities with partners beyond what might be seen as traditional conservation partners has resulted in significant biodiversity outcomes, for which club members should be commended.

Another exciting area of work is the positioning of Land for Wildlife programs within the Territory Eco-link framework. The Land for Wildlife program does not necessarily focus on protecting the areas of high biodiversity value, it focuses on the areas of biodiversity an individual wants to look after and protect on their land. It provides advice and guidance on how to look after those biodiversity values. Field days focus on gaining skills to help manage the threats to these values.

Importantly, positioning the Land for Wildlife program within the Territory Eco-link framework and adding a focus on the importance of connectivity is delivering some valuable outcomes. Valuing the contribution each Land for Wildlife participant makes and placing this contribution within the Territory Eco-link framework allows each participant a sense of achievement in contributing to an inspiring community effort to protect the Territory's biodiversity, and in playing a part in building a wildlife corridor that will span the continent from north to south.

Requests to register with Land for Wildlife are now increasing rapidly and spreading beyond the traditional focus of the peri-urban block owner. Tourism businesses and resorts are signing up, as is the Alice Springs Correctional Centre, a pistol club and schools. Land for Wildlife properties now cover over 40,000 hectares and the growing interest of businesses to get involved reflects a willingness to integrate nature conservation into their businesses. The Land for Wildlife program has also provided a useful pool of skilled volunteers, with many willing to travel to the more remote areas under conservation agreement, to assist with weed and fire control, and biodiversity monitoring.

In the past, attempts at securing biodiversity conservation agreements on private lands, and particularly pastoral lands, left many landholders sceptical and resistant to engaging with and participating in the new Territory Eco-link initiative. Building trusting relationships with land owners, taking time to understand their needs and concerns along with focussing initial efforts on pastoral landowners who will 'champion' the Territory Eco-link initiative to their peers, have all helped reduce this resistance. Ensuring the focus has been on helping land owners protect the natural values that they see as important on their land, rather than coming from the 'expert perspective' and telling them what biodiversity values they have on their property and how they should be looking after those values, has been an important strategy to build trust and ultimately gain participation in the Territory Eco-link initiative.

Finding additional means to assist land owners with funding and labour to manage the threats to biodiversity values has also been important. Working with programs like Land for Wildlife, and organisations such as the Arid Lands Environment Centre, has served to build a growing number of volunteers, skilled in the application of conservation management techniques who are willing to assist land owners with their management responsibilities. This has been particularly important to landholders who feel they do not have the necessary skills or time to adequately to manage the threats to biodiversity values.

In summary, Territory Eco-link is an important conservation initiative which by championing a new and more holistic approach to achieving sustainable biodiversity conservation outcomes in the Northern Territory has begun to successfully galvanise a 'whole of community' effort and facilitate significant biodiversity outcomes.

Territory Eco-link might have a small budget, but its large framework, designed to inspire, encourage and facilitate all sectors of the society in the Territory in a new and innovative way, is turning an ambitious goal into an achievable goal.

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Territory Eco-link aims to connect core protected areas such as the West MacDonnell National Park with other lands. ©Photo: NRETAS

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Biography

Andrew Bridges is a park management practitioner with over 30 years' experience in parks, wildlife and cultural resource management in the Northern Territory. After starting as a ranger at Uluru-Kata Tjuta National Park he worked in several remote national parks before moving into a leadership role. Andrew has initiated change and innovation in conservation and protected area management, led the development of some of the Territory's major national parks, and overseen the implementation of joint management arrangements with Aboriginal owners for a number of iconic central Australian national parks. In September 2012, Andrew was appointed as the Chief Executive Officer for the Parks and Wildlife Commission of the Northern Territory.

Editors' postscript

Shortly before going to press, the newly elected Northern Territory Government decided to cease funding for Territory Eco-link "resulting in savings of $380,000 in 2012-13 and $450,000 ongoing from 2013-14. The Government will continue to fund the Land for Wildlife component of the program" (Conlan, M. (2012). 'Parks and Wildlife to receive funding increase'. Minister for Parks and Wildlife Media Release, 4 December 2012. Available: http://newsroom.nt.gov.au/index.cfm?fuseaction=viewRelease&id=10126&d=5 [accessed 7 December 2012]).

Innovative approaches to land acquisition and conservation management: the case of Fish River Station, Northern Territory

James Fitzsimons and Michael Looker

There has been a dramatic increase in the area that is within the National Reserve System since 2000 – from around 60 million hectares to around 100 million in 2008. This dramatic increase can be attributed to Indigenous Protected Areas and the acquisition of private or leasehold land for either addition to the public protected area estate or management as private protected areas. This growth has also been strategic, increasingly the reservation status of the most underreserved bioregions (**Figures 1 and 2**). However, the reality is the land acquisition has slowed since the global financial crisis of the late 2000s and this has led to new models with different partners coming to the fore. This chapter highlights one of those new models – the acquisition of Fish River Station in the Northern Territory for conservation.

Fish River Station

Fish River Station is 180,000 hectares of savanna woodland, rainforest and floodplains, bordered by the Daly River to the north and sandstone escarpments to the south (**Figure 3**). Fish River Station was formerly a cattle station, but its location and difficulties of access meant it was only ever lightly grazed, has little infrastructure and is ecologically intact. The property has significance for the local Indigenous people, with a number of known cultural sites and strong connection to country.

So why was this property purchased for conservation? Fish River contains extensive areas of flat, productive savanna and floodplain that is the target for proposed future agricultural development in northern Australia. These same threatened ecosystems are also under-represented in the reserve system. The property increases protection of the under-reserved Daly Basin bioregion from 2.5% to 9.5% making it a significant addition to the National Reserve System (NRS). A range of terrestrial threatened species are present in the savannas (Mahney et al. 2012), including mammals such as the Northern Quoll (*Dasyurus hallucatus*), that are known to be declining across northern Australia (e.g. Fitzsimons et al. 2010, Woinarski et al. 2011).

Fish River Station in the wet. ©Photo: James Fitzsimons

Flowers on a billabong, Fish River Station. ©Photo: Ted Wood

The Daly River is one of the largest and most significant rivers in northern Australia. The Daly is the northern border for Fish River Station and this area contains two wetlands of national significance. The Daly supports a greater diversity of freshwater turtles than any other river system in Australia including eight of the 12 freshwater turtle species found in the Northern Territory, and is considered the most important for the threatened Pig-nosed Turtle (*Carettochelys insculpta*) (Scott 2006). Several species of threatened or rare freshwater fish also occur in the river, including Freshwater Sawfish (*Pristis microdon*) and Freshwater Whipray (*Himantura dalyensis*). The property also supports an extensive and well-developed riparian rainforest network.

Innovation and success in the purchase arrangement

Fish River Station first came to the attention of The Nature Conservancy as a potential purchase proposition in late 2008. Throughout 2009 it became an on-again, off-again proposition for a range of reasons. It was eventually purchased in August 2010 and officially launched late in 2011.

So why was Fish River more than just another land acquisition for addition to the National Reserve System? It is innovative on a number of fronts: the types and diversity of partners involved in the deal; the fact that the property is being handed back to Traditional Owners for healthy country (conservation) management; the means of financing its management in the long term; and finally the influence the model and outcome have had beyond the borders of Fish River.

From very early on in our pursuit of the purchase of this property, The Nature Conservancy was keen to explore the potential of a new governance and ownership model – namely the handing of land back to Traditional Owners for healthy country (conservation) management once self-sustaining management arrangements and financing could be achieved. An application to the Australian Government's National Reserve System component of the Caring for our Country program was successful in securing two-thirds of the $13 million purchase price. The Nature Conservancy then sought to structure a deal for potential partners to assist in funding the remaining one-third of the purchase price and ownership arrangements. The Nature Conservancy (TNC) and the Indigenous Land Corporation (ILC – whose remit is to assist Indigenous people with land acquisition and land management to achieve economic, environmental, social and cultural benefits), had previously discussed working more closely together on projects of mutual interest, and Fish River was considered to fit the bill. ILC would hold title until handed back.

At the time TNC were part of a productive partnership with the Pew Environment Group (called the Wild Australia Program) and Pew also agreed to contribute to the required purchase price. Fairly late in the piece it was realised that due to technicalities about funds flowing from one of the partners to a government entity, Greening Australia was approached (and agreed) to be the receiver of some of these funds and to be a part holder of the title in a trust arrangement with ILC.

From The Nature Conservancy's perspective, this transaction offers an excellent example of the importance of leverage for major conservation acquisitions. TNC was instrumental in negotiating the purchase of this site for conservation and itself contributed $1.5 million to the purchase price. With partner organisations and the Australian Government, this initial amount was able to be matched and leveraged to reach the purchase price. There is no doubt that potential funders, be they government, corporate or philanthropic individuals, are attracted by the big vision that large-scale conservation projects offer, paired with shared funding.

The purchase of this land and planned 'hand back' to Traditional Owners for conservation management is the first on a number of fronts. Essentially, it is the first time an environmental NGO has put money into such an arrangement in Australia. It is also the first time that the Australian Government's National Reserve System program has funded an acquisition for this purpose. And it is also the first time that ILC has purchased land with a specific focus on conservation *and* sustainable livelihoods.

But the leveraging went well beyond the financial contribution to the purchase of this property. It resulted in the Northern Territory Government and Territory Land Corporation signing a conservation management agreement over the 127,000 hectare Fish River Gorge Block (NT Portion 2700) – this property adjoins Fish River Station to the south, and results in connected conservation lands of over 300,000 hectares (**Figure 3**; see also DIPE 2002). Both properties filled a crucial gap in the 'Territory Eco-link', a large-scale connectivity corridor which seeks to link Arnhem Land with central Australia – which in turn is part of the continental Trans-Australia Eco-Link which reaches across the

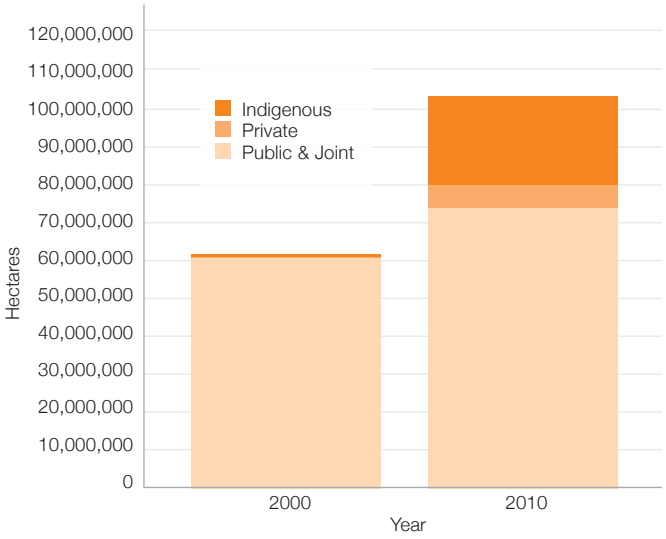

Figure 1. Increase in extent of protected areas in the National Reserve System between 2000 and 2010, including ownership type (data from the Collaborative Protected Area Database 2000 and 2010).

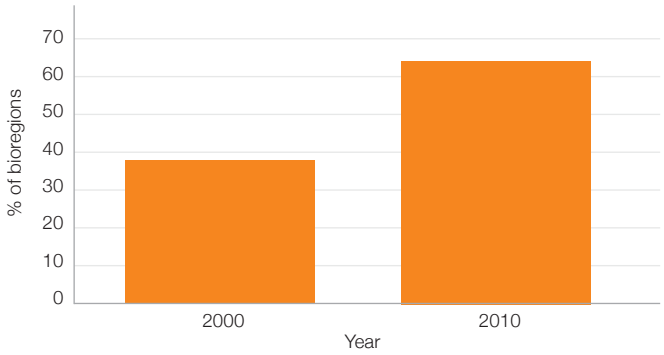

Figure 2. Change in number of IBRA bioregions that have greater than 10% of their total area covered by protected areas, in 2000 and 2010 (data from the Collaborative Protected Area Database 2000 and 2010).

continent from the Northern Territory to South Australian coasts (see chapters by Bridges and by Leaman in this publication). The purchase provides impetus to this large vision and complements newly signed Indigenous Protected Areas and conservation covenants in the region. And finally, there is significant interest in the applicability of this purchase/management model for other parts of the country.

Governance and management

Fish River Station is owned by ILC which employs a fulltime station manager. Seven Indigenous rangers already have jobs on the station, controlling weeds and feral animals, managing threatened species and fire. Day to day management is currently guided by the *Fish River Station Interim Management Guidelines* (Lipsett-Moore and Ansell 2011) prior to the development of a Traditional Owner-driven Healthy Country Plan (see for example Wunambal Gaambera Aboriginal Corporation 2010; Moorcroft et al. 2012).

A steering committee meets regularly and includes representations of the Australian Government, TNC, ILC, Pew, Greening Australia, as well as the Parks and Wildlife Commission of the Northern Territory, the North Australian Indigenous Land and Sea Management Alliance (NAILSMA), and the Northern Land Council. An Indigenous Advisory Group established by the Northern Land Council will represent the interests of the Wagiman, Labarganyan, Malak Malak and Kamu clans who have strong ties to Fish River. Meanwhile the Aboriginal Areas Protection Authority is working with Traditional Owners to identify sacred sites.

Fish River Station has been designated as an IUCN protected area management category II which will mean the lands and waters will be principally managed for biodiversity and cultural values. A conservation covenant will be applied to the lease, established under Section 74 of the *Territory Parks and Wildlife Conservation Act 2000* and will run with the title of the lease.

So what is happening on the ground and how is it being financed? Getting feral herbivore numbers down and a more sustainable fire regime are the two most pressing issues, and significant effort has been put into these over the past two years. An Indigenous business is employed to remove feral animals such as scrub cattle, donkeys and buffalo, while the Indigenous-run Gunbalunya abattoir is processing the buffalo for sale to local communities, the Sydney market and restaurants at the Indigenous-owned Yulara Resort. With fire, there has been a reduction in the area burnt annually, but significantly the hotter, more damaging late dry season burns which occurred on 30% of the property (on average) prior to purchase have been reduced to less than 2%.

Funding at present is coming from a mix of philanthropic and government sources but it is likely that income will be generated from early dry season savanna burning which reduces greenhouse gas emissions and will be eligible for carbon offset funding under the Carbon Farming Initiative (e.g. Russell-Smith et al. 2009; Fitzsimons et al. 2012). NAILSMA and ILC intend to seek accreditation for Fish River for carbon income streams from fire abatement, sequestration and feral animal control.

Carpet Python, Fish River Station. ©Photo: Tim Bond

Challenges

No new and innovative approach runs smoothly or is perfect. The Fish River model and deal was no exception. There were many points at which this deal almost fell over due to a variety of reasons. Some of the more pertinent challenges included:

1. Establishing an agreed valuation of the property. Fish River was unusual in that it was a perpetual lease and not a grazing lease. Very few such leases exist in the Northern Territory and differentiating between actual and potential future land use activities proved to be a challenge for valuers.
2. Coordinating the eventual five different partner organisations, each with different objectives, different organisational setups, and different internal bureaucracies and approval processes.
3. Purchasing land on a competitive open market with a need to act quickly and ensuring sufficient Indigenous consultation prior to purchase can be challenging. Early discussions with land councils and relevant Indigenous organisations and individuals are essential though to ensure the approach is broadly supported. While there is a registered Native Title claim that includes Fish River Station, Native Title may not be determined by the time the property is ready to be handed over, so the role of the land council here will be all-important. Initiating contact with representatives of the Native Title claimants and identifying the Traditional Owners of Fish River was a necessary early step and was undertaken by the Northern Land Council in consultation with ILC.
4. One of the other challenges will be ensuring communication is accurate and transparent in that land is being transferred but 'with conditions'. In other words, the land is for healthy country (conservation) management and with the legal protection requirements which are standard for National Reserve System acquisitions, but which do of course allow of sustainable livelihood opportunities for Traditional Owners.

Lessons

Three important lessons are evident from efforts to secure Fish River Station for conservation:

1. Shared vision is important – There were many stages where this deal could have fallen over. However, it was the strong shared vision of the end result that ultimately saw the acquisition succeed.
2. Openness and transparency – With a diverse range of partners, being open and transparent about the reasons for going into a collaboration of this nature and the expected end result for the property was very important.
3. Build and maintain strong partnerships – When this deal was almost going to fall apart due to complications about funds flowing to a government entity, TNC was able to call on Greening Australia, with whom TNC had had a strong relationship; and crucially for the project, Greening Australia was able to assist.

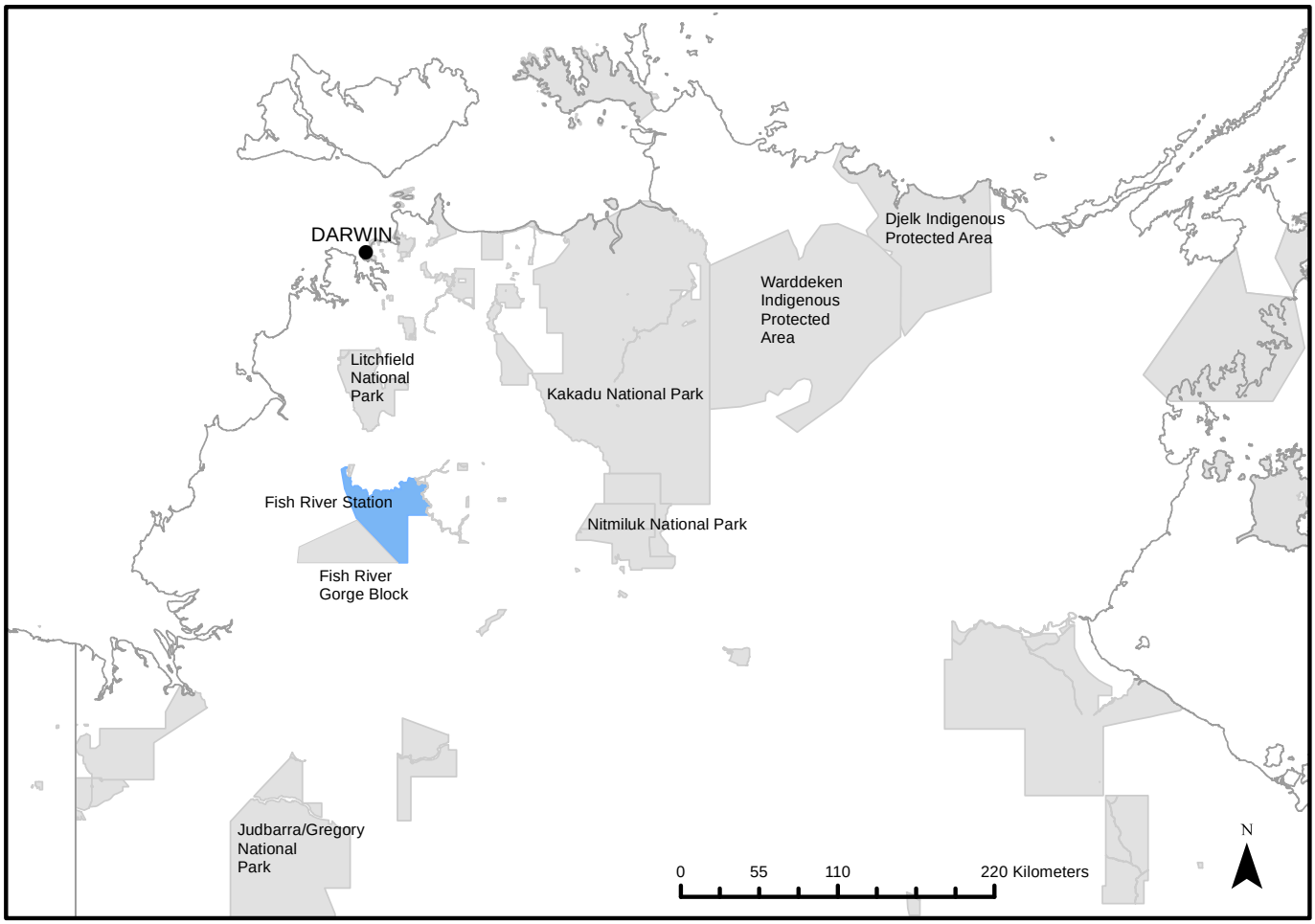

Figure 3. Location of Fish River Station in the Northern Territory. Other protected areas and conservation lands are shaded grey.

Conclusion

The purchase of Fish River Station was significant as it was the first time major environmental non-government organisations, the National Reserve System Program and the Indigenous Land Corporation had assisted to purchase a property for the purpose of handing the land back to Traditional Owners for conservation and sustainable livelihoods. This innovative approach has broadened the types of partners contributing to the National Reserve System and the management and governance arrangements for properties within the NRS. Future effectiveness of the model will be judged on outcomes: by a reduction in the threats to the property; the recovery of significant elements of biodiversity such as key species, rainforest patches, wetlands; and a financing model that will enable ongoing sustainable management by Traditional Owners. The arrangement will inform and hopefully encourage other similarly innovative approaches to expanding the National Reserve System.

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Further information

http://www.nature.org/ourinitiatives/regions/australia/explore/fish-river-station.xml

http://www.environment.gov.au/parks/nrs/getting-involved/case-studies/fish-river.html

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http://www.youtube.com/watch?v=UHkfQ7_Wn6k

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Arkaroola – creating a new type of protected area

Jason Irving

It is little wonder that the eminent geologist Sir Douglas Mawson was wont to refer to the Arkaroola region of the northern Flinders Ranges in South Australia as “one great open-air museum” (Walter and Walter 2011). Located in the Gammon Ranges, 600 kilometres north of Adelaide, Arkaroola is a starkly beautiful arid landscape of great antiquity. It contains mainly rugged ranges with distinctive granite peaks and ridges, deep gorges and entrenched streams, which resonate deeply with the many people who visit every year.

The geology of Arkaroola and its associated landscapes of gorges and plateaus are of profound conservation and research interest. In particular, Arkaroola has a diverse and concentrated suite of geological phenomena associated with radiogenic heat generated by the natural decay of radioactive uranium, thorium and potassium minerals within 1,580 million year old granitic rocks. These phenomena are expressed through a large number of intact and easily seen features, ranging from the explosive hydrothermal brecciation of basement rocks (Streitberg Ridge); to the Mount Gee-Mount Painter geothermal site which hosted boiling pools and geysers over a multi-million year period; and the modern-day Paralana Hot Springs, the only known active, radon-containing hot spring in the world. Of further interest is that it is also home to Arkaroola Reef, one of only five Neoproterozoic reefs known for Earth – and the best preserved – making it potentially, a site for researching the evolution of the first animal life.

Arkaroola also has considerable richness in biodiversity by virtue of its landscape, and exceptional ecological integrity by virtue of the management of the property. Its mountainous environment, streams and deep gorges, and semi-permanent and permanent waterholes, provide critical habitat for relict and threatened flora and fauna such as the Spidery Wattle (*Acacia araneosa*), the Slender Bell-fruit (*Codonocarpus pyramidalis*), and Yellow-footed Rock-wallaby (*Petrogale xanthopus*).

The striking landscape features of Arkaroola are reflected in the significance of the area for the Adnyamathana people, whose cultural connections with this place remain strong and vibrant; *Arkaroo* was the great serpent that according to myth inhabited the Gammon Ranges.

View from Streitberg Ridge looking towards the Freeling Heights, Arkaroola Protection Area. ©Photo: Bill Doyle

The area benefited immeasurably from a low stocking rate in its history as a working pastoral lease, and the strict conservation measures undertaken since it was destocked following its far-sighted acquisition for conservation by Reginald and Griselda Sprigg in 1968. They, and now their children Marg and Doug Sprigg, have managed the property for tourism for many years and in making Arkaroola accessible to many thousands of visitors, created an enduring visitor destination in the South Australian landscape. In directly adjoining the Vulkathunha-Gammon Ranges National Park, Arkaroola has also benefited from cooperative conservation programs with the South Australian Government.

Notwithstanding all of these values, Arkaroola has remained Crown land subject to a pastoral lease under the South Australian *Pastoral Land Management and Conservation Act 1989*. Its long-standing declaration as a Sanctuary under the state's *National Parks and Wildlife Act 1972*, while providing some recognition of its conservation value, did not offer any long-term protection of that value; and significantly, did not place any restrictions or management framework for exploration or mining activities occurring on the land.

The concentration of geological, biological and cultural attributes over a relatively small area of 60,000 hectares, combined with the history of management and tenure of the property, provide the underlying context for why special purpose legislation was enacted in 2012 to protect Arkaroola in perpetuity.

Seeking a balance between conservation and resource use

Due to its geological structure, Arkaroola had been the subject of some exploration and minor extraction for gold, uranium and other valuable minerals since the 1850s. Conservation management and mineral exploration had co-existed for many years at Arkaroola – in the absence of any serious proposition for a large-scale mine.

Community interest and debate about mining at Arkaroola was triggered in late 2007 following compliance failures over the terms of a mineral exploration licence held by exploration company Bonanza Gold Pty Ltd, a wholly owned subsidiary of Marathon Resources Limited. Community interest in mining, and the future conservation of Arkaroola, was increased further by a stated aim by Marathon Resources that it intended to develop a uranium mine in the centre of Arkaroola, based on the inferred resources found at Mount Gee.

In 2009, the South Australian Government released for consultation a draft policy document, *Seeking a Balance*, to provide a framework for applying a higher level of regulation and more specific locational controls on exploration and mining activities in the area (DEH 2009). This draft policy document identified the environmental, landscape, and mineral values of Arkaroola, and proposed different levels of land access (including some 'no-go' areas for mining) and associated exploration licence conditions under state mining legislation. The aim was to continue to provide mining access but within a more structured conservation framework. *Seeking a Balance* was itself innovative – not only to use a systematic values-based approach to determine land access for mining, but also, and perhaps more significantly, to consult with the community on land access and mining regulation.

Overwhelmingly, the community response to the draft policy was negative – the dominant response being that it was impossible to strike a balance between mining and conservation in Arkaroola. One salient feature of the 485 public submissions was that many people had visited and valued Arkaroola and thought – erroneously – that Arkaroola was already 'protected', and in particular, protected from mining, and that the new policy sought to weaken this protection.

The policy challenge for government sharpened in light of the increasing community awareness that Arkaroola was not 'protected' in any formal sense. What had started as a discrete policy issue for managing mining access eventually became a broader policy question about the conservation of Arkaroola itself. The question thus became – what mechanism would afford the protection needed?

'Arkaroola National Park' as the solution?

In considering the broader conservation management framework for Arkaroola – potentially while still allowing mining access – the then Premier of South Australia, the Hon Mike Rann MP, commissioned further consultation on options with those who held a direct interest in the outcome – namely, the pastoral leaseholders, the exploration companies with licences over the property, and the Adnyamathanha Native Title holders.

Yellow-footed Rock-wallaby at Arkaroola Waterhole. ©Photo: Jason Irving

A government-owned national park was explicitly canvassed as one option – possibly with the government acquiring the Arkaroola pastoral lease and, following proclamation of a national park, leasing the land back to the long-term managers (the Spriggs) to continue to manage and operate their ecotourism business. However, it soon became clear that creating a national park – the usual approach for protecting conservation land of community interest and the generally accepted means of removing mining access – would not be supported by the pastoral leaseholders. A new approach was needed for protecting Arkaroola and resolving the policy impasse.

The solution – the Arkaroola Protection Act

On 22 July 2011, Premier Rann announced that Arkaroola would be permanently protected through special purpose legislation to establish the Arkaroola Protection Area. The *Arkaroola Protection Act 2012* came into operation on 26 April 2012.

The purpose of the Act is to establish the Arkaroola Protection Area; to provide for the proper management and care of the Arkaroola Protection Area; and to prohibit mining activities in the Arkaroola Protection Area.

The Arkaroola Protection Area comprises most of the Arkaroola Pastoral Lease and also includes the Mawson Plateau region of the adjoining Mount Freeling Pastoral Lease. The Area is approximately 590 km² (**Figure 1**).

The Act has the following features:

- The Act legally defines the Arkaroola Protection Area. Any alteration to the boundaries of the area requires the approval of the Parliament of South Australia.
- The Act is committed to the Minister administering the *National Parks and Wildlife Act 1972*.
- The objects of the Act are to:
  - Provide for the conservation of nature in the Arkaroola Protection Area, including the conservation of:
    - habitat, ecosystems and ecosystem processes;
    - biological diversity at the community, species and genetic levels;
    - landforms of significance, including geological features and processes; and
    - landscapes and natural features of significance;
  - Support the conservation of objects, places, or features of cultural value to the Adnyamathanha people;

  - Support scientific research and environmental monitoring (consistently with the preceding objects);
  - Foster public appreciation, understanding and enjoyment of nature and objects, places or features of cultural value monitoring (consistently with the preceding objects); and
  - Ensure that development in the Arkaroola Protection Area, and the management of pastoral and other land in the Arkaroola Protection Area, is consistent with the preceding objects.
- The Act requires a management plan that will further the objects of the Act; in doing so, it will be an 'expression of policy' for the area and the Act requires that any person administering another Act will be required to act consistently with the management plan.
- The Act prohibits exploration and mining from occurring within the Arkaroola Protection Area, even within those exploration licences that continue to exist within the Protection Area.
- The Act cannot ban grazing on the pastoral leases (as such a ban would be inconsistent with the underlying pastoral lease tenure), however it provides the power for the pastoral leases to have conditions consistent with the management plan for the Arkaroola Protection Area. In addressing grazing through the management plan, the current stocking regime (whereby the land is not stocked at all) will continue into the future.
- The *Development Act 1993* has been amended so that the State Planning Strategy is required to have regard to the objects of the *Arkaroola Protection Act 2012*. In addition, the *Arkaroola Protection Act 2012* requires that the Development Plan for the Flinders Ranges must be reviewed within six months of the management plan being finalised, to determine whether any amendments to the Development Plan are required to promote consistency with the management plan.

Arkaroola Protection Area – a National Park by any other name

Site-specific legislation is not generally desirable for governments, but in this case, it enabled a governance structure to be designed to satisfy the aspirations and needs of government, the leaseholders, and the community. The land is not vested with the government and the management of Arkaroola remains in private hands. Of course, this would qualify the Arkaroola Protection Area to be a private protected area. However, the singular feature of Arkaroola is that the Minister prepares and adopts the management plan. In this regard, Arkaroola is neither a public, nor strictly a private, protected area. It is a hybrid protected area whereby the Minister establishes the vision for its management and gives that vision legal force.

The *Arkaroola Protection Act 2012* is unique in establishing the Arkaroola Protection Area with the legal status and protection commensurate with that afforded to a national park under the *National Parks and Wildlife Act 1972*. Furthermore, the Arkaroola Protection Area meets the IUCN definition of a protected area, and more specifically, the definition of a 'Category II National Park' under the IUCN framework. From an Australian perspective, the land is now included in the National Reserve System (NRS) by meeting the NRS establishment and management criteria as the Arkaroola Protection Area.

It was well observed by Shakespeare that a rose by any other name would smell as sweet (*Romeo and Juliet*). Arkaroola is a National Park as generally understood, in all but name; from a policy perspective, Arkaroola is a new form of protected area.

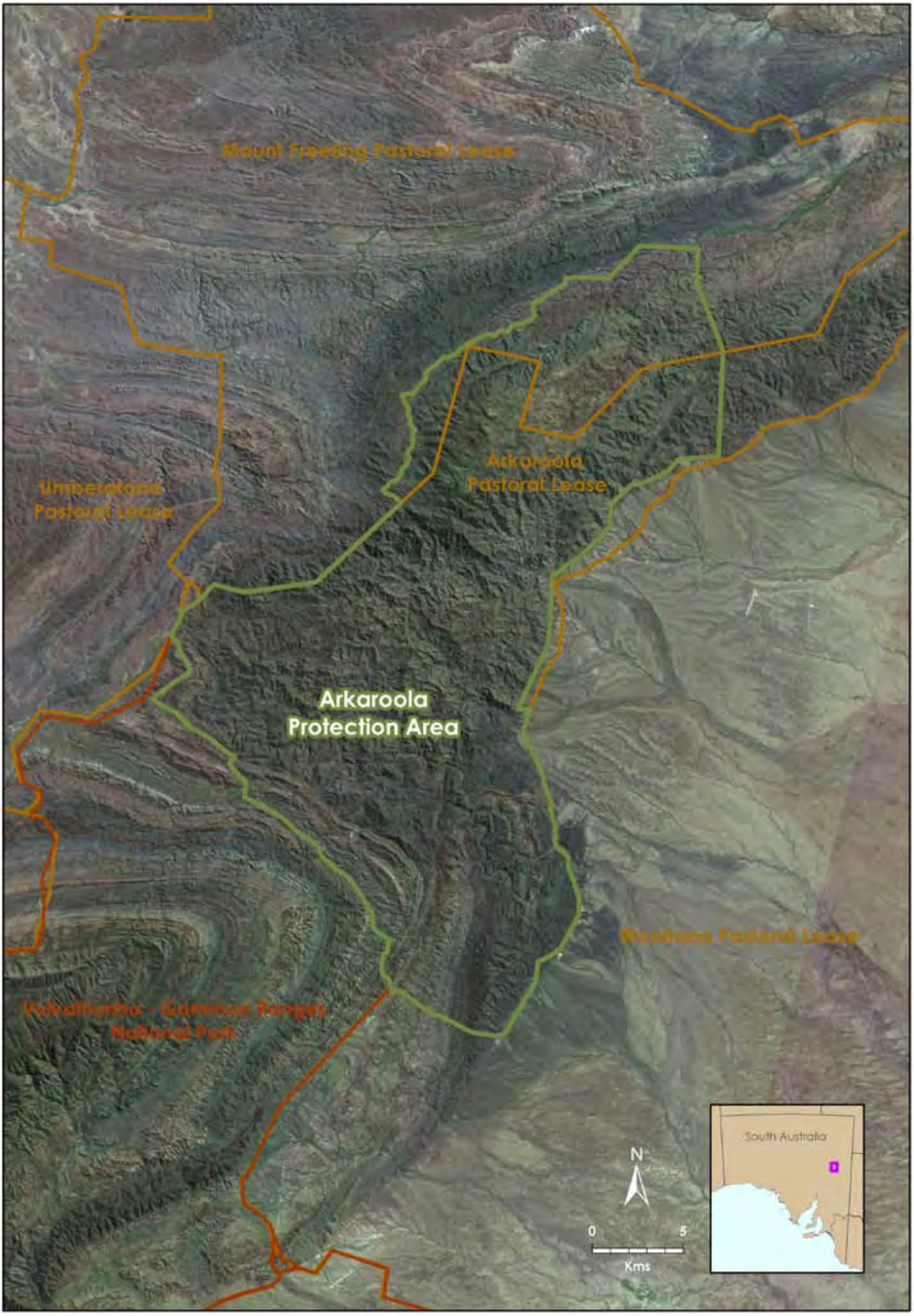

Figure 1. Arkaroola Protection Area.

As noted above, the Minister's interest in the Arkaroola Protection Area is largely limited to preparing a management plan to further the objects of the Act. The management plan is prepared by the Minister, in consultation with the pastoral leaseholders and the Adnyamathanha Native Title holders, and the community has a say in the content of the management plan; in this regard it walks a line between the community interest in a unique part of South Australia and the private interest (i.e. pastoral leaseholders) with a responsibility for its management. The management plan derives its legal strength from its ability to influence other government statutory processes and in that regard has the potential to be an extremely powerful tool for conservation.

The Act also has regulation-making powers to restrict or prohibit activities, and prescribe fines, which could be used to support the implementation of the management plan.

Using an opportunity to create innovation

The innovation with Arkaroola was to create a new kind of protected area to solve two complex policy challenges for the government – first, to decide whether conservation and mining could co-exist, and second, what mechanism/s could protect the area's values in perpetuity when the option of government purchase for a formal reserve is not available.

Arkaroola contains a unique set of values that have long warranted a governance model that secures and promotes their conservation. This has now been achieved as a result of considerable flexibility in policy thinking over several years triggered by the challenges of a mining issue. Government was able to bring new policy thinking outside of the traditional government-run national park approach (or simply banning mining through other mechanisms). Government not only responded to community concerns about a threat to the values of the area, but also used the opportunity to put in place a new governance model to promote the conservation of those values into the future.

The innovation of the Arkaroola solution was thus to design an elegant and long-term conservation outcome around how the *administration of government interacts with the management of an area by individuals*.

The *Arkaroola Protection Act 2012* has established a more secure and relevant legal governance model for Arkaroola – as a protected area. A shared vision can now be developed through a management plan for the area. Most importantly, the leaseholders of most of the area, sister and brother Marg and Doug Sprigg, have some security so that they can focus on developing a governance model for the management of Arkaroola for the next 50 years (Sprigg 2011).

While there may be practical difficulties in applying the Act's provisions more generally to private protected areas, it has a number of features that could inform the future governance framework for establishing a network of private protected areas. It may also serve as a governance model that could be used in other scenarios where the use of private land conflicts with community expectations about the conservation of the land.

This is particularly relevant where the community expects that a *landscape* is protected: areas of singular beauty capture public imagination and create concern for their protection. Because in the end it was neither practical nor desirable to bring that landscape into the government-owned protected area system, the *Arkaroola Protection Act 2012* enabled a 'protection area' to be designed to maximise conservation outcomes over two pastoral leases – free of concern for tenure. This approach enabled the entire Mawson Plateau to be protected, a particularly sensitive landscape that straddles both the Arkaroola and Mount Freeling Pastoral Leases.

Arkaroola Reef. ©Photo: Jason Irving

Acknowledgements

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Biography

Jason Irving is Manager of Protected Area Policy and Planning in the South Australian Department of Environment, Water and Natural Resources. He has over 15 years experience in protected area policy and is currently responsible for legislation and policy for protected areas on public and private land, including legislation, management planning, native title and co-management, tourism and recreation, and exploration and mining. He is a member of the World Commission on Protected Areas.

Opportunities for enhancing conservation management and resilience through tenure resolution in Cape York Peninsula

Andrea Leverington

The Queensland Government has been committed to joint management arrangements in Cape York Peninsula in partnership with the region's Traditional Owners. The tools required to achieve this partnership were created through significant new legislative and policy reforms and substantial financial commitments in land acquisition and management.

This chapter identifies the key drivers that led to the reforms, describes the legal basis and the process for tenure resolution including dedicating National Park (Cape York Peninsula Aboriginal land) (CYPAL), and outlines implementation to date. It presents some of the challenges for negotiations and implementation, and suggests some indicators for measuring the future success of the new arrangements.

Drivers

While for many years Queensland legislation has provided for Aboriginal people to claim and lease back specified national parks, this option has been regarded by Traditional Owners as unsatisfactory. A more acceptable joint management regime was therefore one of the key negotiating principles put forward by Traditional Owners as a prerequisite for dealing with the Queensland Government in future conservation arrangements. Consequently, in November 2007 the Queensland Government amended legislation to provide for a new class of protected area, called National Park (Cape York Peninsula Aboriginal land) – National Park (CYPAL).

This new approach has been widely accepted by the region's Traditional Owners and allows all existing national parks in the Cape York Peninsula region and any future parks in this region to become Aboriginal land and also be dedicated as National Park (CYPAL). It provides a framework for joint management of national parks by Traditional Owners (represented by a land trust or Indigenous corporation) and the department responsible for national park management.

Mount Tozer: Kutini-Payamu (Iron Range) National Park (Cape York Peninsula Aboriginal land). ©Photo: Queensland Parks and Wildlife Service

Another impetus for the reforms was that the Queensland Government was seeking to resolve the tenure of large areas of state-owned land on Cape York Peninsula and establish several new national parks while recognising native title interests. The approach taken by Queensland was to base negotiations on outcomes that were going to deliver equitable land tenure and management arrangements for both the State and Aboriginal people.

A third driver was the increasing recognition that ownership of land contributes significantly to Indigenous economic development. There was strong support for enabling Traditional Owners to benefit more directly from inalienable freehold land that is able to be utilised for a range of sustainable economic activities, as well as land under the National Park (CYPAL) regime where joint management can provide associated economic opportunities, including contractual services on the park and partnerships with tourism operators.

Legal basis

A key component of the process is the negotiation of an Indigenous Land Use Agreement (ILUA) under the Commonwealth *Native Title Act 1993* prior to the transfer of land and dedication of the National Park (CYPAL). This approach ensures that the dealing is authorised by the Native Title holders and is valid in terms of Native Title. If Native Title has not yet been determined, anthropological desktop studies are commissioned to assist with the identification of the relevant Native Title group. The Queensland Government enters into negotiations with Traditional Owners, who receive State-funded support and advice from the Cape York Land Council and the Balkanu Cape York Development Corporation.

The legal basis for NP (CYPAL) is significantly different from that for national parks on Aboriginal land in most other jurisdictions in Australia. The underlying tenure is inalienable Aboriginal freehold land, but the land is not leased to the State to be dedicated as a national park.

Instead, a land trust and the State enter into an Indigenous Management Agreement (IMA) under the provisions of the Queensland *Aboriginal Land Act 1991*. The IMA must state that the land will be managed as National Park (CYPAL) in perpetuity. The IMA must be registered on the title of the Aboriginal land. It is binding on the land trust and everyone with an interest in the land. The National Park (CYPAL) is then dedicated over the Aboriginal freehold land under the provisions of the Queensland *Nature Conservation Act 1992*.

Establishment process

Each property in the tenure resolution program (whether originally State-owned or acquired by the State for this program) is assessed for its environmental, social, cultural and economic values. Negotiations are held with the Traditional Owners to identify those areas of the property that will become NP (CYPAL) and those areas that will become 'ordinary' Aboriginal freehold land. Some of that land may be subject to additional conservation measures including nature refuges (a legally-recognised type of private protected area in Queensland).

Once agreement in principle has been reached on key commitments, such as level of funding and protection of cultural sites, the Traditional Owners, with advice from the Cape York Land Council, negotiate the detailed terms of an ILUA and IMA with the Queensland Government. The ILUA provides the framework for the entire dealing including the arrangements to apply to the ordinary Aboriginal freehold land. These arrangements may include licensing the use of the freehold areas to commercial interests for a period of time for activities that may include grazing or tourism, which may provide a steady income to the land trust. There may also be agreements between the land trust and local authorities for access to material for public road maintenance, or with service providers such as Telstra to construct and maintain infrastructure on the land.

The IMA must address how the NP (CYPAL) land is to be managed and the responsibilities of the environment minister, the chief executive (of the department responsible for national parks) and the grantees of the land. Public access is guaranteed subject to any specific cultural considerations. Through the IMA, the land trust and Queensland Government agree on how they will consult with each other about park management; manage and present the park; employ and train people to work in the national park; contract work out (including to the land trust); and develop the land trust's capacity to increase its role in park management.

When the draft agreements have been negotiated, Native Title holders meet to consider them and authorise the Native Title parties to enter into an ILUA. The native title parties then sign the ILUA, the land trust signs the IMA, the Aboriginal land is granted and the NP (CYPAL) dedicated.

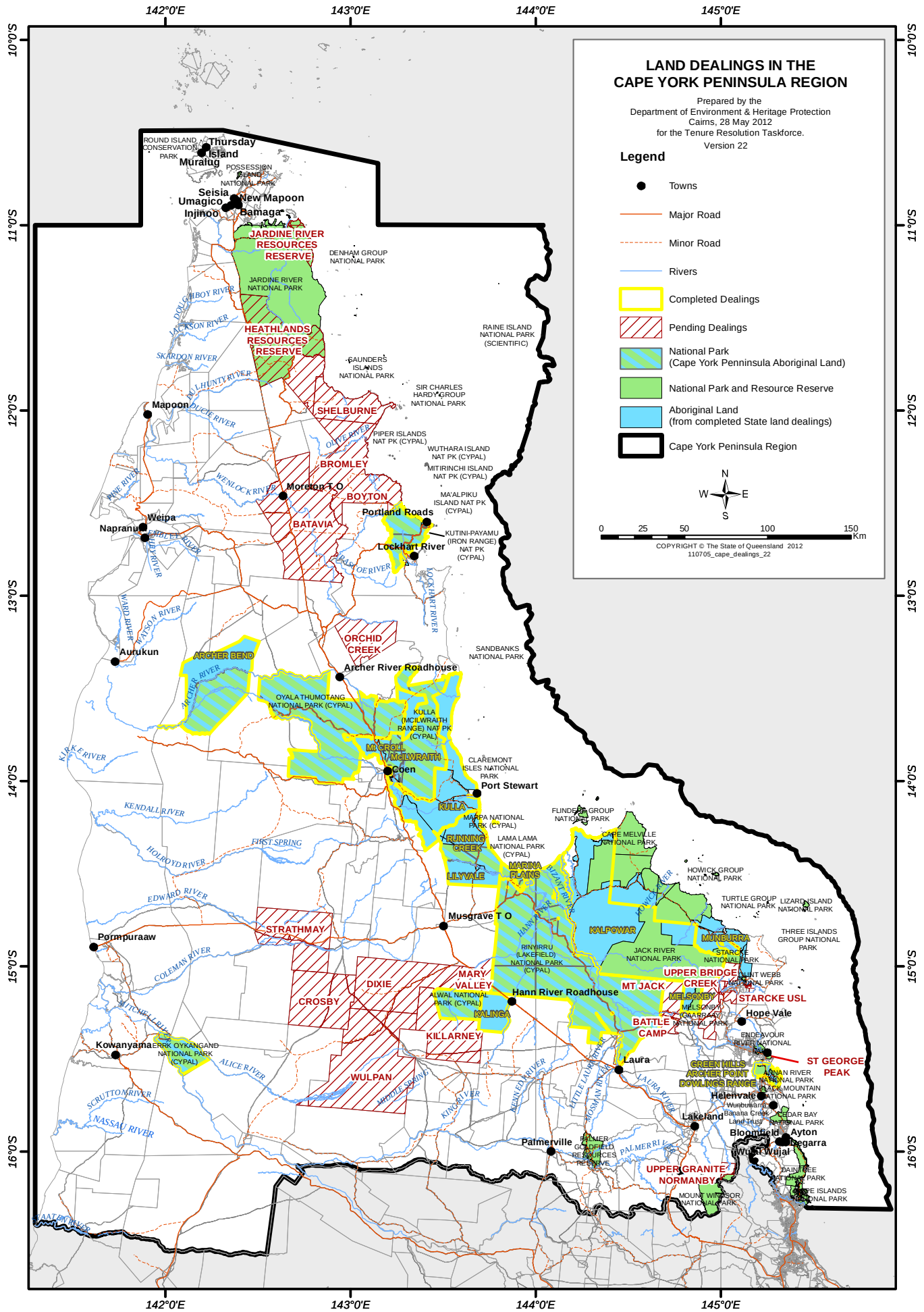

Figure 1. Land dealings in the Cape York Peninsula region as at mid-2012.

Field inspection of the Flinders Group National Park and Cape Melville National Park. ©Photo: Queensland Parks and Wildlife Service

Joint management

The National Park (CYPAL) must be managed in accordance with the IMA, the ILUA, the management principles set out in the *Nature Conservation Act 1992* and any management plan. The management principles for National Parks (CYPAL) are the same as for national parks, with the additional requirement that the park is to be managed, as far as practicable, in a way that is consistent with any Aboriginal tradition applicable to the area.

A key issue for joint management of national parks is ensuring that Traditional Owners have the resources and capacity to fully engage in park management and decision-making. The funding commitment made by the Queensland Government in the IMA is essential to support joint management in practice. It is also important that land trusts seek support from other funding programs to help with business development and capacity development in general. A fundamental goal is therefore is to build the capacity of land trusts to increase their role in park management.

Implementation to date

The tenure resolution program has been very successful to date in delivering 580,000 hectares of new national park and 703,000 hectares of Aboriginal land, of which 90,000 hectares are managed as Nature Refuges (Figure 1). Three new National Parks (CYPAL) have been dedicated and nine existing national parks have been transferred. Further nature refuges will be declared over areas of Aboriginal land that have significant conservation values, yet also provide opportunities for sustainable land management practices including grazing and tourism.

The Australian Government has also recognised the benefits that the program is delivering and provided $16 million to Queensland for land acquisition under the National Reserve System component of the Caring for our Country program and a further $4 million to support enhanced Aboriginal land management.

Land trusts have been successful in using their new tenure arrangements and conservation commitments to attract other government investments including 'Working on Country' and Indigenous Protected Area funding. There are also growing examples of private investment including investigations into carbon farming and reafforestation as well as more contemporary activities including grazing and tourism.

This new investment has brought a raft of land management programs to the Cape York Peninsula that are being delivered at both the landscape and local scale, ensuring a more intensive management of threatening processes by local communities.

Challenges

The challenges in delivering the tenure resolution program and jointly managing new National Parks (CYPAL) include:

- Resourcing and building the capacity of land trusts to become fully operational
- Resourcing and building the capacity of departmental officers to deliver work programs under the new partnership arrangements
- Securing economic opportunities for Traditional Owners from both the freehold land and joint management of the park

Fencing work: pest management workshop – Oyala Thumotang National Park (Cape York Peninsula Aboriginal land). ©Photo: Queensland Parks and Wildlife Service

- Ensuring effective involvement of geographically dispersed land trust members
- Assisting Traditional Owners and other parties to understand complex legal and administrative processes for tenure changes, and establishing clear and effective communication and decision-making procedures at both the tenure resolution and joint management implementation stages
- Ensuring effective coordination of disparate land management projects at the landscape and local scale.

Evaluation

To evaluate the success of this program in each park and across the region, several indicators will need to be measured. These may include:

- Number and rate of properties resolved
- Condition of natural and cultural resources
- Level of involvement (including employment) of land trust members and their families
- Satisfaction levels of land trust members and departmental officers
- Level of public understanding, compliance and support
- Social and economic indicators for the region.

Conclusion

This initiative has been a significant achievement, re-establishing Indigenous ownership and access to land and providing formal recognition of Aboriginal tradition in the ownership and management of national parks in the Cape York Peninsula region. Early indications are that, given adequate resourcing and sufficient interest from all parties in achieving tenure resolution and joint management, this is a workable model that will significantly enhance both conservation and Indigenous social and economic outcomes.

Author

Andrea Leverington

Biography

Dr Andrea Leverington has worked in natural resource and conservation management and policy development in the Queensland public service for over 25 years. Andrea was involved with the drafting and implementation of the *Cape York Peninsula Heritage Act 1997* which provided the basis for the current joint management arrangements, and was the Deputy Director for the Queensland National Parks and Wildlife Service between 2009 and 2012. In this latter role, Andrea oversaw the dedication of many of the National Parks (Cape York Peninsula Aboriginal land).

Gondwana Link: process or plan, movement or organisation?

Keith Bradby

"...there is no more delicate matter to take in hand, nor more dangerous to conduct, nor more doubtful in its success, than to set up as a leader in the introduction of changes. For he who innovates will have for his enemies all those who are well off under the existing order of things, and only lukewarm supporters who might be better off under the new. This lukewarm temper arises partly from the fear of adversaries who have the laws on their side, and partly from the incredulity of mankind, who will never admit the merit of anything new, until they have seen it proved by the event." (Niccolò Machiavelli, *The Prince*, Chapter 6)

Gondwana Link is a 10-year-old effort proud of the on-ground change and support engendered through our approach. We started as, and largely remain, a broad collaboration across a number of global, national and local groups; supported by a small unit charged with maintaining the vision and providing the critical support for on-ground change where needed. Our collective vision has remained consistent: 'Reconnected country, from the wet forests of the far south west to the woodland and mallee bordering the Nullarbor, in which ecosystem function and biodiversity are restored and maintained'. These words reflect more than just the restoration of ecological linkages, as connectivity is only one of the many critical ecological functions we seek to achieve.

Our work has already led to considerable improvements in the ecological wellbeing of large areas across south-western Australia (see **Figure 1**), and more importantly, has prepared the ground for much greater improvements. In launching and establishing Gondwana Link we have mainly followed a common-sense, adaptive approach that builds on the fundamental principles accepted throughout the ecological sciences. It seems this is often called 'innovation'.

Systems not species

In many ways our mere existence is innovative. When we launched Gondwana Link in 2002, it was but a pipe dream to reverse downward trends in ecological and evolutionary function through concerted landscape scale action across multiple tenures. Australian conservation programs were still largely focused on achieving minimal protected area representation of previously widespread vegetation types, and intensive management programs focused on a selection of the rarest and most endangered species. However, we launched, we survived, we grew – and are now seeing a growing consensus on the need for large landscape ecosystem-based approaches.

Royal Hakea (*Hakea victoria*) in Fitzgerald River National Park in Western Australia. ©Photo: James Fitzsimons

A process not a plan

Many programs start with development of a grand plan. In our experience, plan development can give the general impression of a 'black box' process where scientists decide, through means only they can really understand, what the others involved should be doing. These exercises can be very expensive and often run at least a few years over schedule, by which time any willing participants have had their initial enthusiasm fade away, and the unwilling have become entrenched in their aversion to the approach.

We started with a simple strategy focused on processes which embed ongoing ecologically-focused restoration and management into visible results in a landscape. Through The Nature Conservancy we were fortunate to receive a significant donation early in the process, and chose very deliberately to allocate it to on-ground programs in two sections of the proposed Link. For these on-ground programs we had a general approach, in which each funded action was worthy in itself – its contribution to the broader goal being an additional benefit. Through the initial actions we built the momentum, support, knowledge, and additional funding which is enabling the overall program to grow and to become more ecologically and operationally fine-tuned.

This could be regarded as innovative, but it is also a sound risk minimisation strategy that guarantees good results from initial expenditure. By choosing to achieve nett progress, rather than 'neat' progress, we could be certain that the initial outcomes would be worthwhile in themselves, while also building the larger program; even if the approach faltered at some point we would have achieved much good. If we had pursued 'neat progress', by some plan of pre-determined actions, we would have risked ending up with a seemingly good plan and not much else.

Additionally, by growing big through starting small, and checking progress along the way, we ensured the program was built, as much as possible, from the on-ground realities of the areas we worked across.

Organic growth model

We have moved forward somewhat intuitively, through processes that can be likened to how mallee and woodland eucalypts grow. We have endeavoured to:

- Start small and grow from the ground up – As outlined above.
- Have the right 'genetic material' to do well – Which in this case obviously means the right people; we have not tried to include everybody or collect organisational logos along the way, rather to work directly with those who have genuine roles and preferably with a genuine passion and commitment.
- Germinate with the right enabling conditions – The concept of connectivity is not new, but it was not until the early 2000s that the right enabling conditions, such as the end of old growth logging and extensive agricultural clearing, were present in our part of Australia. The right 'genetic material' also took some time to assemble.
- Grow like hell at every opportunity, and survive the dry spells – There are peaks and troughs in every long-term effort. Our challenge has been to have a wide enough range of committed people and organisations to ride across the top of any individual or organisational troughs, along with the vision, image, and structure to carry us through. We have only started to achieve this in recent years.
- Form comes through function – We did not start with any pre-determined assumption of who we needed to be and how we needed to structure ourselves (apart from a principle that there would be no power pyramids). Our core roles and structures have changed more than once already; and while that unsettles some people, and does have some failings, our efforts have remained consistent with the original intent longer than achieved in most initiatives, where a lot of initial effort goes into setting up elaborate governance structures.
- Spread through flower and seed – We have not proselytised to any great degree, but the strength of the original vision and the flowering of the original effort have planted seeds in other minds, many of which are now working with us or on their own programs.
- Stand together so each tree forms the forest – We may be starting to achieve ecological improvements over large landscapes, but only because lots of smaller efforts are happening cohesively.

Figure 1. The Gondwana Link vision is 'Reconnected country, from the karri forests of the far south west to the woodland and mallee bordering the Nullarbor, in which ecosystem function and biodiversity are restored and maintained'. Work is underway in eight main areas.

The organic approach recognised that being effective over larger areas does not necessarily mean just doing more of the same. Complexity can increase exponentially with size, so the tools and techniques necessary to achieve meaningful ecological change over large areas are likely to be very different to what have been used in the past. As work to achieve Gondwana Link demonstrated, those tools and techniques can only be developed through experience.

Achieving exponential improvement in technical approaches

Exponential growth in on-ground change, and from that, exponential change across large landscapes, will not happen without innovative technical approaches that improve both efficiency and ecological effectiveness. While there are now many examples of this across Gondwana Link, both the stand-out example and the personification of many of the critical elements is the work of Justin Jonson. Justin first made contact with Gondwana Link in 2004 – long enthusiastic phone calls from the then student who readily grasped our concept and wanted to be part of the action. He first secured himself some work on the seed-picking teams and then a position with Greening Australia. When this did not work out we secured, again through The Nature Conservancy, funds for Greening Australia to re-employ him on the critically important work of determining how much carbon could be grown in biodiverse systems.

Within three years Justin had produced a definitive set of carbon sequestration rates for the main local species (Jonson and Freudenberger 2011), designed and produced a broadacre direct seeding machine, planned and implemented the first high standard ecological restoration planting (Jonson 2010) – which was also the first carbon-funded planting in Gondwana Link – and finally, set an outstanding example of a good process for monitoring restoration. Justin has now established his own business, Threshold Environmental, and has undertaken high standard restoration in Gondwana Link for Greening Australia, Carbon Neutral, Bush Heritage Australia, Fitzgerald Biosphere Group and a number of landholders, including the first significant plantings in the Ravensthorpe section of the Link.

A key element in Justin's success, and a lesson well learnt by us, is the benefit of directly linking research with implementation, with journal papers being a by-product of focused application and experience.

Sam Crowder and Justin Jonson with Justin's broad-acre direct seeding machine on Greening Australia's Peniup property in Gondwana Link. ©Photo: Danny ten Seldam

This example underscores the importance of encouraging and supporting passionate and determined contributors who want to do this work and achieve major change. Connectivity conservation, a sector where the financial rewards are generally less than in other sectors, needs to be skilled at attracting and working with passionate and talented people.
The skills needed include how to identify major talent and how to provide the critical support they need to produce, recognising that we don't all fit into neat arrangements. An intense and rigorous scientific focus, combined with an innovative approach and often a non-conforming personality, can be very challenging to both colleagues and institutions comfortable with their existing modes of operating.

Don't follow the money

While large amounts of funding are obviously required to achieve ecological change at scale, we first defined our overall vision, and then developed strategies to bring various sources of funding in behind the work of achieving that vision. While this may sound like an obvious approach, and hardly innovative, for some decades Australia has had a significant number of groups who tend to follow the readily available funding, usually from governments, rather than charting their own course. There is no consistency in this approach, particularly in relation to government funding, as the speed at which a number of public sector grant programs adjust their objectives is matched only by the rapidity with which groups re-write their applications to match the adjustments. This leads not so much to mission creep as mission gallop, and any original objectives, beyond those of funding the organisations themselves, are easily lost.

Two additional elements were also integral to our original strategy. Firstly, we aimed to develop new funding sources that would have better continuity and be more ecologically focused, lessening the dependence of groups on either government grants or small-scale public fundraising. This was part of the attraction we had for some groups, particularly given the early funding provided by The Nature Conservancy. Since then, we have been a small part of an immense growth in environmental philanthropy in Australia. Nationally, this is much better evidenced by the rising importance of organisations such as the Australian Wildlife Conservancy, Bush Heritage Australia, The Nature Conservancy and the Pew Environmental Group. Whether a similar rapid growth will occur in carbon-funded restoration, or whether party politics and shifting priorities will kill the potential, is yet to be seen.

Secondly, we have focused on where the ever-changing public funding programs were not focused, in effect innovating beyond the norm to fill essential gaps in ecological protection and management. Ideally the work we supported built on existing public funding that others were accessing. Ten years on, public funding is starting to provide greater support for whole of landscape approaches and particularly for ecological restoration of whole paddocks. Where on-ground groups have more diverse funding bases, with public, private and often commercial funds involved, the private funds generally support the more innovative elements in their program.

The same property four years later, with restoration plantings of upland yate systems, a key conservation target. ©Photo: Justin Jonson, Threshold Environmental

What fosters innovation?

Critical to understanding what helped us 'innovate' and launch Gondwana Link is appreciating the critical role The Nature Conservancy brought in our formative and establishment years. They provided support in and encouraged:

- Thinking big, along with tangible examples of how that can work from the perspective of the private sector
- Astute minds with robust strategic thinking
- Extreme flexibility and 'nimbleness'
- Total focus on achieving large ecological outcomes rather than organisational outcomes
- Relative freedom from Australian power structures and positioning
- Insights, mentoring and formal training in proven techniques
- Substantial early funding delivered astutely and timely
- Credibility by association
- Friendship and encouragement.

These were critical elements in helping us successfully adopt an innovative new approach, and reflect the qualities and processes we now strive to provide, when needed, to help 'new' groups become involved in achieving change in sections of Gondwana Link.

The additional underpinning element, of both that initial engagement with the Conservancy and ongoing innovation across Gondwana Link, is the passion and ability of committed individuals. With the Conservancy it was key individuals who first saw the potential we held, and steered support for our vision into and through their organisation. With significant technical advances, such as the work on carbon sequestration rates in biodiverse plantings and paddock-scale restoration noted above, it has been passionate individuals who have innovated and achieved the greatest advances. While these then become, or are at least used in, 'innovative' programs adopted by organisations and agencies, it is important to recognise that, by and large, it is individuals who innovate and organisations that adopt innovations (or not).

What kills innovation?

Innovation cannot be controlled, ordered, budgeted for, 'policied' into existence or otherwise prescribed. It happens when conditions are right, and the role of management is to focus on creating those conditions, supporting the innovators, and nullifying the negative forces that diminish innovation, as well as being able to recognise and adopt useful new strategies or tools. There is considerable literature from the business world on how to create those right conditions and avoid the pitfalls (e.g. Bartlett and Ghoshal 1997, Lehrer 2012) but not much specific to the conservation sector.

In Gondwana Link's decade of experience, key elements to be avoided include:

- Organisations unduly taking the credit for the work of individuals, which removes the impetus for further innovation
- 'Command and control' management systems which operate at a distance from the on-ground realities, limiting the ability of on-ground operators to develop and test ideas

- Organisational insularity, in which the extent of congratulatory back-slapping overshadows the critical scrutiny and brutal honesty which fertilises new thinking
- Homogenisation of programs which fails to recognise that "no single, detailed prescription can be of much use for more than a single system" (Holling and Meefe 1996, p. 334) – we are not in the business of making widgets, but restoring complex ecosystem processes
- Gatekeeper and competitive organisations, who fail to respect the polycentric nature of power and creativity in our society
- Acceptance of mediocre outputs rather than a willingness to drill deeper and harder
- Systems that preferentially reward the mediocre and reliable rather than the innovative, which leads to organisational and individual exhaustion of innovative talent.

It is particularly concerning that, in many cases, government funding in Australia is often delivered in such a way as to reinforce the persistence of a number of the features mentioned above. Of particular concern are the rigid, output-focused, governance systems of publicly-subsidised regional organisations, some of which compete with the smaller on-ground groups and the more innovative and outcome-focused private sector approaches.

Goethe summed it up from a different perspective: "The useful encourages itself; for the multitude produce it, and no one can dispense with it: the beautiful must be encouraged; for few can set it forth, and many need it." (*Wilhelm Meister's Apprenticeship* (1795), p. 306).

Where is Gondwana Link heading?

Our initial approach is gaining greater support in Australia and we are excited by the opportunity to now work with other similarly sized and similarly ambitious programs around the country.

With the many groups involved we have made substantial progress, but are still a long way from achieving the original vision where it matters – on the ground. But the foundations are laid for a stronger effort in coming years, and the concept – that major opportunity exists to restore a connected and ecologically functioning landscape from the south-western forests to the edge of the arid inland – has escaped us and is now roaming free, igniting many largely independent efforts.

In terms of organisation, we have moved from what I earlier described as the 'organic growth model' to a slightly more formal structure, based pretty much on a standard off-the-shelf company model, with a few add-ons. The trick here, I feel, will be to continue the focus on supporting the achievement of high standard ecological outcomes on the ground, and not be captured, as so many organisational structures are, by our own internal needs.

We are not seeking to have control over other organisations, nor sit at the top of a hierarchy or pyramid-shaped power structure, nor claim to be a representative 'umbrella' organisation. We are focusing on a number of core collective functions, all of which sit under the broad heading of 'enabling and guiding' rather than 'directing'.

As Tim Flannery (2010) wrote, "All this is to say that an effective governance system need not be ruthlessly centralised, but merely capable of sending messages that effectively influence the system." (*Here on Earth*, p. 246).

Necessity is said to be the mother of invention

We are now well into the Anthropocene, that terrible time in Earth's history where cumulative human actions, and individual inaction, are causing a rapid and massive decline in biological richness and diversity.

For those of us who can clearly see what is happening to the ecosystems around us, that reality has become a critical driver of both innovation, and the determination to implement that must go with it.

The vision of Gondwana Link includes the Great Western Woodlands – the largest temperate woodland left on Earth ©Photo: James Fitzsimons

Acknowledgements

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Biography

Keith Bradby is a long-time advocate for the ecological values of south-western Australia, starting as a community-based activist in the 1970s. He helped halt public land alienation to agriculture in the early 1980s, has since been part of some of Australia's earliest landcare groups, facilitated local enterprise development and managed a large catchment program. He worked inside government to tighten vegetation clearing controls in Western Australia during the 1990s, and for the last decade has had the privilege of working with the collaboration of private sector groups achieving Gondwana Link.

Great Eastern Ranges Initiative: mobilising the community and sustaining the momentum for continental-scale conservation

Rob Dunn, Gary Howling and Alison Totterdell

The Great Eastern Ranges Initiative (GER) brings people and organisations together to maintain and improve the health and resilience of the mountainous ecosystems of eastern Australia, ranging over 3,600 kilometres from the Grampians in Victoria to far north Queensland. The GER is a response to the ongoing decline and mass extinction of species due to past and current land-use and climate change. It delivers a holistic approach that uses science to identify and assess the significance of 'gaps' in native habitat and works with regional partners to determine how these 'gaps' can be restored to enhance the functional connectivity of the GER corridor.

The GER corridor follows the Great Dividing Range and Great Escarpment, as well as landscape-scale connections with adjacent coastal and inland slopes environments. It comprises the most biologically diverse landscapes on the continent and includes one of the most extensive network of protected areas in Australia (Figure 1). The topography of the landscape means the GER corridor provides refuge for many species and ecosystems. Today the GER corridor contains two-thirds of species listed as threatened in New South Wales. The GER vision is to conserve and manage this 'continental lifeline' and maintain the natural processes on which it depends.

The GER relies on a program of education, information and relationship-building to deliver its aims. Local landholders, government agencies, non-government organisations (NGOs), community and Indigenous groups, researchers, councils and industry have been mobilised to collaborate in the planning and delivery of projects on a voluntary basis.

The GER has evolved through three periods: foundation, transition and now expansion. Each of these phases has involved innovation to build, maintain momentum and capitalise on an increasing number of opportunities.

Snow Gum (*Eucalyptus pauciflora*) near Mt Paralyser in Kosciuszko National Park. ©Photo: Ian Pulsford

Foundation years: 2007-2010

The GER was officially launched in 2007 with $6.7 million funding allocated over three years by the New South Wales Government. This allowed the recruitment of six staff with expertise in science, research, spatial analysis, communications, tourism and project management. This team undertook a number of foundational tasks in the areas of science, branding and the establishment of five regional partnerships.

From the outset, strong emphasis was placed on the need to gather and synthesise knowledge to guide strategic delivery. Leadership by the New South Wales Government was important at this stage, as it facilitated access to the extensive spatial data and mapping resources available within government. A number of resources were developed to describe the natural and cultural heritage and socio-economic values of the GER, including:

- Principles for continental-scale connectivity conservation
- Mapping of regional biodiversity assets
- Analysis of conservation opportunities and constraints
- Analysis of connectivity values and regional priorities
- Continental-scale ecological processes and conservation priorities.

This underpinning of science was, and continues to be, a key strength of the GER.

The GER also recognised good communications as essential to ensuring the awareness, understanding and support of a diverse audience. This involved developing the messages and communications 'infrastructure' needed to engage, motivate and influence partners, stakeholders and the wider community. The development of the brand played an important role in connecting people with the GER vision.

A targeted approach to working in priority areas was adopted to maximise outcomes and ensure resources were not thinly spread. An initial analysis of connectivity priorities considered the following variables:

- Biological values – regional distinctiveness and species diversity
- Connectivity need – lack of connectivity of habitat and between protected areas
- Social opportunity – organisations with the capacity and interest to become involved.

This assessment identified five regions as the focus for effort during the early stages: the Border Ranges in northern New South Wales and south-east Queensland, the Hunter Valley, the Southern Highlands Link, Kosciuszko to Coast in southern New South Wales and the Australian Capital Territory, and Slopes to Summit covering the South West Slopes of New South Wales.

While the GER team supported the establishment of each of these partnerships, a critical role was played by regional partnership facilitators, whose priorities were to:

- Draw up conservation action plans to identify common objectives
- Develop governance arrangements to enable the involvement of a diverse range of stakeholders
- Use existing networks, media and events to promote the emerging partnership
- Oversee project delivery and promote and leverage partners' programs.

This process brought together many organisations for the first time and acted as a catalyst for new thinking on approaches to understanding priorities for collaborative projects.

The GER was able to make impressive progress over its first three years. By the end of the period over 100 organisations were actively involved and $12.9 million in cash and in-kind contributions had been leveraged for conservation projects from the New South Wales Government's $2.7 million in project grants. Perhaps the best proof of success was the enthusiasm with which the GER had been received by organisations and the community. Indeed this was the critical component that maintained the GER's momentum through the uncertain period of transition that followed.

Figure 1. The Great Eastern Ranges initiative – a 3,600 kilometre conservation corridor from the Grampians to far north Queensland. Source: OEH

Signatories to the GER Lead Partners MOU in 2011 – from left Sue Lennox (OzGREEN), Rob Dunn and Gary Howling (GER), Kevin Evans (National Parks Association), Paul Toni (Nature Conservation Trust), Lynn Webber (OEH), David Butcher (GER Chair). Photo: GER

Transition: 2010-12

In 2010, with the initial period of New South Wales Government funding about to end, a group of organisations discussed how the GER might continue into the future. Maintaining the facilitator positions, the need to expand beyond New South Wales, and a more sustainable funding model were all recognised as essential. These discussions resulted in five lead partners (Greening Australia NSW, National Parks Association of NSW, Nature Conservation Trust of NSW, OzGREEN, and the NSW Office of Environment and Heritage (OEH), entering into a memorandum of understanding (MOU). Under the MOU the parties agreed to provide leadership, deliver essential activities and coordination, and source future funding. The MOU identifies the governance arrangement as a 'partnership in spirit not in law' and is an important example of a New South Wales Government program transitioning to a NGO-led partnership.

The MOU allowed the New South Wales Government to extend the remaining funds for a further year. Though the six-person GER team had to be disbanded, there was still funding for the five facilitators, a new chief executive officer position and continued access to OEH resources. However, future funding remained uncertain, while the Government considered providing longer-term support.

Despite these uncertainties, the commitment of the members of the partners continued. Four new organisations joined the Hunter Valley partnership's management group membership, each from very different sectors: Conservation Volunteers, Muswellbrook Council, University of Newcastle and Xstrata Coal. The Border Ranges Alliance continued to focus on key regional priority areas. Kosciuszko to Coast became an incorporated association and won the Murrumbidgee Catchment Management Authority Landcare Award. Slopes to Summit expanded its reach into peri-urban areas with new funding. Work in the Southern Highlands continued with a Caring for our Country project led by the Hawkesbury-Nepean Catchment Management Authority. In addition, a project with the federally-funded Atlas of Living Australia included support for the GER team and the five facilitators until late 2011.

At this time, the lead partners' MOU was revised to enable the involvement of national, state and regional partners, in addition to the existing partnerships.

Expansion: 2012 and beyond – new funding success

Funding certainty was finally realised with the announcement in December 2012 of a further $4.4 million in funding from the New South Wales Government through to 30 June 2015. This was allocated to:

- An expanded GER team with increased capacity in science, communications and partner relationships
- The five existing facilitators in order to leverage increasing opportunities and interest
- Two new regional partnerships in priority focus areas, each with new facilitator positions
- Significant project funding to expand the reach of the GER corridor in New South Wales.

The two new partnerships were selected using a refinement of the assessment process used for the five original partnerships. The approach was enriched by the consideration of recently published data on drought refugia, connectivity, and habitat management benefits. The first new landscape encompasses the geographic area of Coffs Harbour, Bellingen and the Upper Nymboida–Dorrigo Plateau. The Jaliigirr Biodiversity Alliance is made up of non-government, Landcare and Aboriginal groups, agencies and public authorities, and business. In just its first six months the Alliance agreed on its governance structure and completed an operating plan, and the Northern Rivers Catchment Management Authority, with other members of the Alliance, was successful in obtaining $3 million funding under the Australian Government's Biodiversity Fund.

The second partnership will cover the Illawarra and Shoalhaven region, linking the Royal National Park with the Sydney Catchment and south to Budderoo and Minnamurra National Parks and Kangaroo Valley. An early task will be to hold workshops for stakeholders from a range of sectors to contribute to the partnership's strategic direction and assess how they can best contribute.

A number of other Biodiversity Fund bids which directly contribute to the GER were also successful, including applications from the Hunter Valley and Slopes to Summit partnerships. One of these covers the forested and cleared hills linking protected areas from Kanangra Boyd to Wyangala, including Abercrombie River National Park and remnant woodlands in the Southern Tablelands and Western Slopes. The project is designed to provide a model to guide investment in other parts of the GER corridor. This recent funding success is further evidence of the broad recognition of the GER's potential to leverage the capacity and community support that has been built up since 2007.

Expansion: 2012 and beyond – working with other national, state and regional partners

An important lesson in implementing the GER so far is the recognition of the level of investment needed to establish regional partnerships. While so far successful, the heavy investment in establishing flagship partnerships suggests the need for alternative models that can prove similarly successful without the associated upfront costs.

While the GER corridor contains a major part of the Australian population, it is unrealistic to expand too widely with a small GER team. Our approach is to form partnerships with national, state and regional organisations whose work already contributes to the GER, but may not be identified as such. The GER is able to offer a clear value proposition to potential partners:

- They will be part of a one of the largest conservation corridors in the world, which is widely recognised for its innovation and achievements
- Participation allows the organisations to promote themselves to the community and to sponsors as part of this much bigger effort
- New funding opportunities may occur or applications have a greater chance of success if aligned with the GER.

To date new partners have included Conservation Volunteers, BirdLife Australia, Wildlife Land Trust, Land for Wildlife NSW, Trust for Nature (Victoria), Western Sydney Parklands Trust, and Hinterland Bush Links (near the Sunshine Coast). With these organisations and the five GER lead partners alone, there is considerable expertise and capacity in volunteerism, research, land owner conservation support, in-perpetuity protection of private and public land, advocacy, recreation, youth engagement, and bush rehabilitation and regeneration. By working with partners to identify new opportunities, we can engage more Australians and build and sustain momentum at a continental-scale. This will allow us to expand our reach across all eastern states without the need for additional resources.

The GER vision: the ultimate innovation

The GER was able to establish itself initially through the investment of the New South Wales Government in the science, branding and establishment of five partnerships in priority areas.

The enthusiasm that was engendered within and beyond these initial focus areas and the community's readiness to accept 'big picture' strategies supported the later transition to a NGO-led program and is now driving its expansion. This has resulted in significant funding support and increasing interest from national, state and regional organisations who want to become involved.

The GER brings people together around a shared vision and is forging conservation outcomes at a continental scale. It is this vision which is the ultimate innovation of the Great Eastern Ranges Initiative.

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View of the Sentinel from the Great Dividing Range alpine area of Kosciuszko National Park. ©Photo: Ian Pulsford

Wunambal Gaambera Healthy Country Plan

Heather Moorcroft

The Wunambal Gaambera Healthy Country Plan is an innovative conservation project based in the remote Kimberley region of Western Australia. The project is owned by the Wunambal Gaambera Native Title holders, the Indigenous Traditional Owners. It involves partnerships with both the private and public conservation sectors. Indigenous world views and cultural perspectives are paramount in the project, and Indigenous governance structures and protocols are supported and promoted. Indigenous knowledge and Western science are respected and integrated, and cultural, social and economic aspirations are incorporated with conservation outcomes.

Wunambal Gaambera Country and conservation significance

Wunambal Gaambera Country encompasses approximately 2.5 million hectares in the North Kimberly Region of north-west Western Australia. It includes 900,000 hectares of varying landscapes and 1.6 million hectares of seascapes, including islands. The statutory tenure of the area includes Aboriginal reserves, conservation reserves, mining reserves, leasehold and Crown lands.

The region is nationally and internationally recognised for its outstanding conservation values, both natural and cultural. It forms part of three of the World Wide Fund for Nature's Global 200 Priority Ecoregions for conservation (WWF 2010), is one of Australia's National Biodiversity Hotspots and is covered by the West Kimberley National Heritage Listing. There are considerable numbers of threatened, endemic, migratory and marine species in the region (DSEWPC 2012). It is a significant tourism destination with a range of attractions, encompassing spectacular scenery like Punamii-Uunpuu (Mitchell Falls) and extensive rock art galleries. It also supports an increasing expedition cruise industry (Scherrer et al. 2011).

Most importantly it is the ancestral lands and seas of the Wunambal Gaambera people who, with their neighbours, make up the Wanjina Wunggurr cultural bloc. Wunambal Gaambera people call their ancestral lands and seas their 'Uunguu', their living home, as they have for many thousands of years. Today there are over 600 Wunambal Gaambera people who reside in a number of settlements in the region, and the Wunambal Gaambera Aboriginal Corporation (WGAC) is the formal governance body responsible to them for the management of their Uunguu (Moorcroft et al. 2012).

Wunambal Gaambera Country – the gorge downstream of Punamii-Uunpuu (Mitchell Falls). ©Photo: Annette Ruzicka

The healthy country concept

'Country' is an Aboriginal English word that encapsulates the way Indigenous Australians understand and relate to their ancestral estate (see Rose 2002). Wunambal Gaambera Traditional Owners believe that if their country is healthy, then they will be healthy. This belief, commonly held by Indigenous Australians, is also recognised by Western science (see Burgess et al. 2005; Hunt et al. 2009). With impending Native Title determination under Australia's *Native Title Act 1993*, and a growing momentum of ideas for their country from external interests, the Wunambal Gaambera Traditional Owners wanted to develop a strategic framework that recognised their responsibility to manage the cultural and natural values of their country today and into the future. They wanted a framework that would help them:

- Articulate in modern contexts the principal values of healthy country and how to maintain those values
- Manage and look after *lalai* (creation) places in the ways of Wanjina Wunggurr cultural responsibilities and values
- Enjoy, live on, gain sustenance and manage Wunambal Gaambera Country land and sea as one country
- Raise their capacity to meet their cultural responsibilities and manage country on their own terms (Vigilante and Mangolomara 2007).

The Healthy Country Plan

In 2006, Wunambal Gaambera Traditional Owners, through the WGAC, invited Bush Heritage Australia (BHA), an Australian not-for-profit conservation non-government organisation (NGO), to be a key partner to help them develop and implement the Healthy Country Plan. The partnership, which is supported by written agreements, is in two stages: (1) a two-year planning stage to develop the plan and (2) a 10-year stage to help implement the plan. The first stage was completed in early 2011 and the second stage is now in effect. As well as BHA other key partners are the Kimberley Land Council (KLC), the regional Traditional Owner representative body, and the Australian Government's Indigenous Protected Area (IPA) and Working on Country programs.

Figure 1. A page from one of the pictorial reports showing members of the working group visiting country as part of considering the draft plan. Source: WGAC (2009)

The Healthy Country Plan was developed using The Nature Conservancy's Conservation Action Planning (CAP) tool. The CAP process uses an adaptive approach whereby the results of regular monitoring of specified indicators inform a continuing planning cycle. Plans are amended and updated as required so that work stays on track to achieving an agreed vision. Wunambal Gaambera Traditional Owners were supportive of using CAP as they recognised that the use of an international conservation planning tool with an extensive support network and a strong ecological base would be beneficial. However, they also wanted to ensure that Wanjina Wunggurr law and culture remained paramount and was afforded the highest priority in the process and the resulting plan. When the Wunambal Gaambera Healthy Country Plan was developed, there were very few Australian examples of CAP being used in a cultural landscape and cross-cultural context. The partners adapted the conservation planning approach so that:

- Wunambal Gaambera governance structures and protocols are supported and promoted
- Wunambal Gaambera world-views and cultural perspectives are paramount
- Wunambal Gaambera social, cultural and economic aspirations are incorporated with conservation outcomes
- Wunambal Gaambera Indigenous knowledge and Western science are respected and integrated.

The planning process

Importantly, the planning process involved members of Native Title claimant families, rather than people from residential communities (see Davies 2003). It included a series of participatory workshops: two large on-country workshops with members of Native Title claimant family groups to develop the vision and identify conservation targets; one smaller group workshop to develop objectives and strategies; one large workshop with members of Native Title claimant family groups to further work on strategies and actions; a travelling workshop and field trip to consider the first draft; and an approval meeting with members of Native Title claimant family groups. Regular feedback was given to participants between workshops in the form of pictorial reports (Figure 1), as well as at the commencement of each workshop. An unhurried and culturally respectful approach proved to be important, confirming an important characteristic of engagements with Indigenous people (Horstman and Wightman 2001). Healthy country partners BHA and the KLC assisted with the process, including facilitating the workshops, recording the process and preparing the pictorial reports, and providing ecological knowledge.

To support the workshops, a number of concurrent activities were also scheduled, such as turtle and dugong surveys with the North Australian Indigenous Land and Sea Management Alliance (NAILSMA); recording of traditional ecological knowledge (a project supported by WWF-Australia); and fire management operations in preparation for carbon abatement opportunities. These activities, although not strictly part of the planning process, resulted in Traditional Owners spending more time on country, assessing country, and passing on knowledge. All this helped to inform the workshops. It also helped build trusting working relationships with the *aalmara* (non-Indigenous) scientists and partner organisations, a critical factor in the success of the project.

Wunambal Gaambera governance structures and protocols were promoted throughout the process and included: acknowledging elders' roles and customary responsibilities in decision-making for specific cultural sites and *graa* (family estates); respecting gender and in-law avoidance relationships by convening men's and women's discussion groups; holding workshops and associated activities on-country, reinforcing the Indigenous view that 'to speak for country you need to be on country'; and maintaining flexible timelines to respect cultural obligations such as 'sorry time' (funeral and grieving periods).

The planning concepts

Conservation planning concepts based on ecological systems were adapted to include cultural perspectives and aspirations defined by Traditional Owners. By incorporating these cultural perspectives and aspirations, an Indigenous world view is respected and promoted, and the long-term cultural, social and economic health of Wunambal Gaambera people is supported. Such Indigenous perspectives and goals are often ignored or misinterpreted in environmental management processes (Lane and Corbett 2005). Examples of how the conservation planning concepts were adapted are detailed below.

The project area is defined by culture, not by bioregion or a catchment. The whole of Wunambal Gaambera Country, both land and sea, is the project area, with the process and the plan being 'tenure-blind', representing the cultural landscape of the Wanjina Wunggurr Uunguu Native Title claim. Language names and words for places, plants and animals are also used. These adaptations not only recognise and promote Indigenous views of landscapes and seascapes; they also assist with intergenerational transfer of knowledge. The use of such concepts and words additionally serve to describe and interpret Wunambal Gaambera culture and law when there are no adequate English words to do the same.

Conservation targets include tangible and intangible cultural targets as well as ecosystems, species assemblages and threatened species. Tangible cultural targets include important foods that Traditional Owners continue to hunt, collect and consume, such as bush plants, *mangguru* and *balguja* (marine turtles and dugong), *aamba* (kangaroos and wallabies) and other meat foods, as well as rock art and cultural places on islands. Intangible cultural targets such as ways of doing things include 'right way fire' (burning according to customary responsibilities – at the right time, at the right place and by the right people) and *Wanjina Wunggurr* itself (Figure 2).

Key parts of target ▶ Target ▼		Landscape/ seascape health	Cultural health	Biophysical condition	Size	Overall Health
Wanjina Wunggurr Law – our culture	1	Good	Poor	–	–	Fair
Right way fire	2	Fair	Fair	Fair	Fair	Fair
Aamba and other meat foods	3	Good	Fair	Good	Good	Good
Wulo	4	Good	Fair	Good	Good	Good
Yawal	5	Very good	Fair	Good	Good	Good
Bush plants	6	Good	Fair	Good	Good	Good
Rock art	7	Good	Poor	Fair	–	Poor
Cultural places on islands	8	Good	Poor	Fair	–	Poor
Fish and other seafoods	9	Good	Fair	Good	Good	Good
Mangguru and balguja	10	Good	Fair	Good	Good	Good
					Overall Health of Wunambal Gaambera Country:	Fair

Figure 2. Matrix from the plan showing the conservation targets, their health (viability) and the overall health of Wunambal Gaambera Country at the time of plan development. The ratings for the key attributes of landscape/seascape health, cultural health, biophysical condition and size, are based on Traditional Owners' knowledge and Western science and range from Very good (dark green), requiring minimal work under the plan, to Poor (red), warning that if no work is done soon then the target may never be healthy again. Source: WGAC (2010).

The objectives and strategies of the plan reflect Traditional Owners' cultural perspectives and aspirations, as well those of Western science and conservation. Financial and capacity-building objectives are supported by specific strategies of maintaining and building partnerships, establishing an endowment fund, and training and career development to create Wunambal Gaambera people's wealth and capacity to deliver sustainable healthy country management. Threats to achieving healthy country include weeds and feral animals, as well as threats to culture, such as loss of traditional knowledge and tourists not being respectful.

Indicators for assessing viability (health) include ecological indicators as well as social and cultural indicators. Examples of the latter include the availability of certain bush foods and the amount of fat on parts of preferred food animals like *mangguru* (marine turtles) and *aamba* (kangaroos and wallabies). Indicators relating to customary responsibilities – as to who is making decisions about country and who is doing the burning – support Indigenous governance structures. Monitoring of indicators include subjective and objective measurements. Quantitative measures like the number of hectares burnt, water quality and species distribution sit alongside qualitative measures of the taste of certain traditional foods, and elders' views on the amount of traditional knowledge being maintained and passed on (WGAC 2010).

Achievements of the plan

Following Native Title determination in 2011 the project entered the 10-year implementation stage of the plan with the key partners committing to financial, technological, facilitation and ecological support. A healthy country manager has been appointed to oversee the implementation of the plan. Uunguu rangers are undertaking training and carrying out on-ground conservation programs such as weed and feral animal control, and cultural site recording as well as fulfilling customary responsibilities of 'right way fire' and maintenance of cultural sites. Stage 1 of the Uunguu IPA was declared on 7 December 2010 and stages 2 and 3, including marine areas, are to follow. The Uunguu Monitoring and Evaluation Committee, with both cultural and natural heritage specialists, both Indigenous and non-Indigenous, is in operation. As part of the monitoring program, biodiversity and social benchmarking for carbon abatement through 'right way fire' has commenced (see Fitzsimons et al. 2012). The Uunguu Visitor Pass System is in development by WGAC, to provide the basis for Traditional Owner consent for access to and management of Wanjina Wunggurr cultural assets and exclusive possession – determined country, and on which to build authentic visitor experience products. Other Traditional Owner groups in the region are interested in being involved in the system.

Uunguu rangers carry out on-ground Western conservation activities as well as fulfil customary responsibilities for healthy country. ©Photo: WGAC

Challenges and impediments

The remoteness and tropical weather of the region is a significant challenge to the success of the Healthy Country Plan. Organising any activity is logistically difficult and very costly. Maintaining and building partnerships is in itself resource intensive. Another challenge is the continuing need to respond to ideas for Wunambal Gaambera Country from external interests. These ideas, from both the public and private sector, may present real opportunities for Traditional Owners and be consistent with the Healthy Country Plan, such as nature-culture tourism, or they may pose a risk or impediment to achieving healthy country, for instance bauxite mining.

Implications and opportunities

The implications of the plan and the planning process have been broader than expected. The plan, and the process, is seen as a benchmark by the Australian Government's IPA Program for developing IPA plans into the future. Other Kimberley Traditional Owner groups have adopted a similar approach for the management of their traditional lands and seas. The Nature Conservancy also views the plan, and the process, as a model and now not only supports a number of Traditional Owner groups across northern Australia to develop plans for their IPA projects, but is training Indigenous rangers, ranger coordinators and Traditional Owners in healthy country planning processes. Collaboration with the healthy country partners has allowed Wunambal Gaambera Traditional Owners access to an expanding conservation and Indigenous land and sea management network, and an opportunity to articulate their vision to a wider audience. The plan has provided leverage for Wunambal Gaambera people, through the WGAC, to negotiate and develop other partnerships to assist them with their vision of healthy country.

Controlled burning of part of Wunambal Gaambera Country in preparation for carbon abatement opportunities. ©Photo: Peter Morris

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This is a story about the Wunambal Gaambera Healthy Country Plan. Unfortunately the Wunambal Gaambera Traditional Owners were unable to participate in the Australian Committee for IUCN Symposium on *Innovation for 21st Century Conservation*. However in their absence, they agreed that I could speak about their plan and prepare this chapter. The Traditional Owners have approved the story for this chapter and the use of the images within. I wish to acknowledge and thank the Wunambal Gaambera Traditional Owners, who own the plan and allowed me to be involved in the process. I also acknowledge the work and efforts of Bush Heritage Australia and the Kimberley Land Council staff involved. Particular thanks for assistance with this chapter go to Bevan Stott and Tom Vigilante.

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Biography

Heather Moorcroft is a conservation planner specialising in working with Indigenous Australians. She has worked with both the public and private conservation sector for approximately 25 years, as an employee of national and state conservation agencies and as an independent consultant. Heather was the planning consultant for the Wunambal Gaambera Healthy Country Plan, which sparked her interest in further exploring the intercultural spaces between Western science and Indigenous world views. She is currently undertaking a PhD with the Australian Centre for Cultural Environmental Research at the University of Wollongong looking at engagements between the private conservation sector and Indigenous Australians.

Fire management in the central Kimberley (EcoFire): delivering measurable results by integrating science and land management in a cost-effective model

Sarah Legge and Atticus Fleming

The need for innovation in conservation management in Australia has never been greater: the prevailing 'business model' for conservation is failing. Australia has the worst rate of mammal extinctions in the modern world and many of our flora and fauna species are endangered. Broad-scale indicators of the condition of our biodiversity show that it continues to decline through the combined actions of habitat loss and modification, changes in fire patterns, and the introduction of feral animals and weeds (Australian State of the Environment 2011 Committee 2011). We need innovation to drive the development of new strategies if we wish to prevent further loss of biodiversity.

Innovation can only occur if there is a clear objective against which progress is honestly and objectively measured, and if we are prepared to review traditional roles. 'EcoFire' is an example of a project representing such innovation. It is a regional fire management program covering four million hectares of the central and north Kimberley, delivered by Australian Wildlife Conservancy (AWC) in partnership with the pastoralists, Indigenous communities and government agencies. The project has delivered a measurable change in fire patterns on a large scale, addressed one of the key threats to biodiversity in a cost-effective manner, and demonstrated how science and land management can be integrated successfully across a range of different tenures. In particular, it highlights the value of private-public partnerships in which the traditional role of participants (government, non-government) is re-assessed.

Background

The Kimberley region of north-west Australia covers over 30 million hectares, with a total population of less than 40,000 people, mostly concentrated in a few small regional towns. The Kimberley's rugged and spectacular landscapes support a globally important flora and fauna. The region has the highest rate of vertebrate endemism in northern Australia, and a concentration of mammal taxa and bird groups that have declined elsewhere in northern Australia. Indeed, the north-west Kimberley is now the only mainland area in the tropical savannas with an intact suite of native mammals (Burbidge et al. 2008).

Purple-crowned Fairy-wrens have increased on Mornington Sanctuary as a result of fire management. ©Photo: D. Adams/AWC

However, the region's internationally significant biodiversity values are beginning to erode, with incipient declines in key groups like small to medium-sized mammals, seed-eating birds (e.g. Gouldian Finch *Erythrura gouldiae*), riparian species (e.g. Purple-crowned Fairy-wrens *Malurus coronatus*) and fire-sensitive plants. These declines are due to a combination of several factors (Cawardine et al. 2011, Woinarski et al. 2011), of which altered fire patterns is one of the most profound.

By the early 2000s, fire patterns in the Kimberley had shifted to regular, extensive, uncontrolled fires in the mid to late dry season. All sectors of the Kimberley community were concerned about the effects of these fire patterns on biodiversity, pastoral production and cultural values. Until that point, previous attempts by government agencies to manage fire at a regional scale had been unsuccessful.

A new approach to fire management

In 2007, a new approach to fire management began with 'EcoFire', a landscape-scale, multi-tenure project covering four million hectares of the central and north Kimberley (**Figure 1**) (Legge et al. 2011b). In EcoFire, the private and public sector work together for highly cost-effective and measurable outcomes. The key innovative features of this project are:

- **Role of government and non-government participants:** The project represents a new model in the delivery of remote area conservation, with government acting as an investor while delivery has been contracted to the non-government AWC and landholders. Prior to EcoFire, delivery of prescribed burning in the region was carried out primarily by various Western Australian government agencies.

Fitzroy Valley and Bluff. ©Photo: Wayne Lawler/AWC

- Cross-tenure collaboration: The project is a 'tenure-blind' partnership involving 13 neighbouring conservation, pastoral and Aboriginal pastoral properties (and four Indigenous communities), State and Federal governments, and a number of regional bodies.
- Scale: covering more than four million hectares, EcoFire is the largest non-government fire management program in Australia.
- Integration of science and management: the objectives of EcoFire are set on the basis of scientific work which helps inform project targets, such as the need for old-growth vegetation to provide key resources (shelter, food) for declining species like Gouldian Finches and a host of small mammals. Science plays an ongoing role in the development of annual strategies and the evaluation of success against project objectives.
- Accountability through measurable results: The success of EcoFire is measured against several clear science-based objectives (see below). The effectiveness of the program is evaluated using spatial analysis of satellite imagery to describe fire patterns, and by rigorous monitoring of key ecological indicators; in other words, progress is measured by reference to changes in fire patterns and the consequent impact on biodiversity.
- Cost-effective: EcoFire is relatively cheap. Implementation occurs at a considerably smaller cost (less than half) than comparable government-led fire management programs. This reflects the operational advantages of engaging landholders for delivery.

Fire in the Kimberley

Fire is a natural ecological process in the tropical savannas of northern Australia. Profuse grass growth during the monsoonal season cures during the dry season to become a large flammable biomass that is easily ignited by lightning in the build-up to the subsequent monsoon. Following their arrival to the continent, Aboriginal people began modifying the existing lightning fire regime with 'management' fires, probably small-scale and low intensity, lit to encourage fresh grass growth to attract foraging wildlife for hunting, to ease travel, for ceremony, and 'to clean up country'. When pastoralism was introduced to the Kimberley from the 1920s, burning was used to control the movement of cattle and the availability of green pick, and to protect pasture. From the 1960s, purposeful fire management dwindled as people moved off pastoral stations and into settlements. Fire ignitions became increasingly 'anarchic', and this resulted in a shift towards regular (every one to three years), large-scale mid-to-late dry-season wild fires (Vigilante et al. 2004).

Impacts on biodiversity, pastoralism and Indigenous communities

These recent shifts in fire patterns have simplified the structure and composition of the woodland savannas, reducing shelter and food resources for animal species, reducing spatial and temporal heterogeneity across habitats, and accentuating weed and feral animal impacts. The most vulnerable native animal groups include species that live in the ground layer (small-to-medium sized terrestrial mammals, grass-dwelling birds), and seed-eating species such as small mammal, ant, and many bird species, and many bird species)), and riparian- and rainforest-dependent species.

The biodiversity declines are so serious that some species have disappeared from large parts of northern Australia. For example, about half of the tropical savanna's 40 small to medium-sized mammals have undergone substantial declines in both distribution and/or density, and mis-managed fire is probably one of the drivers for these declines (Fitzsimons et al. 2010, Woinarski et al. 2011).

Regular, extensive fires destroy feed for cattle, reduce pasture quality in the longer term (e.g. by the replacement of perennial grasses with annuals), and damage fences and other infrastructure. The resultant annual cost of unplanned fires has been estimated at AUD$50,000 to $400,000 per property (Palmer 2004).

Indigenous communities are concerned about the effects of unplanned fires on cattle, pasture, and infrastructure, as well as damage to cultural sites and country, especially animals and plants that are important resources.

> *"There is more fire now, right across the plains, hill, ranges, you know, we lose a lot of bush medicine, bush plants, some of the wildlife gets caught, you know like the animals and all the trees that we know from before we don't see now because they all burnt down, our grass we don't get the grass medicine like the lemon grass anymore because of wildfire, bushfire, when someone light it at the wrong time of the year – that fire can travel, travel, travel all the way."* (Betty Walker, Tirralintji Community and EcoFire participant)

EcoFire – how it works

The objective of EcoFire is to reduce the incidence of extensive, intense fires, and increase the amount of long-unburnt habitat in the landscape. The project relies on using prescribed burning very early in the dry season (when fires are less intense, less thorough, much smaller, and are more likely to leave a multitude of unburnt patches of various size inside the firescar footprint).

AWC staff work with the property owners, managers, and Traditional Owners to develop property burn plans that respect the various objectives of the individual owners and managers, while being coordinated with the plans of the neighbouring properties (Legge et al. 2012). Broadly speaking, the burn plan aims to prevent late dry season fires from becoming extensive, and also limits the loss of long-unburnt vegetation by breaking up large patches of the same age into smaller areas separated by burnt areas. Vegetation in this region is considered long-unburnt once it reaches three years post-fire, partly because without active management, most vegetation in the region burns within two years and also because AWC's integrated research and monitoring program has identified vegetation of an age greater than three years as being critical for a number of animal species.

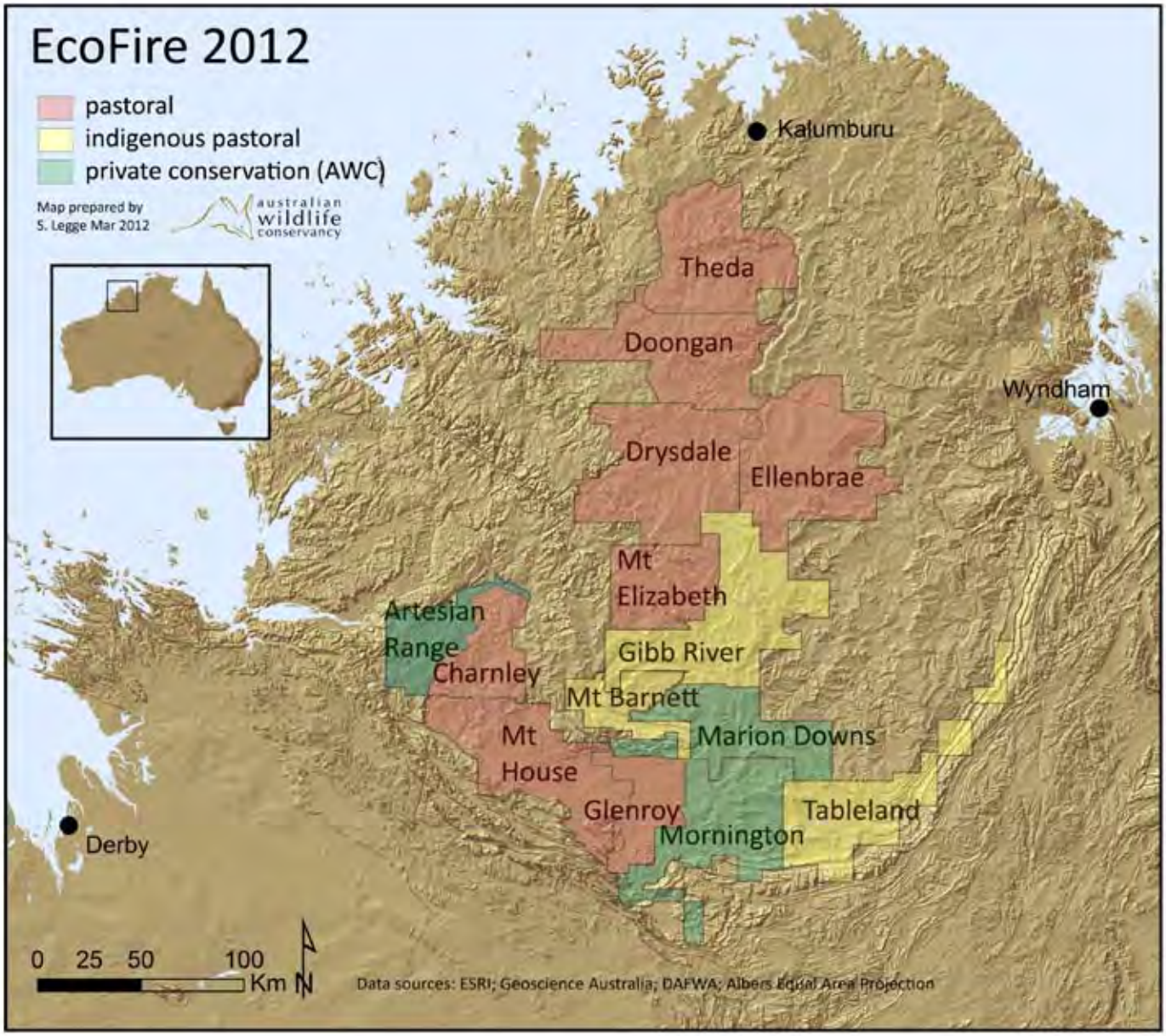

Figure 1. The EcoFire project area, Kimberley.

Late dry season burns consume almost all the vegetation within the firescar footprint; in contrast, an early dry season burn leaves a substantial proportion of unburnt vegetation within the firescar, providing refuge for some animal species. (©Photos: S. Legge/AWC)

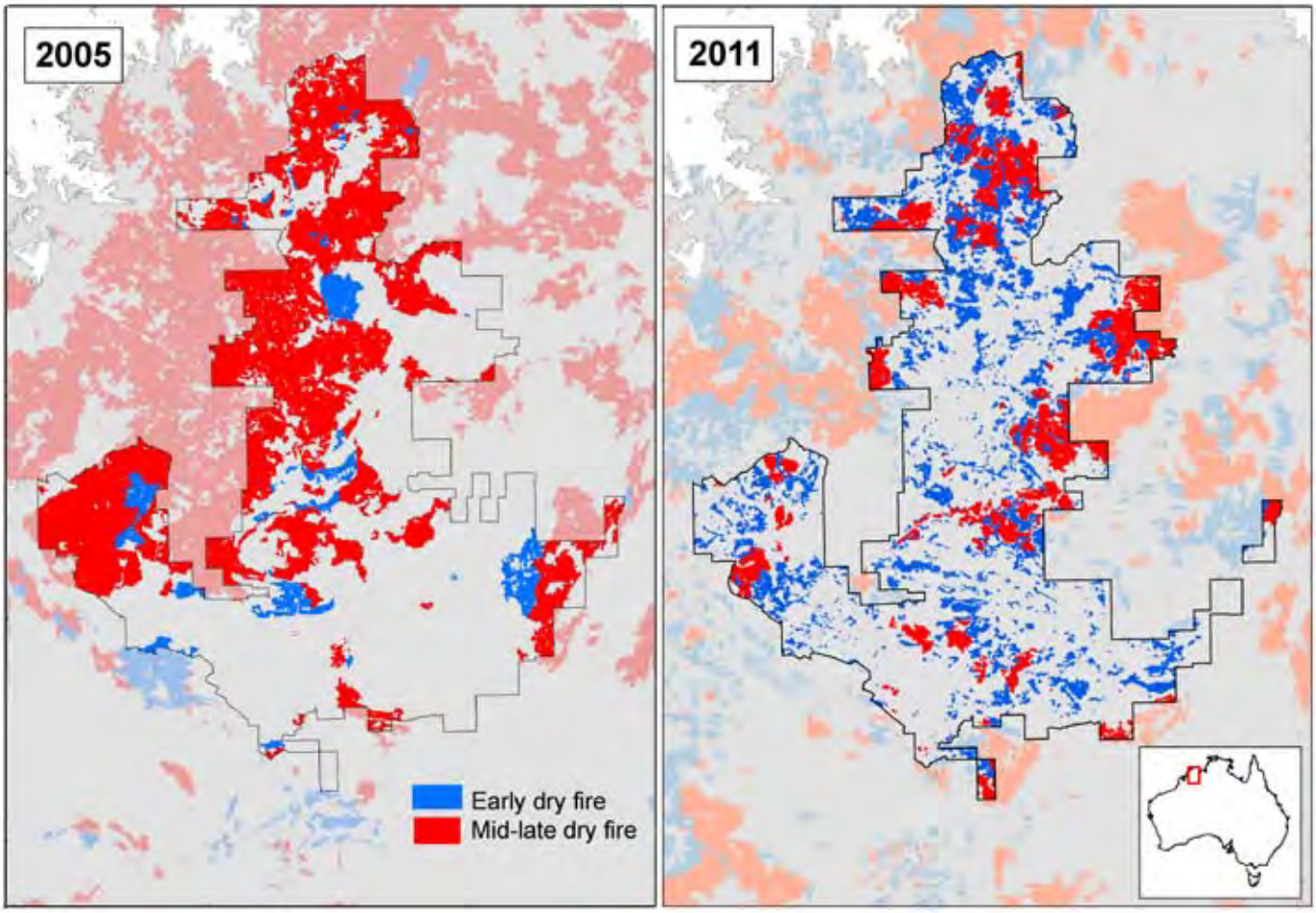

Figure 2a. Maps showing the seasonality of fires in the EcoFire project area, and a clear shift between 2005 and 2011 towards earlier, smaller, and more evenly dispersed fires.

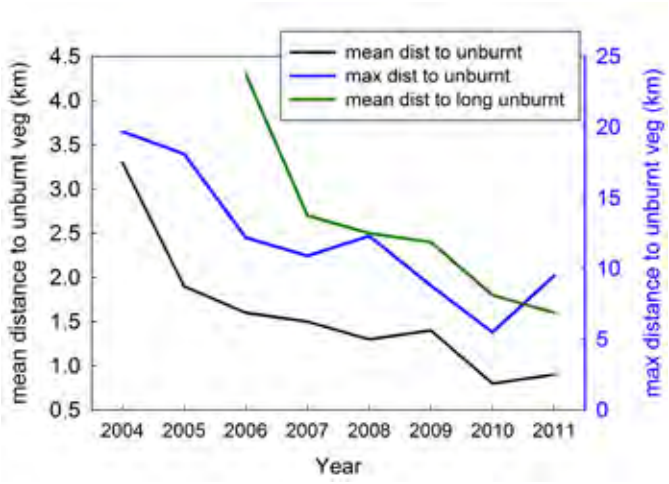

Figure 2b. The distance from within a firescar to the nearest unburnt vegetation (mean and maximum) and the nearest unburnt vegetation, between 2004 and 2011.

Given the large scale and remoteness of the project area, most of the prescribed burning is carried out using aerial incendiaries dropped from a helicopter. Each year, the team flies about 35,000 kilometres (equivalent to Sydney to London return), and drops about 55,000 incendiaries, repeatedly following and adjusting the routes outlined in the burn plan for that year in order to achieve a strategic mix of firebreaks with areas where fuel loads have been reduced. Burning from the ground is carried out by the property owners and managers around infrastructure. AWC staff also work with two Indigenous communities to carry out a program of burning around cultural sites and other important assets.

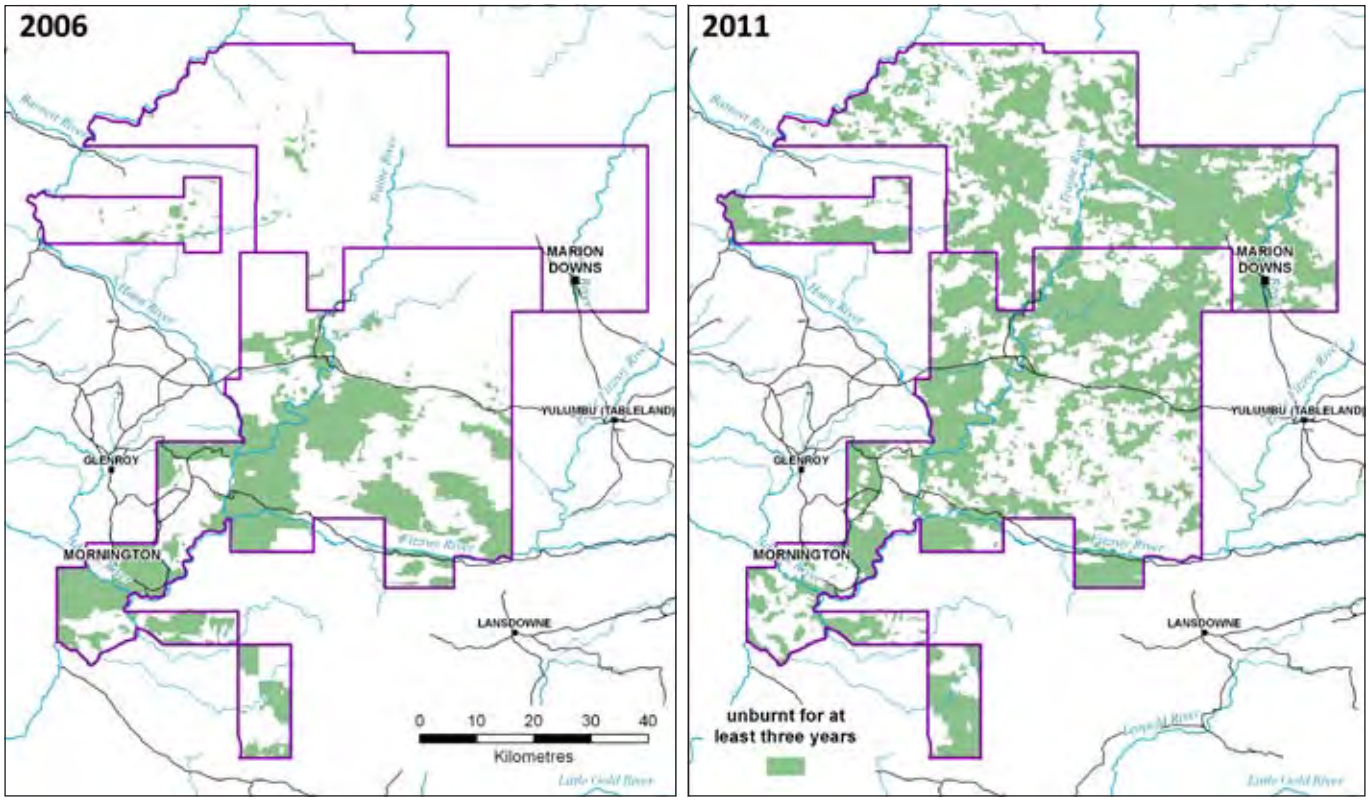

Figure 2(c). The dispersion of long-unburnt (3+ years) vegetation at the end of 2006 (left) and 2011 (right) on Mornington and Marion Downs Sanctuaries.

EcoFire – achievements

One of EcoFire's greatest achievements has been the transparent and clear reporting framework, and the associated mechanism for feeding results back into adaptive management (Legge et al. 2011b, Legge et al. 2012). For effective biodiversity conservation, fire management should be assessed in two ways: fire patterns should meet empirical targets that make ecological sense; and fire management should deliver benefits to biodiversity that are measurable.

We identified key spatial characteristics of fire patterns that defined the target fire patterns, then used satellite imagery (verified by ground truthing) to measure progress towards those targets.

EcoFire has successfully achieved the following changes:

- A greater proportion of the fires each year occur in the early dry season (Figure 2a)
- The availability of unburnt patches has increased, as measured by a reduced average distance to unburnt vegetation (and old-growth unburnt vegetation) (Figure 2b)
- The overall extent of long-unburnt vegetation has increased (Figure 2c).

The effects of EcoFire on biodiversity have been measured on AWC's Mornington, Marion Downs and Tableland Sanctuaries, and also a neighbouring pastoral property, by monitoring a suite of biological indicators that are known to be sensitive to fire. Examples include tracking the population health of Gouldian Finches (a seed-eating specialist), estimating the density of Brown Quail (*Coturnix ypsilophora*) (a ground layer inhabitant), mapping the distribution and density of Purple-crowned Fairy-wrens (a riparian specialist), monitoring the species richness and abundance of small mammals (ground-dwellers and some are seed-eaters), and the characteristics of the soil surface (which is simplified by frequent intense fire) (Legge and Fleming 2008, Legge et al. 2011a, Skroblin and Legge 2012). Over the period 2004-2012, these indicators collectively showed an improvement correlated with the reduction in extensive fires on Mornington (Figure 3).

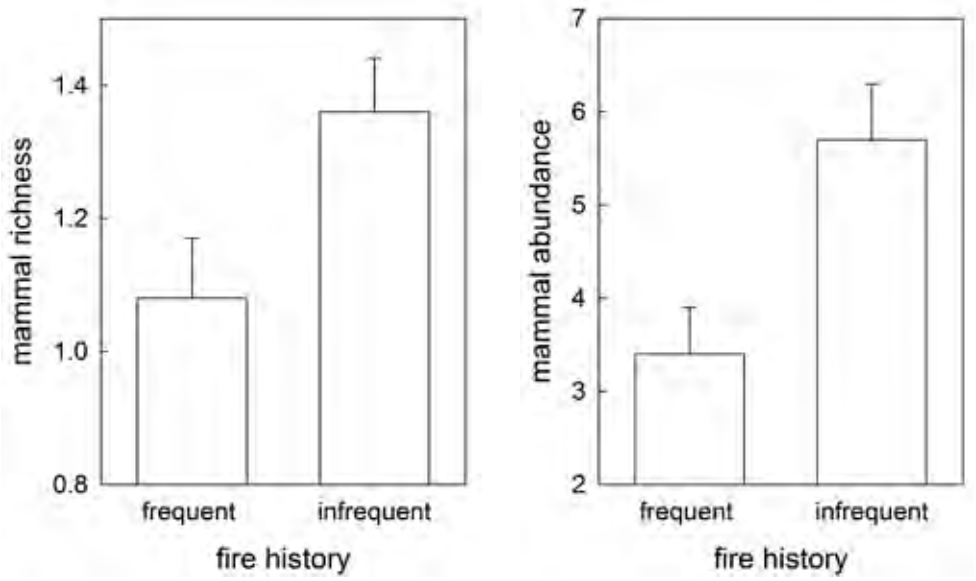

Figure 3(a)

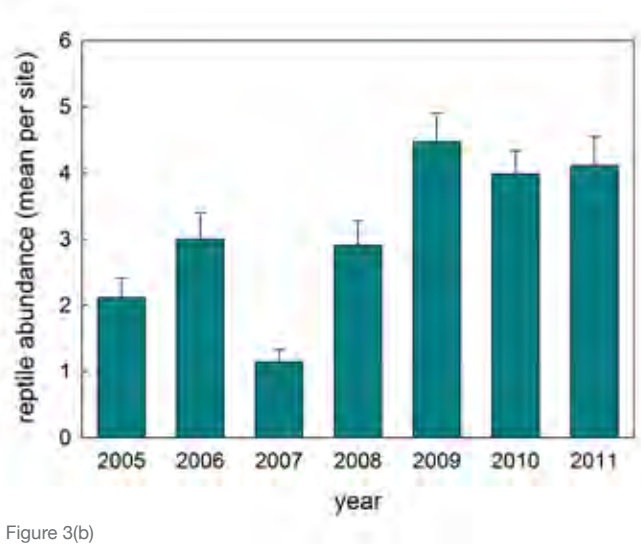

Figure 3(b)

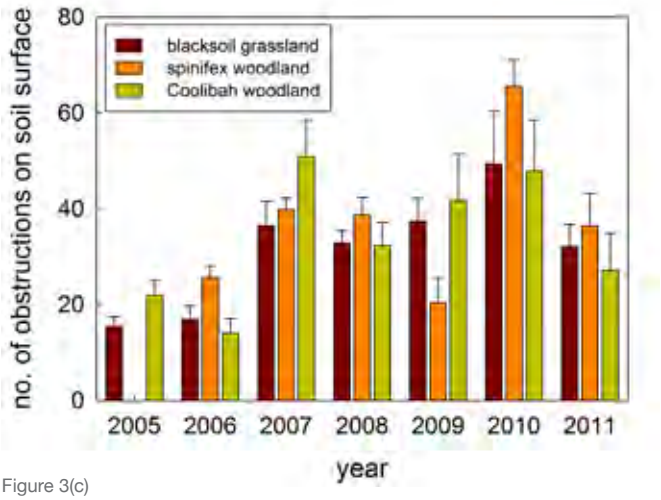

Figure 3(c)

Figure 3. Ecological trends on four properties in EcoFire (Mornington, Marion Downs, Tableland, Glenroy): (a) the abudance and species richness of mammals at permanent monitoring plots with frequent extensive fire and infrequent fire; sample is from 45-84 monitoring plots per year over 8 years. (b) The abundance of daytime skinks and dragons at permanent monitoring plots between 2005 and 2011; sample is from 42-84 monitoring plots per year. (c) The number of obstructions on the ground surface per 50 m transect for three habitats, between 2005 and 2011. Sample sizes are 21-60 transects per year.

Dimond Reach. ©Photo: Wayne Lawler/AWC

Conclusion – the benefits of innovation

Coordinating fire management at a massive scale, in a remote area with a diverse set of stakeholders, were challenges that had stymied previous government-led programs. Innovation by government (in being prepared to consider a new model) as well as AWC and landholders (in being prepared to coordinate delivery at a regional level) has delivered measurable benefits in a more cost-effective manner. Critical to this has been the existence of a lead delivery organisation (AWC) with substantial science and operational capacity based 'in the field'.

The Australian Wildlife Conservancy's investment in field programs is unusual among conservation organisations: over 80% of its staff are based on the sanctuaries, and an average of 89% of its expenditure goes to conservation programs (around 11% on administration and fundraising).

This model confers several advantages that have contributed to EcoFire's success:

- Highly developed land management and science capacity at the sanctuaries (in the field)
- Tight integration between management and science programs
- Cost effective delivery because programs are based out of the project area (rather than from a centralised urban location)
- Strong engagement with neighbours and other stakeholders because AWC staff are genuinely part of the regional community.

Finally, an essential driver for the success of EcoFire has been a set of clear, measurable and science-based objectives. Reporting against these objectives has helped promote continual innovation in the delivery of EcoFire. If we are to halt further biodiversity declines in Australia, we need to insist on clear objectives, transparent reporting, and proper accountability in all conservation programs and environmental management.

Acknowledgements

We thank the Federal and Western Australian governments, and Rangelands NRM, who embraced innovation by supporting EcoFire through Caring for our Country and the Kimberley Science and Conservation Strategy respectively, and the Kimberley residents who participate in the project.

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Gouldian Finch on Mornington Sanctuary, Western Australia. ©Photo: S. Murphy/AWC

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Dr Sarah Legge developed and leads the conservation and science program for AWC. Key features of this program have been the unique integration of science with management delivery, the development and implementation of a generic system for measuring the ecological health of sanctuaries, and a nationally significant program of applied wildlife research. Before joining AWC, Sarah's background was in vertebrate evolutionary ecology.

Atticus Fleming is the inaugural Chief Executive of AWC. Previously, he worked as a policy advisor on the personal staff of Australia's longest serving Federal Environment Minister, playing a major role in biodiversity law reform as well as issues such as climate change and fisheries management; before that, Atticus worked as a constitutional lawyer and a corporate lawyer.

Conservation for culture and livelihoods – Angas Downs, Northern Territory

George Wilson and Jennifer Smits

Angas Downs is an Indigenous Protected Area (IPA) located 300 kilometres south-west of Alice Springs, Northern Territory, and 135 kilometres from Uluṟu-Kata Tjuṯa National Park. It is in the Finke bioregion and lies directly on the north-south chain of the Territory Eco-link connectivity initiative. The Angas Downs pastoral lease, which is the underlying tenure of the IPA, is 320,500 hectares. In the past, the property was damaged by poor land management practices, and by cattle and feral animals. Today it provides employment and income for the Indigenous community, creates learning and training opportunities, and improves health (through exercise and diet). It reconnects the traditional people of this area – Aṉangu – to their land and culture, instilling a sense of pride.

The lease was first taken up by William Liddle in 1927. He and his Aboriginal descendants ran sheep and then cattle until the 1990s. As with many pastoral enterprises during the 1980s and 1990s, Angas Downs struggled financially and was eventually taken over by a mortgagee. In 1994, the lease for Angas Downs was purchased by the Imanpa Development Association Inc of the nearby Imanpa Indigenous Community. It is managed by their company Lisanote Pty Ltd.

In 2009, Angas Downs was declared an IPA after a management plan was developed by Australian Wildlife Services (Wilson et al. 2005) in consultation with the local community, and with funding provided by the Australian Government's IPA Program. The plan sought to adhere to the principles of IUCN Protected Area Management Category VI, and remains a planning resource for members of the Imanpa Community.

Angas Downs is important to Aṉangu because it has significant *tjukurpa* (Indigenous law and customary knowledge) places and sacred sites where ceremonies continue to occur. The acquisition and management of the land is a community-based initiative that seeks to balance conserving and restoring natural systems with deriving benefits from commercial use.

Previous land management practices and other anthropogenic pressures damaged Angas Downs and many native species had disappeared. Preferred game and culturally important animals are less common, and feral animals and weeds pose a major challenge.

Senior Ranger David Wongway and Emu chicks being reared for release on Angas Downs IPA. ©Photo: George Wilson, Australian Wildlife Services

The key innovative feature of the Angas Downs IPA Plan of Management is promotion of *kuka kanyini* – looking after game animals. The goal addresses an Anangu aspiration for subsistence food consumption from their lands, more wildlife on the property for cultural reasons, and as the basis of proposed tourism developments. There is also limited livestock grazing for what local people call a 'killer herd' for local meat consumption, and a small scale commercial operation in one part of the property (low-key sustainable use of natural resources where compatible with conservation is consistent with IUCN Category VI Protected Areas).

The management plan outlines the natural and cultural resource base, land management operations, sustainable development opportunities, training and education, and collaborative partnerships for management of the property. The objective of the plan is to manage land and wildlife resources in order to maintain Anangu culture, conserve biodiversity, and enable sustainable production in support of human communities and economic development. To achieve this, it has two strategies: first, blending the *tjukurpa* (Anangu law and customary knowledge) with *piranypa* (non-Indigenous) non-Anangu scientific knowledge to improve wildlife habitat, enhance landscapes, and increase the numbers of those species of wildlife preferred as bush tucker; and second, improving the health and wellbeing of communities and maintaining culture through tourism and other enterprise development centred on land management.

The management plan details priorities for environmental restoration and activities to restore and protect biodiversity, including bush foods. Activities include:

- Restoring and maintaining water points and erecting fences around key water and cultural sites to keep out large feral animals
- Reducing the density of feral animal populations, including camels, horses and cattle
- Reducing the impact and spread of weeds
- Restoring patch burning and reducing fire hazards
- Re-establishing and protecting threatened or significant species, including:
  - building a 28,800 hectare feral herbivore-free wildlife enclosure
  - establishing a native animal breeding compound, initially for Emu (*Dromaius novaehollandiae*)
  - establishing a native plant nursery, initially for Quandong (*Santalum acuminatum*)
- Managing a small sustainable cattle production operation restricted to a 26,600 hectare zone, being 8% of the property area.

A key feature of the management plan and the associated funding provided by the IPA Program is the provision of ongoing scientific support to monitor landscape and ecosystem health and wildlife populations. The plan enables scientists to work with Indigenous communities to help them manage their land and wildlife through sustainable use, and to provide the sound monitoring and surveying which underpins all of this work.

CyberTrackers can also be used to record Elders from the Impana community telling stories about the land and special places. Files are being entered into the Ara Irititja Anangu cultural database, a purpose-built computer archive that digitally stores repatriated materials and other contemporary items. This will include information on Indigenous rock paintings and engravings that were rediscovered in August 2011 at Puna Kura Kura waterhole, and elsewhere in the Liddle Hills.

Aerial surveys are a cost-effective way of assessing populations of large animals over large areas quickly. Much of Angas Downs does not have road access, and aerial surveys can monitor to trends of both feral animal and preferred animal species (such as kangaroos). Fixed-wing aerial surveys are conducted over Angas Downs and the surrounding landscape annually and observers count kangaroos, camels, horses and cattle. Sampling intensity is approximately 5% of the total 400,000 hectare survey area (Australian Wildlife Services 2010). Aerial surveys enhance the Anangu rangers' knowledge of the density and distribution of surveyed animals. This helps them manage landscapes and take action to either encourage populations or control them. Initial results from 2010–2012 show kangaroo numbers increasing and camel numbers decreasing.

Angas Downs rangers (left to right, Paul Pumpjack, Leo Armstrong, Phillip Tucker, Fly Maloney), and Geoff Kay (far right) elated with results of pitfall traps during biodiversity surveys on Angas Downs. ©Photo: Jenny Smits, Australian Wildlife Services

Track-based monitoring on sandy substrate areas set up on Angas Downs have been established. Two hectare (100 metre x 200 metre) plots are searched for animal tracks and movements using the methodology described by Southgate and Moseby (2008). This method enables rangers to identify where native and feral animals are occurring without intensive intrusive animal trapping.

Pitfall and funnel trapping is used to survey for small mammals and reptiles on Angas Downs. 'Drift fence' barriers direct foraging animals towards traps (funnel traps or 20 litre buckets dug into the soil). Surveys since 2010 have identified 51 reptile species, six small mammal species, and four amphibian species.

Photopoints are established around the property as reference points enabling comparison of landscape health through time. At each photopoint, Angas Downs rangers erect two steel posts five metres apart. The two posts are for aligning the photos; rangers take photos at each photopoint every two to three months and collate the images in a photographic journal.

Landscape Functional Analysis (LFA) is a field-based method of assessing soil and site conditions and vegetation cover (Tongway and Hindley 2004). LFA assesses how the landscape regulates resources (water and nutrients) – whether they are being lost or recycled within the landscape, and how the landscape is functioning as an ecosystem. On Angas Downs, there are 28 LFA transects at selected photopoints and other areas of interest. Initial results have shown an increase in functionality of all points but it is likely this is due to high rainfall and good seasons over 2010–2012, increasing plant cover. Training is ongoing for the rangers, but illiteracy is inhibiting the transfer and uptake of this knowledge. Inclusion of LFA on a Cybertracker system could increase capacity.

On Angas Downs, mustering of feral cattle and horses for sale is ongoing. Camels are shot opportunisticly with an annual take of between 70 and 100 camels. Rabbits can also do substantial damage. However, in many communities rabbit management is more complex than straightforward pest control, as rabbits can be an important food source. Predators such as foxes and cats can also pose threats to many species, and may require control programs in the future.

Angas Downs rangers have completed a course in Indigenous fire management run with neighbouring rangers at Uluṟu-Kata Tjuṯa National Park and Docker River, and are reinstating traditional mosaic burning. Cool burns at the right time of the year reduce fire damage to the dominant overstorey and create a mosaic of vegetation ages. Under the management plan, the aim is to reduce the risk of large wildfires and to increase the heterogeneity of habitats and niche ecosystems.

Angas Downs rangers have begun the training for reintroduction of wildlife now locally extinct – *kuka iritija* (animals from before). A breeding and release program for Emus is currently being implemented. Emus were once more numerous on Angas Downs and while there are other species that are considerably more threatened, Emus were chosen as they are a keystone species in the propagation and distribution of a number of plant species.

Rearing Emus is also providing training opportunities for rangers in working intensively with animals. Emus are relatively easy to rear, and the program is likely to be successful and provide motivation for more difficult efforts. Once Emus are re-established, the rangers will apply their new skills to reintroducing other more difficult to raise species, including two that are extinct in the wild in the Northern Territory – the Mala (*Lagorchestes hirsutus*) and the Brush-tailed Bettong (*Bettongia penicillata*) – as well as Australian Bustard (*Ardeotis australis*), Greater Bilby (*Macrotis lagotis*), and Common Brushtail Possum (*Trichosurus vulpecula*).

Under current management arrangements, Angas Downs' hunting activity is governed by the 2005 management plan developed by Australian Wildlife Services (Wilson et al. 2005) and there is very little hunting of native species to allow populations of desired species such as kangaroos to recover and breed up to allow future sustainable hunting. The demand for kangaroo in the local community remains strong and frozen kangaroo tails are favoured items in the store; the tails come from pastoral lands elsewhere in Australia where kangaroo populations are higher.

Angas Downs' location on the prime tourism route to Uluṟu-Kata Tjuṯa National Park gives it substantial tourism potential and there are opportunities for private sector investment and collaboration with government tourism programs such as the Red Centre Way and National Icons. Unfortunately government programs such as the Indigenous Enterprise Development Program have been reluctant to fund the potential which we believe Angas Downs has.

Good science, blended with traditional knowledge, is a great way to innovate and grow conservation at the landscape scale. Potential initiatives are numerous particularly in the carbon, biodiversity and tourism markets.

Aṉangu board members responsible for the property are still coming to grips with the complexities of financial governance and strategic management, nevertheless significant progress is being made on the ground.

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Biography

Dr George Wilson is Adjunct Professor at the Fenner School of Environment and Society, Australian National University. He is also the principal of Australian Wildlife Services (AWS) which is a consultancy company that focuses on developing wildlife industries and tourism opportunities that support conservation, and integrating traditional knowledge and wildlife science into the management of Indigenous land.

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Shoalwater Bay Training Area: capability, conservation and collaboration

Julia Bowett, Alan Davidson and Tennille Danvers

The Australian Defence Force (ADF) performs a unique role in support of Australia's strategic and national security interests. The role requires not only naval and amphibious warfare capabilities but also disaster relief, search and rescue, and border patrol training capabilities in a range of settings. Currently, Shoalwater Bay Training Area (SWBTA) is one of the only locations in Australia that allows large-scale joint and combined exercises necessary for the development of alliances and multi-lateral Defence agreements, commonly involving the United States, New Zealand and Singapore. However, SWBTA delivers other values in parallel with Defence training. It contains a range of highly significant ecosystems which encompasses areas of the Great Barrier Reef World Heritage Area, as well as freshwater and intertidal wetlands which have been recognised as being of international importance under the Ramsar Convention.

For over 40 years, the Department of Defence's investment in the management of SWBTA has aimed at striking a balance between supporting military training and conserving the natural environment. Many Defence operational activities often assist, directly or indirectly, in the achievement of World Heritage management objectives including the conduct of hydrographic surveys and fisheries and border protection patrols.

Shoalwater Bay Training Area

Shoalwater Bay Training Area is arguably Australia's single most important area for the conduct of Royal Australian Army, Navy and Air Force combined exercises. It occupies approximately 453,700 hectares (289,700 hectares of which is terrestrial and 164,000 hectares is marine) and is located on the central Queensland coast about 70 kilometres north of Rockhampton (**Figure 1**).

SWBTA covers two Queensland bioregions (the Brigalow Belt and Central Queensland Coast) and contains 71 different regional ecosystems. Twelve of these ecosystems are considered 'endangered' in Queensland and 31 are 'of concern' (Department of Defence 2009).

Much of SWBTA is in a relatively natural state, with almost 100% vegetation cover. Prior to the acquisition by Defence in 1965, 4% of the total area of SWBTA had been cleared for grazing with around 22% selectively logged. Most of the disturbed areas have since regenerated. Consequently, the area exhibits high natural integrity, with continuous ecosystem gradients. Few other areas in eastern Australia combine such a diversity of ecosystems and species with the ecological connectivity and continuity present in SWBTA (Department of Defence 2009).

Eastern Shoalwater Bay. ©Photo: Department of Defence

Much of the biodiversity value of SWBTA lies not only in the number of species present, but in the diversity of species assemblages within a relatively small area. At least 201 plant and animal species recorded in SWBTA are at or near their known southern or northern distribution limits which represents a higher number of species at their distribution limits, than most other areas of similar size in Australia (Department of Defence 2009). A significant number of endangered, vulnerable or rare plant and animal species either occur in SWBTA or depend on the area during their migrations.

Collaborative environmental management at SWBTA

For successful and effective environmental management of an area as complex and large as SWBTA, it is important for Defence to take a collaborative approach, engaging the expertise of many external specialists. Defence is in constant communication with organisations such as state and local government agencies, other Commonwealth government agencies, the Darumbal People (who are the Traditional Owners of the area), universities, research institutes and neighbouring land owners, to ensure that Defence activities are consistent with the principles of ecological sustainability.

Defence has a history of collaborative environmental management of SWBTA dating back to the late 1960s when the area's first 'Ecological Management Plan' was proposed. From that time until the late 1980s, CSIRO's Woodland Ecology Unit was engaged to advise Army on land management and in particular, bushfire management (Cosgrove 1996).

Since 1994, the management of SWBTA has been aligned with the findings of the Commonwealth Commission of Inquiry that determined that while Defence use should remain the primary use of the Area, conservation should be a concurrent use and be of equal significance (Commission of Inquiry into Shoalwater Bay 1994).

Defence works with a range of Commonwealth and state agencies, and the Darumbal People, all of whom have a well established history in ecosystem management and local expertise in the Shoalwater Bay area and its inherent characteristics. Defence, and the SWBTA itself, have derived considerable benefits through maintaining strong and productive relationships with the operational arms of these entities.

Defence regional environmental personnel that manage SWBTA are based in Rockhampton. They communicate with and seek the expertise of these entities on a regular basis to ensure that environmental management of the area is holistic, effective and in accordance with best practice.

For example, Queensland Parks and Wildlife Service personnel are in regular contact with Defence staff over management activities in the marine parks and the islands within the Defence training area. Queensland Parks and Wildlife personnel from Byfield National Park and Marine Parks work with Defence on matters relating to bushfire management and feral animal control (including wild dogs, cats and pigs). Queensland Parks and Wildlife is also involved in compliance and enforcement activities throughout the year which detect illegal fishing practices within SWBTA. Biosecurity Queensland also contributes to the battle against feral animals in SWBTA. Biosecurity Queensland is actively involved in conducting feral animal eradication programs and disease testing of feral species and provides guidance on weed species management within the training area.

Each year, the Queensland Department of Environment and Heritage Protection conducts water quality testing to examine a wide variety of parameters from dissolved oxygen content to heavy metal content. The department also conducts habitat monitoring of water quality sites via the use of the AusRivers habitat indicators and recently, the new Queensland Bio-Condition Assessment. The data on water quality standards collected within SWBTA is intended to be used by the Queensland Government as a benchmark for other areas in central Queensland.

The Queensland Department of Environment and Resource Management also conducts two annual Landscape Monitoring Programs that include flora and fauna surveys for key species such as the Rusty Monitor (*Varanus semiremex*) and the Water Mouse (*Xeromys myoides*), as well as long-term vegetation monitoring sites within SWBTA. This data is fed back into Queensland Government databases such as *Wildnet*. One of the advantages of using biological monitoring sites within SWBTA is that the area provides the Queensland Government with data from sites which have not been under any grazing pressure for several decades.

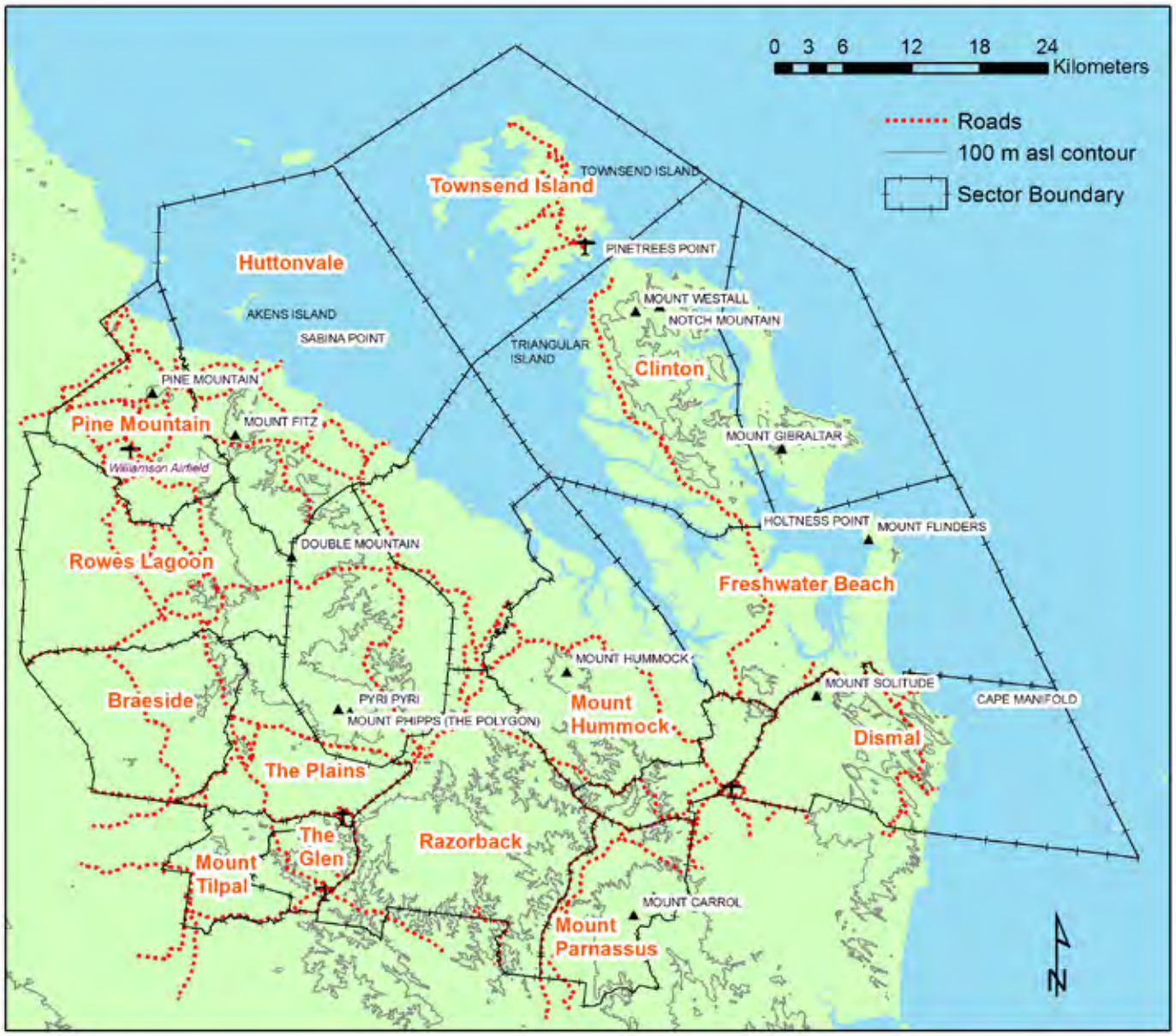

Figure 1. Topography and operational sectors of the Shoalwater Bay Training Area.

The Great Barrier Reef Marine Park Authority (GBRMPA) and Defence meet formally twice a year to discuss strategic environmental matters and share the latest research information and technologies. This forum, in addition to Defence's ongoing environmental management and monitoring, generates tailored environmental management techniques for major exercises such as the biannual Talisman Saber series[1]. Regulatory officers from the GBRMPA and the Australian Government's Department of Sustainability, Environment, Water, Population and Communities participate in the environmental risk assessment process, environmental impact assessment and planning of these types of exercises. These organisations are invited to comment at every stage of the impact assessment process. Copies of appropriate documents such as the Talisman Saber Public Environment Report are made available to the public via the Australian Defence Force website[2] and through social media such as Facebook and Twitter. This provides a window into Defence activities within SWBTA for interest groups and the general public.

Military exercises like Talisman Saber involve extensive consultation between the Australian Defence Force, United States forces and Australian Government environmental agencies. This identifies and minimises environmental impacts through the planning and conduct of the exercise. At the close of each exercise, redeployment of military forces out of SWBTA is managed on a policy of 'no footprint'. This means all exercise materials, equipment and debris removed and all disturbances such as tracks, off-road rutting and defensive positions and engineering works are remediated.

1 Exercise Talisman Saber is a bilateral Australian-United States exercise conducted biennially to practice combined operations in order to improve combat readiness, enhance interoperability and trial emerging capabilities.

2 http://www.defence.gov.au/opEx/exercises/ts11/environment.htm

The Australian Quarantine and Inspection Service (AQIS) is also involved in engagements where military forces travel into the training area. In accordance with Australian quarantine regulations, AQIS inspects equipment coming into the training area from overseas. This helps to prevent the introduction of noxious weeds as well as non-native fauna.

Defence has facilitated research and monitoring activities by external institutions in SWBTA, such as the Central Queensland University, James Cook University and CSIRO. Recently, researchers from James Cook University conducted aerial surveys of Dugongs (*Dugong dugon*) across a significant portion of the training area. This information, along with further Dugong and turtle population investigations, will inform environmental approvals of Defence activities within SWBTA and contribute to future strategic assessments of Defence activities within the wider Great Barrier Reef Marine Park. It also provides a strong indication that the conduct of maritime and amphibious training can be delivered responsibly alongside conservation objectives.

Summary

Shoalwater Bay Training Area is arguably Australia's single most important military training area for the conduct of Army, Navy and Air Force joint training exercises. The activities that occur within the training area develop and maintain the capabilities needed to allow the Australian Defence Force to remain one of the world's most modern, responsive and effective Defence forces.

However, SWBTA is far more than just a military training area. The outstanding natural values and high biodiversity of the area are well known and have been recognised at both a national and international level. Due to its large size, isolation from human settlement, restrictions on access and generally low level of disturbance, SWBTA exhibits high natural integrity – an increasingly important aspect as large-scale habitat modification and development pressures increases along the eastern coast of Australia.

In maintaining a strong and effective level of environmental management of this large and complex area, Defence understands the critical importance of a continuous and collaborative approach with external stakeholders.

Defence is involved in multiple environmental initiatives with a wide variety of external organisations, only some of which are discussed in this chapter. Development and refinement of initiatives like the ones described here ensure that Defence has played, and continues to play, a strong environmental stewardship role in the areas under Defence's jurisdiction. Indeed, the approach that Defence takes towards environmental management in SWBTA typically resembles the approach for management of other Defence training areas.

It is the excellent condition and diversity of SWBTA's natural land and seascapes that provides such a wide range of training opportunities for Defence. It is therefore in Defence's own interests to deliver quality environmental outcomes in parallel with the realism of military capability objectives.

More information on environmental management within the Department of Defence can be seen at www.defence.gov.au/environment/

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Innovation in Victoria's parks

Ian Walker

Parks Victoria is well recognised in Australia and internationally for its innovative approach to park management. This chapter outlines Parks Victoria's role, and looks forward to the next 15 years identifying the emerging management approaches and examples of innovation that highlight a resilient organisation and parks system in Victoria.

Parks Victoria: our custodial role

Parks Victoria is a statutory authority responsible for managing most of Victoria's reserve system. In the second reading speech to Parliament that established Parks Victoria 15 years ago, the Minister for Conservation and Land Management at the time said "In doing so it will create a world-class organisation able to deliver park management services for the state's parks, reserves and open space and other related management functions. A focus on sound environmental management will be a feature of Parks Victoria's role as a leading park management agency, while providing compatible services for recreation and tourism."

Parks Victoria currently manages 4.2 million hectares, or 18% of Victoria, on behalf of all Victorians. The park estate includes 1,200 kilometres or 70%, of Victoria's coastline, 45 national parks, 25 state parks, 13 marine national parks and 11 marine sanctuaries, a metropolitan parks system and more than 2,800 nature conservation reserves. It also provides recreational management of Port Phillip, Western Port and much of the Yarra and Maribyrnong Rivers. Victoria's parks contain the state's largest and most undisturbed ecosystems as well as the most intact areas for protection of urban biodiversity (Parks Victoria 2011).

Grampians National Park. ©Photo: Parks Victoria

Innovative approaches in park management

Parks Victoria has been recognised by peers for its innovative approaches in managing parks. Two notable examples – 'Healthy Parks Healthy People' and 'Linking Landscapes' – are summarised below. These two examples explicitly demonstrate that the use of science and knowledge to progress policy change and set new directions in park management is achievable at the national and international levels. Both examples have common threads associated with their success, including quality research and information to support decision-making, leadership, advocacy, and a 'coalition of the willing' (a shared commitment and collaborative approach).

Healthy Parks Healthy People

In developing *Healthy Parks Healthy People*, a philosophy which describes the fundamental connection between people and nature, Parks Victoria has defined an approach, created momentum, and taken an international lead in its advocacy to promote the interconnectedness between nature conservation, culture, and community benefits. As the evidence base has expanded, a growing number of park agencies around the world have successfully adopted *Healthy Parks Healthy People*. In 2010 the International Healthy Parks Healthy People Congress captured the global interest and commitment with the 'Melbourne Communiqué' being adopted. It is a call to action for leading government agencies and organisations around the world to further our understanding of, and strengthen the connection between, people and nature. Most recently, the United States National Parks Service formally adopted *Healthy Parks Healthy People* as the management basis for strengthening the connection between its public land and public health. Opportunities to build and expand on this work are continuing (Parks Victoria 2012a).

Linking Landscapes

Parks are the core areas for biodiversity in the landscape. However, Victoria's thinking has evolved in line with international trends emerging out of the 2003 IUCN World Parks Congress which focussed on the integration of strong parks into broader landscape scale initiatives on many tenures under such banners as 'Islands to Networks' and 'Benefits beyond Boundaries' (IUCN 2005). Parks Victoria has been pursuing landscape connectivity partnerships for several years with catchment managers and non-government organisations. Building on this work, the agency worked with a range of partners, particularly the IUCN World Commission on Protected Areas (WCPA), to provide the impetus for a national response to the profound threat to our nation's biodiversity, ecological health, productivity and the wellbeing of society.

As a result of this threat, an unprecedented summit was convened by Parks Victoria, WCPA and partners in Kingscliff, New South Wales in October 2009. Over one hundred representatives came together from the diverse fields of science, land and natural resource management, conservation, NGOs, green carbon, business and the philanthropic sector. The Linking Landscapes Summit was driven by "a shared sense of urgency and called for the development of an innovative national network of landscape scale conservation corridors" (Kingscliff Communiqué 2009).

A key outcome from this Linking Landscapes Summit was the Australian Government's adoption of the direction in the communiqué as policy and developing a National Wildlife Corridors Plan. There are a number of large-scale connectivity corridors operating across Australia. In Victoria one of those corridors, Habitat 141° was established as a partnership between Greening Australia, Parks Victoria and other groups "to work with communities to conserve, restore and connect habitats for plants and wildlife on a landscape scale from the outback to the ocean" (Habitat 141° 2012).

Building a resilient Parks Victoria: the next 15 years

Parks Victoria's innovation over the past 15 years has enabled the Victorian park system to grow and maintain relevance. However, with the pressures of climate change, population growth and economic uncertainty, new approaches of doing business are required by park agencies. Parks Victoria is thus developing an approach to increase its organisational resilience.

A resilient organisation can be defined as one that can cope with change and disruptions and continue to deliver its business outcomes and create new opportunities. Healthy organisations can grow and contract depending on circumstances. A resilient organisation is one whose vision and values are shared by all employees and understood by partners.

Over the past decade, Parks Victoria's staff and Victorian communities have been impacted by and responded to major events of fires, floods and locust plagues, and while not of biblical proportion, these events have had dramatic impacts on the delivery of park services and the connection of communities to parks.

Montane grasslands and grassy woodlands in the Bendoc Nature Conservation Reserve, a former grazing property on the Victorian-New South Wales border acquired for addition to the National Reserve System. ©Photo: James Fitzsimons

In responding to these challenges, Parks Victoria is seeking to establish itself as a resilient organisation that is able to cope, deliver and create new opportunities. The shape and form is still evolving, however innovative approaches to caring for Country with Victoria's Indigenous communities, the delivery of partnerships, and evaluation of policies and programmes are emerging as pathways forward, and are briefly discussed below. Paramount to all areas of our business is a clear understanding of the objectives we are seeking to achieve and engagement and connection of people with these special places we manage on their behalf.

Caring for Country

Parks Victoria continues to support the aspirations of Victorian Traditional Owners in park management and access to Country.

In working with Traditional Owners a number of success factors have been indentified and incorporated in a new *Traditional Owner Partnership Strategy*. This strategy identifies a set of organisational principles including:

1. Both Victorian Traditional Owners and Parks Victoria staff will play a vital role in establishing and maintaining the partnerships necessary for building an outstanding park and waterway system.
2. Parks Victoria will support Victorian Traditional Owners in good governance, community strengthening, employment, gathering and meetings, training and business development.
3. Free, prior and informed consent principles will be used in all Parks Victoria processes that involve Victorian Traditional Owners organisations.
4. All Parks Victoria staff are involved in managing parts of Traditional Owners' Country; their environmental and cultural landscapes and heritage involves all aspects of park management, yet only Victorian Traditional Owners through their representative organisation speak for their Country.
5. Culturally and mutually inclusive park management practices will be developed and integrated into all aspects of Parks Victoria business, from individual work plans through to corporate and business plans.
6. Leaders in Parks Victoria will be responsible for building and demonstrating accountability for the Traditional Owner Partnership Strategy.

With the adoption of these principles Parks Victoria believes that both Traditional Owner and park management outcomes will be enhanced.

The 'Ngootyoong Gunditj Ngootyoong Marra' South West Management Plan and the Yorta Yorta Caring for Country Ranger team described below highlight the application of these principles.

Helena Gum Moth. ©Photo: Museum Victoria

'Ngootyoong Gunditj Ngootyoong Marra' South West Management Plan

This management plan, currently in preparation, proposes to delivers a number of innovative approaches including:

- A strong and deliberate joint planning approach with the Traditional Owners
- A whole of landscape plan for south-west Victoria covering marine and terrestrial parks and private lands managed by Traditional Owners as protected areas
- Online community engagement tools.

The management plan has a traditional Gunditjmara name *'Ngootyoong Gunditj, Ngootyoong Mara'* which translated means *'Healthy Country Healthy People'*, indicating the importance of managing these conservation areas for their natural, cultural and social values together. The plan is being prepared as a partnership between Parks Victoria and the Gunditjmara Traditional Owners. This partnership also takes in the statutory co-management arrangements for Mount Eccles National Park with the Gunditjmara Traditional Owners. The project is overseen by a group of representatives from Parks Victoria, the Victorian Department of Sustainability and Environment, Budj Bim Council and the Gunditjmirring Traditional Owners Aboriginal Corporation. The planning area covers the conservation areas in the Registered Aboriginal Party area of the Gunditjmara Traditional Owners including Indigenous Protected Areas, marine and terrestrial parks (Parks Victoria 2012b).

Yorta Yorta Caring for Country Ranger Team

This program will provide training and ongoing employment opportunities for Yorta Yorta people in the management of their traditional lands in the floodplain country of northern Victoria, including land currently managed by Parks Victoria and the Department of Sustainability and Environment.

Historically, training programs for Aboriginal people have delivered variable outcomes with one of the challenges being securing employment at the completion of training programs. The program is providing full-time employment for five participants, developing skills and capacity to establish and manage a Yorta Yorta natural resource management (NRM) business. The key success factor is the link between real on job experience and accredited training graduating to a Yorta Yorta NRM business owned and managed by Yorta Yorta Nations Aboriginal Corporation.

Programs such as this build capacity of both Parks Victoria and Traditional Owners with learnings shared across the state. Parks Victoria recognises the importance of employment (particular on Country) as a major contributor to 'Closing the Gap' outcomes, with 7.5% of Parks Victoria staff of Aboriginal descent. The Victorian Government is now supporting similar programs with both the Dja Dja Wurrung (Central Victoria) and Gunaikurnai peoples (East Gippsland).

Delivery partnerships

In establishing a resilient organisation, Parks Victoria recognises the critical role that strategic partnerships play in achieving park management outcomes, increasing relevance and building capacity. Numerous partnerships established with other organisations, including with Conservation Volunteers Australia and Museum Victoria, are briefly described here.

Conservation Volunteers Australia

In June 2009, a partnership was formalised with Conservation Volunteers Australia to strengthen the existing (Parks Champions offers people the opportunity to volunteer in some of Victoria's most beautiful places) and include the enhanced delivery of other key conservation/volunteer programs. The partnership has included the secondment of a Conservation Volunteers staff member into Parks Victoria to coordinate and support delivery. This partnership resulted in the delivery of 1,741 volunteer days in 32 Parks Victoria locations in 2009/2010 – of which 814 days were from the local community and 927 were from the international community.

The combined value of the Conservation Volunteers-Parks Victoria partnership was costed at greater than $2.3 million for practical on-ground works in 2009/2010. This represents a substantial return on investment, delivery of a range of conservation initiatives (that would not have been otherwise delivered), and

Yorta Yorta Caring For Country Ranger Team, courtesy Parks Victoria. ©Photo: Misheye

increased engagement with the community in parks. It is an outstanding model and could be emulated by many other agencies.

Understanding our natural history

A new partnership with Museum Victoria has emerged following the successful delivery of the 'Prom Bioscan', a snapshot census of wildlife across all major terrestrial and aquatic systems at Wilsons Promontory National Park generating data to enable assessments of the status of sensitive species (Hooely and Norman 2011).

The survey resulted in the documentation of a number of undescribed species and new species records for the National Park, generated extensive species lists for birds, mammals, freshwater fish, and freshwater, terrestrial and marine invertebrates. It has also resulted in a palaeontology report.

The new partnership will see delivery of multiple outputs: annual parks scans in iconic national parks; natural history online engagement; community support and heritage connection; social history research; marine communications; and the development of park-specific mobile device 'apps'. Overall this partnership will generate a greater understanding of wildlife in parks and increased ability to share information and knowledge with the community.

Goals and evaluating success

All of the innovation described above is ineffective unless we are clear about what we are trying to achieve and knowing when we have arrived. Perhaps one of Parks Victoria's most innovative approaches has been the establishment of our 'Conservation Outcomes Hierarchy' and 'State of the Parks' evaluation. Combined, these two elements are being successfully integrated into Parks Victoria's core business and provide clarity of direction and measures of success.

Parks Victoria's Conservation Outcomes Hierarchy is a framework for developing statements about the desired condition of natural assets in a park or parks, and the limits of acceptable threat to those assets, which management is seeking to achieve. Parks Victoria has recently commenced a fast-track process to define an 'objectives hierarchy' (**Figure 1**) for parks in the landscape, based on work by Biggs et al. (2003), which will also be the basis of new management plans including the 'Ngootyoong Gunditj Ngootyoong Marra' South West Management Plan described above.

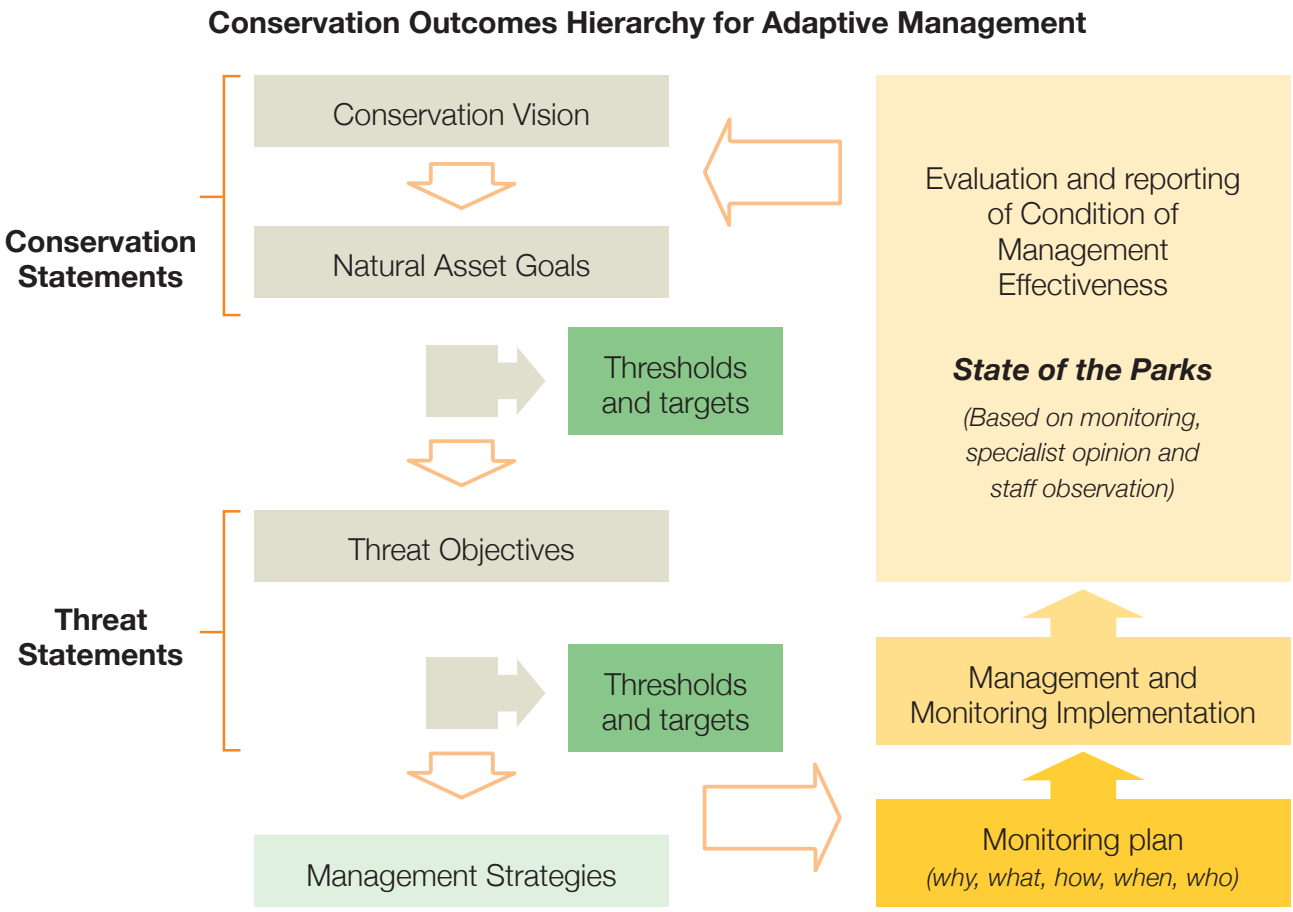

Figure 1. Parks Victoria's conservation outcomes hierarchy.

The process involves setting measurable objectives for our priority values and threatening processes based on:

- Current and desired condition of priority values and severity of threats
- Predictions of future conditions
- Realistic expectations of what can be achieved
- Social and political objectives.

A key component of the hierarchy is the State of the Parks (SoP) evaluation program, which reviews the effectiveness of management in meeting its core objectives for natural values, heritage values, visitor experiences, community involvement, and fire and emergency management. Evaluation of management effectiveness is a key component of responsive proactive park management and these assessments are now being undertaken by many park agencies around the world using the accepted best practice guidelines by the IUCN (Hockings et al. 2006).

Parks Victoria was the first parks agency in Australia to develop a SoP report. While previous SoP programs (2000 and 2007) have focussed primarily on reporting the status of park values and their threats, the purpose of the current program is to apply SoP as an adaptive management and knowledge tool to inform management priorities and decisions at a range of scales, from statewide to local.

Using a broad range of available information from corporate datasets to monitoring data to park manager experience, detailed assessments are now being systematically undertaken every three years and fed into planning and priority setting. Different communication products for different users have already been developed or are in their final stage of development. These include an online reporting system, statewide report cards, maps, park profiles, and Web-based products for community engagement.

Consistent with its aim to making evaluation 'normal business' at Parks Victoria, staff and managers will increasingly realise the value of the SoP evaluation tool, and the quality of information will improve over time.

Conclusion

This chapter provides a summary of a range of innovative approaches adopted across Parks Victoria to increase resilience and be adaptive to change. Recognising that parks are the critical cornerstone of conserving nature and in providing a suite of benefits to the community, our focus remains on ensuring parks are effectively managed in a landscape context and are equitably governed. As this chapter demonstrates, applying resilience thinking – including the acquisition and application research and information to support decision making, leadership, advocacy and establishing a 'coalition of the willing' – provides us with a new framework for enhancing the values of parks across Victoria.

Acknowledgments

This chapter reflects the work of a great number of staff in Parks Victoria whom I would like to acknowledge. In particular Tony Varcoe, for his work on Conservation Objectives and State of the Parks, John Senior for his work on Healthy Parks Healthy People, Patrick Fricker and Mark Riley for their work with Traditional Owners, and Joe Mumford for his work on park strategies.

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Biography

Ian Walker is General Manager for Environment and Heritage, Parks Victoria, and has 20 years experience working in the conservation sector in Victoria and Western Australia in both operational delivery and corporate roles within the government sector. An ecologist by training, Ian has collaboratively progressed landscape scale conservation at a national level supporting the establishment of the wildlife corridors plan and currently chairs Habitat 141°. Ian is also a member of the IUCN WCPA Taskforce that prepared the IUCN Ecological Restoration Guidelines for Protected Areas. Developing and supporting conservation partnerships has been a feature of Ian's career along with supporting education, health and employment outcomes by enabling Aboriginal people to care for Country.

Mapping our priorities – innovation in spatial decision support

Rob Lesslie

Modern strategies for conservation and natural resources management are rarely simple to implement. Questions such as 'Where should we invest in revegetation for landscape connectivity?' have multiple dimensions that require a clear understanding of objectives, and the relative contribution of data and factual information, as well as value judgement and expert opinion.

Usually, there is no 'right' answer. For example, there may be many reasons for undertaking revegetation work – to enhance habitat for rare or threatened species, to promote ecological processes at a landscape scale, to sequester carbon, to improve water quality, and to enhance landscape aesthetics. For private landholders, motivations can also include soil stabilisation and erosion control, management of salinity risk, harbour for beneficial organisms, shelter for stock, timber and farm wood, and local amenity values. Therefore there will be a wide range of scientific, social and economic choices to be made about the objectives and evaluation criteria.

Participatory engagement by stakeholders, including scientists, landholders and the community, is a necessary part of the formulation process. Spatial analytical tools are necessary to help combine and analyse information in ways that enable stakeholders to understand the effect of various inputs or alternative viewpoints on outcomes. While there has been strong uptake of more holistic decision-making approaches, it is only recently that spatial analysis tools have become available that provide sufficient flexibility and transparency for effective stakeholder engagement.

This chapter discusses spatial decision-making needs for nature conservation and natural resources management and introduces an innovative spatial decision-support tool in a case study demonstration of priority setting for revegetation in south-west Western Australia. The tool, the Multi-Criteria Analysis Shell for Spatial Decision Support (MCAS-S) developed by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), promotes flexibility and engagement, helping stakeholders participate more fully in spatial problem-solving.

One of the many millions of seedlings germinated in-situ by direct seeding planting techniques across Gondwana Link ©Photo: Justin Jonson Threshold Environmental

Decision-making in natural resources management

Natural resource management problems display many of the hallmarks of so-called 'wicked' problems (Australian Public Service Commission 2007). These problems can be characterised as highly complex, where there may be different views among stakeholders and experts as to the scope, scale and potential solutions. In contrast to problems which may be technically complex but tightly defined, wicked problems cannot be successfully solved with linear analytical approaches. Solving these problems generally requires a process to build a shared understanding of issues, objectives, limitations and interrelationships between causal factors and objectives. In the end, defensible solutions depend on informed, systematic and transparent analysis.

Multi-criteria analysis (MCA) is one way of approaching decision-making for complex problems. MCA can be described generally as a family of techniques that aid decision-makers in structuring multi-faceted problems, evaluating alternatives and making defensible choices (Malczewski 2006, Greene et al. 2011). It generally involves evaluation of options or alternatives that have both qualitative and quantitative dimensions. It is not an optimisation process identifying best potential solutions – its focus is on eliciting values, understanding relationships and exploring potential outcomes. Well-developed MCA approaches generally have flexibility, simplicity, and the capacity to explore multiple options and trade-offs.

Spatial decision support

Sophisticated GIS (geographic information system) tools are increasingly available to support participatory engagement in spatial MCA (Green et al. 2011). The best of these tools are simple to use and promote the integration of existing data and the technical expertise of stakeholders in a transparent way. They also enable incremental improvement over time, including the inclusion of new information, and the exploration of alternative scenarios. Internet functionality and improved visualisation methods are also areas of development.

Progress in participatory GIS has nevertheless been hampered by the rigidity and the lack of flexibility in commonly used GIS tools. Stakeholders need to see the potential impacts of their decisions and quickly be able to examine alternative options. This flexibility is essential where a clear understanding of different approaches to the combination of spatial data and other information is required. Participatory GIS requires the ability to view at once all linkages relevant to the assessment process, including 'live-update' functionality immediately showing the effect of any changes.

MCAS-S is an innovative spatial decision support tool that provides this functionality (ABARES 2011, 2012). It is the latest of several multi-criteria decision support aids used in the Department of Agriculture, Fisheries and Forestry policy environment since the early 1990s. It is an easy-to-use spatial decision support tool designed to help visualise and combine mapped information in a flexible, interactive way (Lesslie et al. 2008). MCAS-S allows users to work with spatial data dynamically, see multiple datasets simultaneously, group datasets under themes, modify and combine these datasets, and carry out two-way and multi-way comparisons to form meaningful map-based flow diagrams. Layers can be combined using simple weights or more complex functions. It also allows users to document their results and the decision-making process, including assumptions. The ability to show live updates is particularly helpful at workshops. MCAS-S assists in decision-making where transparency between different approaches to map combination is needed. Successful use of the software does not require GIS, removing the usual technical obstacles to non-GIS users in accessing and analysing spatial information.

Case study – priorities for revegetation in south-west Western Australia

Gondwana Link is a landscape-scale nature conservation initiative in south-west Western Australia that aims to restore and maintain ecosystem function and biodiversity in native vegetation across a 1,000 kilometre swathe from the wet forests in the state's far south-west to the dry woodland and mallee bordering the Nullarbor (see chapter by Bradby in this publication).

While the broad aim of the initiative is to restore ecological systems, a major planning challenge is to determine locations in the landscape where restoration work is of the greatest benefit. A number of criteria will drive the determination of agreed priority areas, with a combination of evidence used to identify locations where these criteria are met, and a range of views as to their relative importance.

A key principle underpinning Gondwana Link is the promotion of connectivity across the landscape. The notion of connectivity encompasses physical connections between areas of habitat at the landscape level, the connectivity of habitat at the species level, and functional connectivity for key ecosystem processes. Other factors

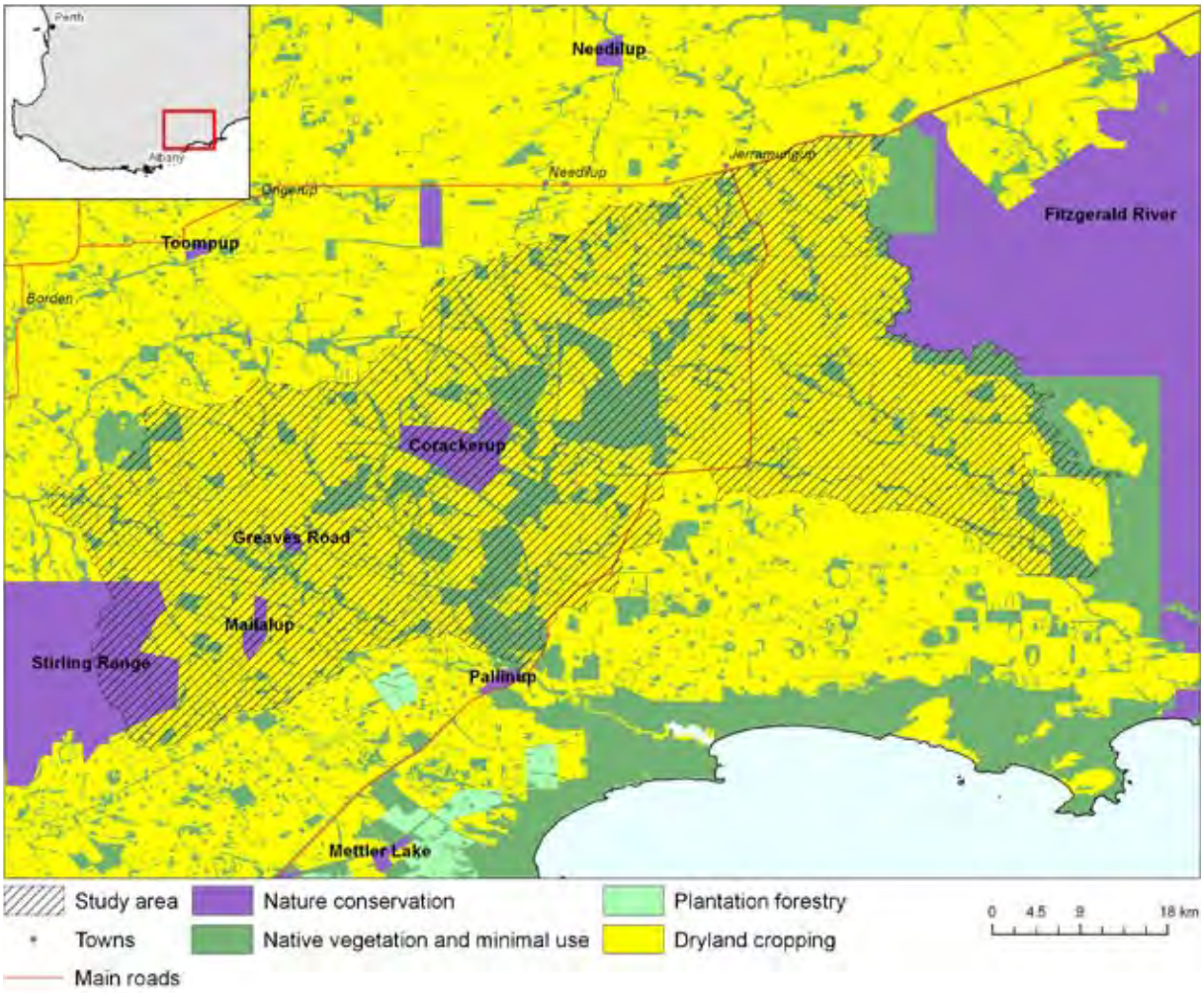

Figure 1. The area selected for a demonstration assessment of priorities for revegetation, located in the section of Gondwana Link between the Stirling Range and Fitzgerald River National Parks, south-west Western Australia.

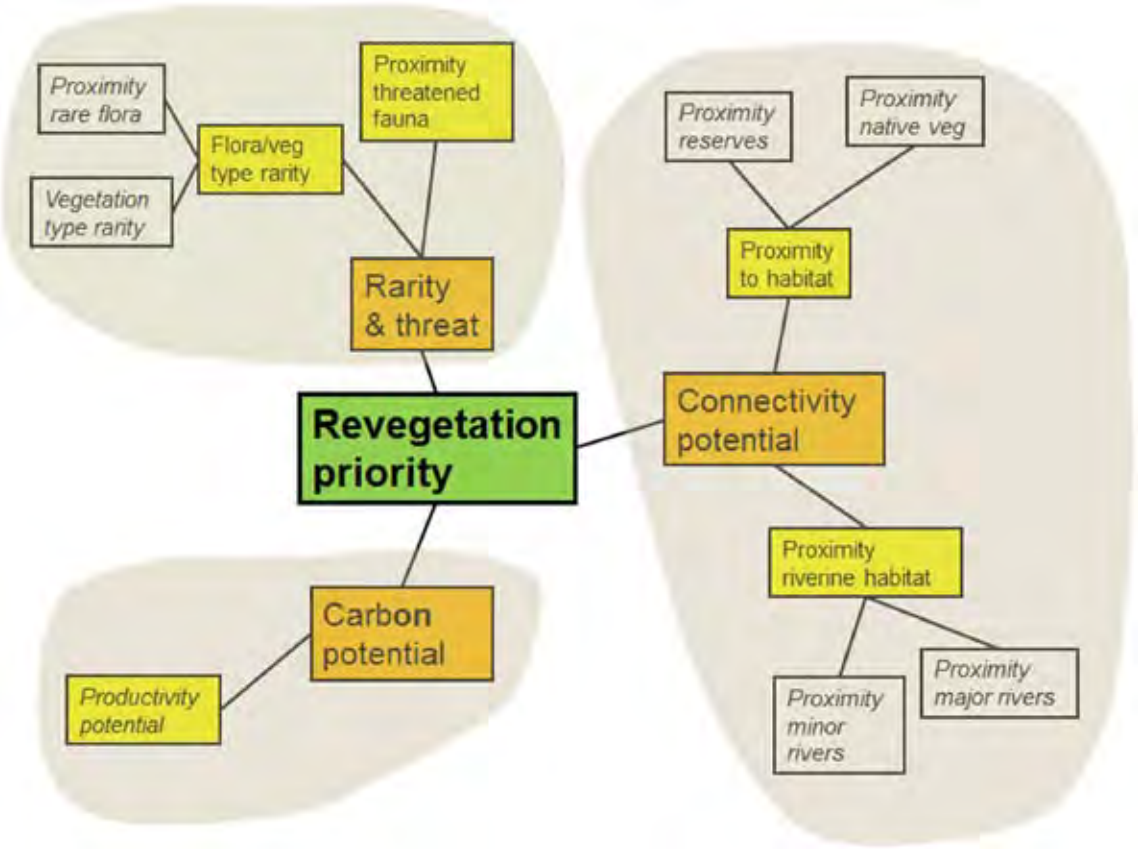

Figure 2. A 'means-to-an-end' diagram showing the relationships between the objective and criteria used in the Stirling Range-Fitzgerald River demonstration analysis.

to account for in a fully developed priority-setting process will include the benefits of habitat restoration for rare species and communities, carbon sequestration, salinity and water quality management, agricultural production, and aesthetic and recreation considerations. Costs will include the opportunity cost of agricultural production and development benefits foregone.

A simple illustration of how a spatial prioritisation process can be undertaken is provided by a proof-of-concept analysis completed for the 70 kilometre-wide zone between the Stirling Range and Fitzgerald River National Parks (Figure 1). This analysis uses the MCAS-S spatial decision support tool and a range of available spatial data inputs for the region to demonstrate how data, modelled information and opinion can be combined in a transparent way to explore revegetation options.

In this demonstration, three broad criteria are specified: connectivity potential, carbon sequestration potential, and the rarity of and threat to native plants and animals. The demonstration draws on the experience of CSIRO Land and Water and the Murray Catchment Management Authority which identified priority areas for revegetation in the West Hume region of southern New South Wales (Hill et al. 2006) – in that case using biodiversity and salinity mitigation criteria. The West Hume project showed how to prioritise locations for regional NRM investment in revegetation using a simple spatial MCA approach, readily available data, and a strong participatory process. The Gondwana Link collaboration is currently working through the development of a more comprehensive analysis process, addressing a broader range of issues using additional inputs and tools.

Structuring the MCA

The first step in undertaking spatial MCA involves the definition of the objective and the decision criteria. This design-phase is critical to the success of the MCA process in framing the assessment and determining subsequent steps. A simple 'means-to-an-end' diagram is a useful way to represent the objective and decision criteria, and to determine what information will be required and how it might be meaningfully combined. The engagement of experts and stakeholders is essential to this phase of the process.

A means-to-an-end representation of the demonstration analysis developed for the Stirling Range-Fitzgerald River region is shown in Figure 2. The diagram shows how criteria and sub-criteria are linked. In this case two sub-criteria contribute to a view of connectivity potential – the proximity of locations to areas of native habitat (based on distance to conservation reserves and native vegetation remnants outside reserves) and proximity to locations of riverine habitat (based on distance to streamlines and rivers). Carbon potential is represented by a single factor – a modelled estimate of potential forest productivity. A view of the rarity and threat status of native plants and animals is represented by a combination of the proximity to known locations of threatened fauna and rare/threatened flora and an estimate of the proportional area of native vegetation remaining for each of the major native vegetation systems within the region.

There is no single correct way of constructing the diagram; its structure is simply a representation of the agreed way of combining relevant factors that contribute to a solution. More than one diagram may be developed for this purpose. Many additional factors could contribute to a solution, including estimates of cost.

Spatial analysis and exploration

Spatial analysis is completed in MCAS-S by combining data to create views of sub-criteria and criteria as depicted in the means-to-an-end diagram (Figure 3). This represents a direct link between the structure of the spatial analysis and the problem-solving approach shown in the diagram. Primary spatial data inputs needed to calculate criteria and sub-criteria are held in the tool. The type and relative importance of input data depends on the particular mix of criteria used in the analysis. However, good quality climate, terrain, soil, vegetation, land use, and hydrological data will usually be important in assessments of this sort (Lesslie and Cresswell 2008).

Once assembled, input data are combined using the functions available in MCAS-S to create spatial representations of criteria and sub-criteria. Functions are automatically available to users according to the type of map combination required. This enables the creation of composite views using a range of computational options including classifying, normalising, weighting and aggregation as well as a range of map algebra and 'paint' options for creating customised layers. Two-way and multi-way comparison tools also provide additional options for the creation of views. In the demonstration study, as shown in Figure 3, most criteria and sub-criteria were created using simple standardised weighted linear combination methods.

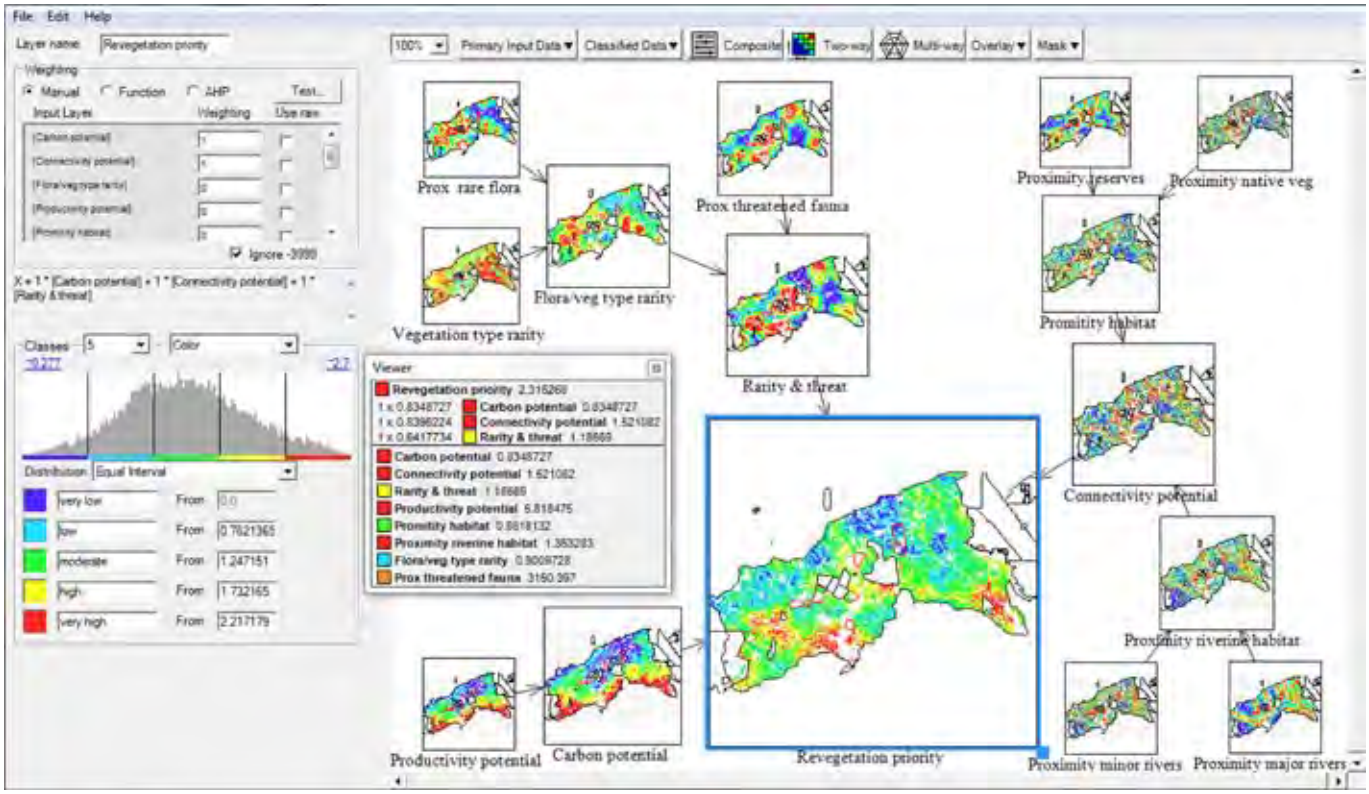

Figure 3. The MCAS-S interface showing the demonstration evaluation of priorities for revegetation in the Stirling Range-Fitzgerald River study area. The arrangement of the analysis reflects the scheme shown in the 'means-to-an-end' diagram in Figure 2. All computational elements at any stage in the analysis chain can be immediately accessed, viewed and altered by users.

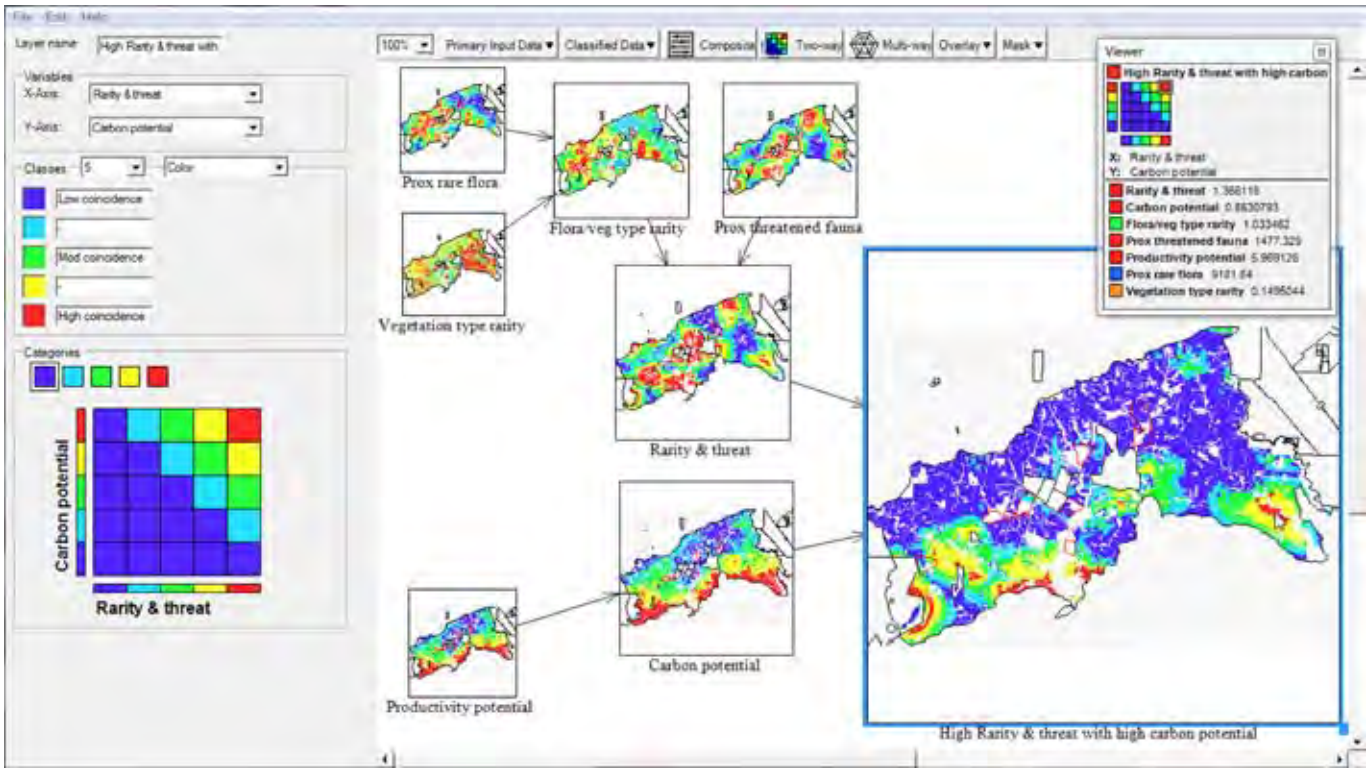

Figure 4. Exploring spatial coincidence: a two-way analysis. A spatial two-way comparison between assessed priorities for revegetation addressing fauna and flora rarity/threat and carbon potential in the Stirling Range-Fitzgerald River study area. A matrix (far left of interface) enables interactive exploration of the spatial coincidence between class values for both these criteria in an associated two-way map layer (right of interface). Locations coloured red in the two-way map layer show where there is a coincidence of high priority class values for both criteria. The viewer (top right) shows the value and class of all input layers for the pixel under the mouse pointer (centre-right).

Any stage of the analysis chain can be immediately accessed, viewed and altered by the users. This creates a highly dynamic, interactive analysis environment highly suited to participatory processes involving GIS non-specialists. Any change can be immediately seen and its effect on potential outcomes assessed. The highly intuitive operation of all functions and access to full visualisation in Google Earth assists in this.

In complex spatial MCA it is helpful for participants to be able to explore, in detail, the spatial relationships between different elements contributing to an assessment. These elements may be key inputs, criteria or even alternative potential solutions. They may also include different approaches to classification, weighting and combination. Live update and sensitivity testing functionality is helpful in this regard. Two-way and multi-way functions in MCAS-S also enable a thorough exploration of these relationships. Figure 4 shows a spatial two-way comparison between assessed priorities for revegetation addressing fauna and flora rarity/threat and carbon potential.

A matrix (far left of interface) enables interactive exploration of the spatial coincidence between class values for both these criteria in an associated two-way map layer (right of interface). Locations coloured red in the two-way map layer show where there is a coincidence of high priority class values for the both the rarity/threat criterion and the carbon potential criterion. The coincidence of other class value combinations (e.g. low/low; high/low; low/high) can also easily be viewed.

Conclusion and challenges for the future

The scope and scale of modern strategies in nature conservation and natural resources management present decision-makers with serious challenges. implementation of the principles outlined in the *National Wildlife Corridors Plan* (DSEWPC 2012) will, for example, require the accommodation of objectives driven by conservation science with the differing aspirations, views and opinions of landholders and communities. Effective decision-making will require the combination and analysis of mapped information in ways that help all stakeholders understand issues, options and trade-offs. Optimal solutions and pathways to desired outcomes will not usually exist. However, solutions and pathways that have the broad support and engagement of the community can be achieved through open, informed participatory decision-making processes.

Spatial information technologies provide the technical capacity for managing and analysing diverse spatial information (data, knowledge and opinion) to answer 'where' questions in conservation and natural resources planning. However, it is only recently that the needs of non-specialists in participatory GIS have been seriously addressed (Fitzsimons et al. 2012). Non-specialists' needs include the ability to interactively construct stakeholder views of relationships and dynamically explore the effects of changing parameters. The MCAS-S tool is one example of innovation that provides for these needs. Although GIS is a mature technology with an established place in conservation analysis and planning, new imperatives for flexibility and engagement require a re-think of design principles and a re-definition of role.

Acknowledgements

Thanks are expressed to Keith Bradby and Amanda Keesing of Gondwana Link for data and advice on the demonstration study and hosting a spatial analysis workshop in Albany in late 2011; the MCAS-S team at ABARES, including Jodie Mewett (data preparation for the demonstration study), Lucy Randall (assistance with maps) and Jasmine Rickards; also Andrew Barry (Barry Computing Services) for software engineering.

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Gondwana Link is rebuilding linkages to the botanically rich woodlands of south-west Western Australia. ©Photo: James Fitzsimons

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Biography

Dr Rob Lesslie is a geographer and ecologist with more than 25 years of experience in natural resources evaluation and management. Rob is currently Principal Scientist, Land Use and Management at ABARES. His responsibilities include development of nationally consistent land use and land management practices data and analysis and spatial decision-support for sustainable agriculture and natural resources management. Prior to joining ABARES, Rob held teaching and research positions in geography and ecology at several Australian universities. He has also worked as an ecologist and reserve planner.

Farmland investment and markets for ecoservices – attracting finance sector investment in ecosystem protection

Shawn Butters, Malory Weston and Cullen Gunn

Kilter is a fund and asset manager offering wholesale investment opportunities in Australian farmland and water. Kilter projects aim to deliver investors long-term, stable, inflation-protected returns through transformational investment and management of Australia's rural land and water systems. Redevelopment of agricultural land assets married with ecosystem protection is a key feature of Kilter landscapes – supporting yield history, asset appreciation and long-term sustainability.

The Kilter strategy has a focus on large-scale intervention in both underpinning ecological systems and overarching market-based systems to deliver asset enhancement at scale for long-term improved yields and growth. Landscape-scale intervention creates significant commercial opportunities for balancing water use, agricultural production and ecological function.

Returns are generated through yields from precision agriculture, water use solutions, ecosystem services and growth in the value of transformed assets. Precision agriculture and irrigation water use solutions generate the majority of yield. Ecosystem service payments while small in percentage terms help ensure affordable long-term ecosystem protection. The core investment offering is underpinned by the Kilter view of the environment as an operating envelope containing, provisioning and sustaining production off land and water assets, rather than a minor factor of production or an externality.

Current investment portfolio

There are three Kilter projects currently operating, involving a total investment commitment of $194 million. Of this total, in excess of $110 million has been deployed to date. Kilter has a target of establishing projects with committed capital of $350 million over the next five years.

Kilter is currently managing over $80 million worth of water entitlements and 9,000 hectares of agricultural landscape in northern Victoria encompassing both dryland and irrigated farming (**Figure 1**).

Native grasslands that remain in north central Victoria are part of the Natural Grasslands of the Murray Valley Plains community, recently listed as ‘critically endangered’ at a national level. ©Photo: James Fitzsimons

Figure 2a. Lunette of Stevenson Swamp at purchase 2009.

Figure 2b. Same lunette two years later.

Kilter manages VicSuper's Future Farming Landscapes (FFL) investments[1] in this region. These landholdings are being managed for sustainable agricultural and biodiversity outcomes, with land use ranging from smaller zones of irrigated intensive agriculture to larger areas of low intensity/low input grazing and protected biodiversity (VicSuper 2011).

Locally significant areas of public land supporting high value biodiversity include riparian frontages on the Little Murray and Loddon Rivers; some Ramsar wetlands; and protected areas such as Winlaton Nature Conservation Reserve, and Mannaor, Tutchewop, Dartagook, and Stevenson Swamp Wildlife Reserves occur in this focus area. Kilter-managed lands are adjacent to all but one of these protected areas, with Stevenson Swamp being particularly significant as it is not only part of the Kerang Wetlands Ramsar Site but is surrounded by Kilter managed-land (VicSuper 2011). Revegetation of Stevenson Swamp lunette was undertaken upon purchase and achieved with a combination of passive restoration (including removal of grazing), direct seeding, and planting (with the seedlings watered using a simple reticulated system) (Figures 2a and b).

FFL leased Crown frontage has been protected against grazing and other disturbance such as agricultural activity to at least 100 metres from a water body. Additionally, Crown frontage licences are being converted where possible from grazing to conservation status. Within the larger FFL area, an area of about 13.4 km^2 (in excess of 20% of FFL) of 'Ecological Estate' has been identified as either:

- supporting remnant vegetation worthy of protection, or
- subject to revegetation and restoration activities including direct seeding, planting and passive regeneration of indigenous species. These ecosystems are largely chenopod grasslands (considered endangered) and chenopod woodlands (endangered or vulnerable depending on bioregion).

Also being managed is a further 13.4 km^2 (20% of FFL area) of low-input grazing country based on indigenous plant species. A further 1.8 km^2 (3%) is planned for diverse forms of forestry. Relative to the irrigated agricultural history of the last century FFL has a strongly positive rather than negative impact on biodiversity health across FFL lands. The resting of fragile soils and indigenous vegetation over the last three years has contributed to a substantial recovery of soil quality and seed set of various indigenous species. A proportion of this seed is collected and progressively sown along with the planting of seedlings. No 'weedy' species are introduced to FFL landscapes (VicSuper 2011).

In an ecological sense Kilter landscape projects have the following elements:

- Recognition that change at many levels across rural Australia is inevitable – Kilter uses change to drive innovation and create opportunities
- A principal focus on protection and renewal – old landscapes but new management regimes offering new opportunities and markets
- Large-scale intervention in projects of 10,000 hectares or larger in Victoria, and on a significantly larger scale in other mainland states
- The management of the dynamic relationships between farmlands, ecosystems and people as a key to delivery of risk weighted profits in rural landscapes. Each can drive performance and, with Kilter management, the whole becomes greater than the sum of the parts
- A balance between areas suitable and capable to sustain precision irrigated agriculture and the protection and management of key ecological sites that generate additional investor returns (such as vegetation offsets, carbon sequestration, salt credit trading, and flood mitigation services).

1 VicSuper is a Victorian-based public offer superannuation fund.

The future health of the swamps and river floodplains in the Murray-Darling Basin depend on cooperation between the public and private sectors.
©Photo: James Fitzsimons

Investing in natural capital

A key limiting factor in future economic development is the availability and functionality of natural capital, including those life-supporting services that have no substitutes – ecosystem services.

The Kilter focus on asset enhancement (both agricultural and environmental) involves large-scale intervention in both underpinning ecological systems and overarching market-based systems.

A range of grant programs have been tried in the past including the Australian Landcare Program, Natural Heritage Trust V1 and V2, National Action Plan for Salinity and now Caring for our Country. The results from these programs have provided many important localised benefits and ecosystem improvements (while acknowledging the National Audit Office concerns about measuring performance (Commonwealth of Australia 2001)).

However, the scale of activity required to protect biodiversity is well beyond incentive programs alone – a new 'additional' approach to investment in protection is required for the future. This new approach must:

- Have consistent long-term metrics and clear outcomes (not changing with the political cycle as grants do)
- Be good value for money
- Operate within a government-developed market framework for transactions
- Operate outside of reliance on government recurrent expenditure
- Operate without reliance on government to transact/facilitate deals
- Be simple, accessible and optional for all participants
- Strengthen links and respect between city resource users and rural resource/service providers
- Ensure ecosystem protection and enhancement beyond the normal background 'duty of care'
- Be accountable and feed into larger reporting monitoring and evaluation frameworks (i.e. System of Environmental-Economics Accounts (United Nations 2012)).

There are many examples of significant contributions to biodiversity and ecosystem protection through voluntary efforts and specific activity of the non-profit sector. Indeed to date Kilter's view is that the non-profit holders of conservation lands (such as Trust for Nature (Victoria), Bush Heritage Australia and the Australian Wildlife Conservancy) have paved a leadership path in protecting natural resources at scale for future generations – often in partnership with government.

Kilter however operates in a different space. It has established itself to deliver returns to investors from the reconfiguration and redevelopment of farmland and water assets – and it is keen to ensure that ecosystem protection can directly build on the return base for investors.

Kilter has been and remains an advocate for a broader range of market-based initiatives to support conservation and rehabilitation of biological assets on private land. Kilter as a private land manager dedicates a part of its implementation program to sourcing returns from investment in ecosystem protection and rehabilitation. Kilter hopes that eco-markets can develop further to encourage greater uptake by landholders in ecosystem protection.

Why is this important now?

Generally, the population tends to believe technology can produce food, fibre and energy, without really thinking about where any of it comes from. But technology has produced no alternative to the complexity and processing ability of soils and landscape ecosystems.

Producing more food for an ever-burgeoning population will be critical for the future. In the same way that we think and agonise about food security we should however concern ourselves with soil security – it is even more fundamental. Soil security is the maintenance or improvement of the world's soil resource so it can keep providing sufficient food and fibre.

An important limit to agricultural intensification is soil degradation which according to the United National Environment Programme has been rising since the 1950s. About 85% of agricultural land contains areas judged to have been degraded by erosion, salinity, compaction, and other factors. Soil degradation has already reduced global agricultural productivity by 13% in the last 50 years (Wood et al. 2000).

Kilter holds a view that profitably meeting consumptive market needs for food and fibre will mean sustaining improved long-term agricultural production. This in turn depends directly on protecting and enhancing the health and long-term function of ecological (land and water) systems. Profit comes from the right production produced sustainably and delivered to the right markets.

The demand for food coupled with land scarcity will drive new pressures and opportunities for rural land in Victoria and Australia over coming decades. For example ABARES's recently released report into foreign investment in Australian agriculture suggests 44 million hectares of agricultural land is now wholly or partly owned by foreign entities, up 60% from the 1980s (Moir 2011).

This is consistent with ongoing local trends to increase both scale and intensity of farming activities. Australia, and more particularly Victoria, is well placed to deliver clean and green food and fibre to the rest of the world but the right market signals (rather than straight regulation) will be needed to ensure concurrent protection of ecosystems and the biodiversity within them.

By most accounts margins in traditional farming are not high. Improving yield returns to investors by 1–3% can make a significant difference to overall project returns and help buffer volatility from traditional agricultural markets. Ecosystem payments structured to offer private landholders the option to source an extra 1–3% yield would create interest. As part of an integrated farming system there is scope for engaging corporate, family corporate and family farming businesses in delivering broad scale ecosystem protection.

In addition, non-profit organisations could help offset ongoing liabilities associated with managing landscapes for biodiversity and ecosystem protection. Scale of landscape intervention is important, and this has been recognised by many groups. In recent years, Bush Heritage has substantially increased its land under management with a vision for 2025 to protect one per cent of Australia. Access to ongoing payments for ecoservices would help manage ongoing liabilities (e.g. pest plant and animal management).

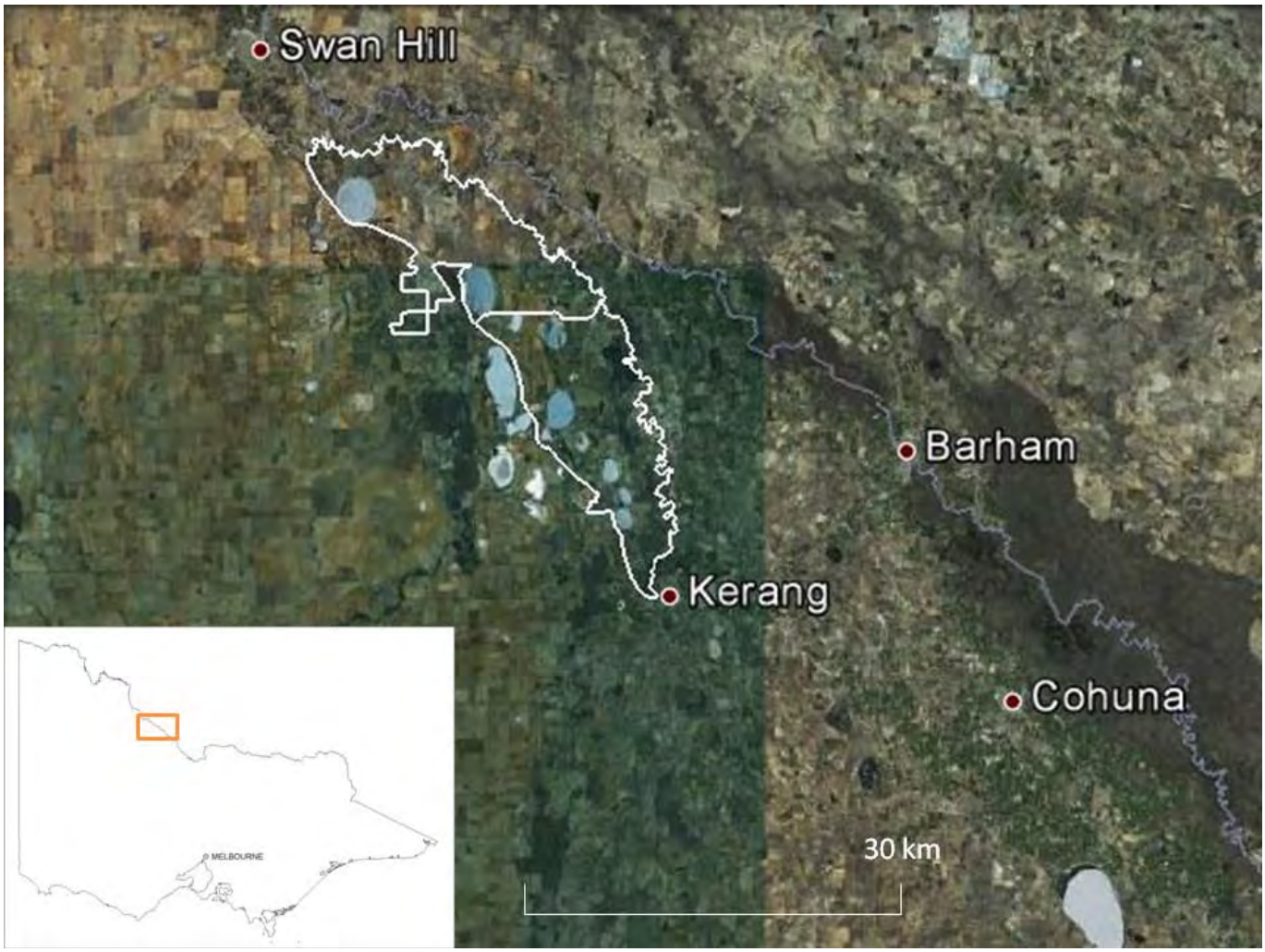

Figure 1. Kilter target landscape area. (Inset: Landscape area in state context).

The ability of corporate agriculture to rapidly and fundamentally change landscapes at scale is a potential positive. Most will recognise that a social licence to operate requires servicing community and regulatory obligations. However this does not 'lift the bar' above the 'status quo' response.

Market signals that provide additional and diversified yield opportunities for land owners would offer the opportunity for a much broader uptake of ecosystem protection and enhancement activities.

Concluding comments

Population increase and the drive to access food, fibre and water will see significant transformation of rural land. The scale and pace of land use change in Australia will likely surprise many over the next decade.

In addition other overlapping pressures such as climate change need also be addressed. While the precise scale, nature and location may be uncertain, climate change impacts will occur. The precautionary principle needs to be applied to help protect and enhance Australia's natural capital.

To bolster other protection efforts Kilter holds the view that ecosystem service provision must become an industry in its own right, giving landholders the option of accessing a market framework to deliver ecological protection and enhancement.

The Kerang Wetlands, internationally recognised under the Ramsar Convention, are in Kilter's target area. ©Photo: James Fitzsimons.

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Biographies

Shawn Butters has worked in rural land and water management since 1984. After completing his degree Shawn worked with the Victorian Farmers Federation across the Victorian Farm Tree and Land Management Groups and assisted in their conversion to the emerging Landcare movement. He then left for deer farming and the family business became the largest processor and marketer of Australian venison across the eastern seaboard. Shawn joined the public sector and worked in catchment and land management for 12 years. The work was at local, regional, statewide and national levels. Shawn then rejoined the private sector and worked as an independent consultant, eventually heading a small consultancy team that worked principally in policy and joining research to policy. This worked to the opportunity to jointly develop Kilter. Shawn has worked with Kilter since its inception in 2006.

Malory Weston has 20 years' experience in natural resource management. Before joining Kilter in January 2008, Malory worked as a consultant with EWR, largely in the areas of environmental policy and management. Employment prior to this included roles with North Central Catchment Management Authority (in catchment management); the Victorian Department of Sustainability and Environment in science communication; and the Victorian National Parks Association, focusing on marine conservation. Malory taught natural resource management and environmental management at tertiary level for about ten years, as well as working as an independent consultant to the Australian Government to deliver a variety of natural resource management projects.

Cullen Gunn has worked in rural land and water management since 1993. After completing his postgraduate diploma Cullen spent time with the then Victorian Department of Conservation, Forests and Lands, and worked as a Landcare Group Facilitator in northern Victoria. Through 1996 to 1999 Cullen worked at the Corangamite Catchment Management Authority, compiling the first Regional Catchment Management Strategy then with the Victorian Department of Natural Resources and Environment helping manage assessment and delivery of the Natural Heritage Trust program in Victoria. Cullen was self-employed as a consultant before being appointed as the Executive Officer for the Victorian Catchment Management Council in 2001, leaving in 2003 to become a Director of ES Link Pty Ltd. Since its inception in 2006 Cullen has worked for Kilter.

‘Henbury Station’ – an industry perspective on financing conservation for carbon and biodiversity markets

Rebecca Pearse

R.M.Williams Agricultural Holdings (RMWAH) is a vertically integrated agricultural company focused on operating prime farmland and, through strategic partnerships, developing a diversified portfolio of businesses supplying a range of R.M.Williams’ branded meat and grain products to both local and international markets. With 120 employees, RMWAH works in poultry, organics, cattle stations and biofuels. To achieve its goals, the RMWAH business focuses on food production, alternative energy solutions, combined with land restoration programs focusing on biodiversity, carbon and water. RMWAH is particularly interested in integrated supply chain solutions, adding value to commodities and delivering those commodities to international markets.

Project background

In July 2011, RMWAH completed the purchase of the 516,674 hectare Henbury Station in central Australia, with assistance from the Australian Government’s Caring for our Country Program (**Figure 1**). This purchase saw Henbury become a protected area and part of Australia’s National Reserve System (NRS) with a conservation covenant to be registered on the title. In doing so, RMWAH will cease all cattle grazing and actively manage the former pastoral property to control fire, water, weeds and feral animals to support the regeneration of native vegetation. This will in turn see RMWAH generate biodiverse carbon credits, with this income used to fund Henbury’s long-term conservation, thus establishing a new model for carbon farming and biodiversity conservation in the rangelands. The project will also allow re-engagement with the Traditional Owners of the land who will play a key role in the long-term conservation of Henbury.

The Henbury Station acquisition (hereafter referred to as Henbury) addresses two key priorities outlined in the Caring for our Country Business Plan:

- Expanding the National Reserve System and contributing significantly to the protection of an under-represented bioregion
- Protecting important natural assets in northern and remote Australia.

Henbury Station. ©Photo: Parks Australia

Henbury will contribute 5.31% to the under-represented, high priority Finke bioregion and 3.46% to the MacDonnell Ranges bioregion, and improve the protection of two subregions in the Finke bioregion with very low levels of protection (less than 0.1%) and eight under-represented regional ecosystems.

Henbury is also a practical example of using Carbon Farming Initiative (CFI) legislation, and the Australian Government's price on carbon, to create a pilot demonstration project to use financial markets to achieve commercial, carbon sequestration, community and biodiversity outcomes.

One of the key requirements is to ensure that the integrity of the biodiversity and community values (see below) of the project are not compromised by the generation of finance through the carbon market. RMWAH intends to work with research groups to ensure that these issues are identified and addressed as part of the 'learning by doing' component of the project. Interim Management Guidelines provide the guidance for the management of Henbury from the period of purchase until the commencement of the Plan of Management on 23 June 2013.

RMWAH will follow recommendations made by CSIRO research, funded by the National Indigenous Climate Change Project, to guide Indigenous co-benefit criteria and requirements to inform the development of Australia's Carbon Farming Initiative.

Natural values

Henbury extends from the high-relief ranges and foothills of the MacDonnell Ranges and across the vast, open red plains and dissected uplands and valleys of the Finke and Palmer River. Reputedly the world's oldest river, the Finke River is the longest in the Northern Territory, rising in the MacDonnell Ranges and flowing into the Simpson Desert, a total of 510 kilometres. The Finke flows south from the Finke Gorge National Park for over 100 kilometres across Henbury Station.

The region is characterised by perennial freshwater wetland systems, some such as Running Waters, 3-Mile, Snake Hole and Harts Camp are regionally significant, and represent some of the largest and oldest wetlands in central Australia that support the area's unique biodiversity.

The Finke River is a 'High Conservation Value Aquatic Ecosystem' and included in the *Directory of Important Wetlands of Australia*, with the headwater gorges described by Duguid et al. (2005, p. 254) as "the only natural permanent waters in the bioregion, these water bodies are important drought refuges for many species in addition to fishes due to the aridity of the general landscape". The Finke River is home to three endemic fish species, including the Finke River Goby (*Chlamydogobius japalpa*).

Henbury is part of the Central Desert Link of the Territory Eco-link. The acquisition of Henbury substantially increases the area of the Finke River protected (additional to that protected in the Finke Gorge National Park), and improves ecological links to the Owen Springs Reserve and Illamurta Springs Reserve.

Henbury protects habitat for three endangered species listed under the *Environment Protection and Biodiversity Conservation Act 1999*: the endangered Slater's Skink *(Liopholis slateri slateri)*, the vulnerable Peter Latz Wattle *(Acacia latzii)* and the Palm Valley Palm *(Livistona mariae)*. The project will improve protection of productive chenopod shrublands and arid floodplains.

Formation of RMWAH

In 2009, RMWAH was formed as a business based on strategic investments and partnerships to grow the Australian agricultural industry in an intelligent, commercial and environmentally responsible manner, including the emerging markets created by the CFI and the *Clean Energy Act 2011* (CEA).

The emergence of the Australian CFI and CEA have provided the structural framework for the Henbury project while partnering with the Australian Government has given the project high visibility and ensured that organisations such as CSIRO, the environment departments of the Northern Territory and Australian Government, and NGOs have seen the project as a potential template for similar initiatives.

Why Henbury and why the rangelands?

Rangelands cover 80% of Australia and generate significant wealth ($90 billion annually), through a range of industries. Some 6,000 pastoral enterprises occupy 58% of the land area in the rangelands (Rangelands Australia 2011). These enterprises have contributed significantly to the economy but are under increasing market, environmental and economic pressures, as

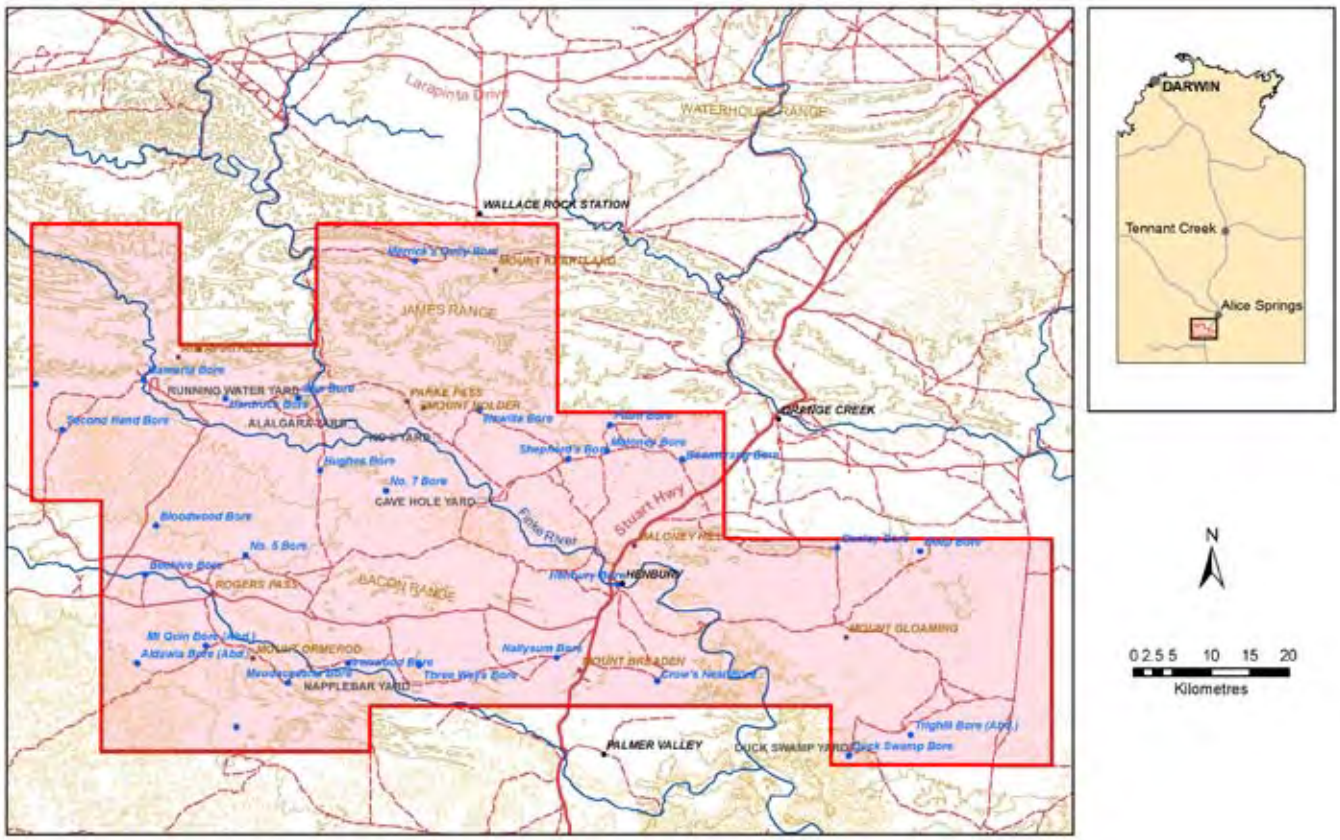

Figure 1. Location and topography of Henbury Station.

product quality, sustainability, tourism, biodiversity, climate change, carbon storage and water resource issues challenge aspects of livestock production.

It is widely acknowledged that some of the past and current pastoral management practices have in some areas proved inappropriate for the rangelands. These practices have resulted in loss of native vegetation, soil salinity, accelerated soil erosion, an increase in the number and distribution of weeds and feral animals, reduced water quality and decreased biodiversity.

The primary means to sequester carbon will be encouraging natural regeneration as the result of reduced grazing pressure of both stock and feral animals; fewer and less intense fires; and strategic watering and fencing to promote regrowth.

Key components of the project

Methodology

The most important immediate foundation of the Henbury project was the development of an applicable CFI rangeland methodology. This was originally anticipated to be completed 'in-house', but since the project came to fruition in June 2011 the complexity of the rangelands has been realised. RMWAH met with a number of other parties with a mutual interest in a rangelands methodology and agreed that in order to get a new methodology through the CFI smoothly, as it was imperative to work with the Australian Government's Department of Climate Change and Energy Efficiency and to take into consideration the views of other interested parties, designing a methodology that has broad consensus, sound science and is conservative.

Fauna & Flora International convened an informal group – Australian Carbon Rangelands Enterprises (ACRE) – which swiftly moved forward to secure support for developing a rangeland methodology and to issue an expression of interest for such a rangeland methodology.

With the methodology submitted for approval in July 2012, there is now a process of becoming a registered offset entity, following project approval, validation and verification.

Vegetation – desktop and then field work

The Finke bioregion is dominated by mulga with various *Acacia* species present over shorter grasses and forbs. The MacDonnell Ranges bioregion consists of spinifex and acacias, particularly mulga.

There are twelve land systems on Henbury, as defined by Perry et al. (1952). The Simpson's land system, the most prevalent across Henbury, comprises spinifex on sand dunes, sparse shrubs and low trees or Desert Oak over grasses on sand dunes, mulga, coolibah or sparse low trees over copperburr, samphire or saltbush species growing in the swales.

The major productive land systems on Henbury, Chandler's land system, is widespread across the property and includes mesas, low ranges, clayey stony slopes, bluebush rises and open woodlands.

Environmental mapping for the entire property only exists at a relatively large scale (vegetation: 1:1,000,000; land systems: 1:250,000), although draft vegetation mapping (1:100,000) exists for the eastern third of the property within the Finke bioregion and is currently being validated as part of the project. Likewise a 1:100,000 land systems map of the property from the 1980s is being ground-truthed.

Vegetation mapping will provide a more detailed understanding of the extent and dynamics of plant communities on Henbury.

Fire

RMWAH has developed and is implementing a fire management plan that will outline the fire management actions required to reduce the perceived negative impacts of large-scale wildfires. Such wildfires, often a result of lightning ignitions during spring/summer thunderstorms, have previously occurred at intervals in the past following prolonged periods of well-above average rainfall. Due to high rainfall in recent years, Henbury is currently experiencing a high fire period that occurs only once every 30 years.

Community

Indigenous communities on Henbury mostly identify as Southern Arrernte, or by their language, Pertame. Although Henbury is most closely linked with Southern Arrernte, there are links through totemic sites and song lines within Henbury to Luritja and other surrounding language groups. There are several outstations located on freehold blocks within Henbury and some 23 sacred sites located across the property.

3-Mile Waterhole, Henbury Station. ©Photo: Parks Australia

The *Draft Indigenous co-benefit criteria and requirements to inform the development of Australia's CFI* have been released by the National Indigenous Climate Change project and CSIRO (Robinson et al. 2011), and will form the basis of the Henbury project community commitment. The objective is to embed benefits such as employment, education, management of cultural sites into the project.

The RMWAH vision is therefore the evolution of a healthy landscape approach at Henbury with conservation, biodiversity and all communities being stakeholders in a resilient landscape.

The Henbury project has the potential to deliver, at a minimum, land sector employment, training and education, management and better infrastructure for access to sacred sites. Henbury and other rangelands projects provide a genuine positive result for the outback community in a rainfall area considered too fragile for intensive pastoralism. Many of the opportunities are embedded within the project's operation (e.g. biodiversity audits, employment, training and cultural management) and are therefore immediate priorities. The challenge remains to not over-promise or under-deliver on the opportunity for Indigenous engagement.

Moving forward, the future

The Henbury project is intended to be one small step along the way of 'learning by doing' to explore the integration of the global environmental markets and options for farmers and pastoralists to alter livestock grazing practices. Land owners will need to decide whether a balance of the ecological needs of the landscape and the economic needs of grazing enterprises is economically attractive. The Henbury project seeks to demonstrate the feasibility of measuring recovery, valuing recovery (both economically and ecologically), and funding ongoing conservation management with reduced grazing impact.

There is a need to examine the historic barriers to changing present practices, including poor economic prospects, high capital costs, practical management issues and equity considerations for fairly distributing costs and benefits through the emerging environmental market place.

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Henbury Station. ©Photo: Parks Australia

Midlands Conservation Fund – an innovative conservation tool developed in response to the social, economic, and ecological conditions of the Tasmanian Midlands

Nathan Males

The Tasmanian Midlands is one of Australia's biodiversity hotspots. It is a lowland area of fertile rolling hills and valleys in the interior of Tasmania, a large island off the south coast of Australia. The social and ecological history of the region is significant in the development of the 'Midlandscapes' conservation model.

The Tasmanian Midlands is fringed by mountains to the west, south-west and the north-east. Prevailing, rain-generating winds originate from these directions, leaving the midlands in a distinct rain shadow. The latitude is 41° south and the marine influences of the Southern Ocean and Tasman Sea provide for a temperate climate. Rainfall is less than 800 mm a year. During the last glacial age in Tasmania which ended some 14,000 years ago, the island was drier and colder and the Tasmanian Midlands was desertified.

For the last 10,000 years, the natural ecosystems of the Tasmanian Midlands has been a mosaic of native grasslands, open woodlands, wetlands and shrubby forests. The grasslands, woodlands and wetlands are particularly rich in herb and wildflower species.

Prior to European arrival in Tasmania in the early 1800s, the island was inhabited by small numbers of mobile Aboriginal peoples. The Tasmanian Midlands was certainly inhabited and the ecosystems were significantly influenced by Aboriginal burning regimes, which were used to encourage native grassland pastures and the associated marsupial grazers that were an important food resource.

Beaufront Valley grassland in the Tasmanian Midlands. ©Photo: Bush Heritage Australia

Figure 1. Focal landscapes of the Midlandscapes initiative within the Midlands Biodiversity Hotspot.

European settlement of Tasmania was initiated as a penal colony in the early 1800s. The penal colony soon proved difficult to manage and free settlement was encouraged – in particular the governments of the day sought to establish an equivalent of the European aristocracy to provide social structure, leadership, and a source of active employment for the convict population.

Being open and grassy, the Tasmanian Midlands represented an ideal landscape for the establishment of large farming estates. By the 1830s, 99% of the Midlands was alienated from the Crown as private land and a wealthy land-owning class was well established. Among a broad range of farming pursuits, the Midlands proved ideal for the production of fine wool, and this enterprise above all others has dominated the farming traditions of the region in the intervening years.

High wool prices, land grants and convict labour enabled the land-owning class of the Midlands to generate significant wealth throughout the 1800s. Families built numerous striking and fashionable Georgian mansions, farmhouses, and farm villages, which are now undoubtedly a little-known, but significant cultural treasure of Australia. In large part the same families remain in ownership of the properties established in the early 1800s.

In general, the ecology of the Midlands survived European settlement. Native grasslands and woodlands were not destroyed by the introduction of sheep, although the intensity of these operations was likely much greater than grazing pressures of native animals under Aboriginal management.

However, since the 1960s the use of superphosphate fertilisers became common and many native grasslands were converted to pastures made up of introduced grasses. This conversion continues today and native grasslands have now been all but lost from the landscape – they are now estimated to constitute only 4% of their pre-European extent. Native vegetation as a whole now occupies only 30% of the landscape.

During the last 40 years, annual rainfall has declined and wool prices have dropped significantly, and as a result, many land-owning families find themselves with financial constraints. The drop in rainfall, combined with soils compaction and other factors, has meant the trees of many of the remaining woodlands have died, exhibiting a landscape that now appears to be in great ecological and some social stress.

Recent innovations in irrigation technology and investments in irrigation infrastructure have made it likely that irrigated agriculture is a possible alternative farming enterprise. While this promises social and economic improvement, it is likely to put further pressure on an already seriously stressed ecology.

Previous conservation efforts in the Midlands

While Tasmania has a significant protected area system on the western side of the island, since the 1990s several strategies have been used in an attempt to establish a formal reserve system in the Tasmanian Midlands. While a number of mechanisms have been used, all have achieved only low to moderate success. They are:

- Conversion of Crown land to reserve, which has achieved only a small number of reserves over a relatively small area, as 99% of the landscape is privately owned.
- Purchases of freehold land which have been attempted by conservation NGOs, but have proved impossible because most land of high ecological value is part of long-term family estates that are not likely to be sold; and when whole estates do occasionally appear on the market, the cost is very high due to the presence of improved agricultural land, farm infrastructure and large, historic houses.

- Private reserves established by conservation covenant, which has had moderate success, particularly when programs offer attractive financial incentives. In general, however, covenants are not attractive to this land owner group as the covenant agreements are perpetual, highly restrictive of land owner activities, involve government which is not highly trusted, and are reliant on ongoing government goodwill for their practical workability. Land owners are cautious about entering into agreements with government that may lead to future generations of land owners being restricted in unpredictable and unintended ways.

The Midlandscapes model

In the mid 2000s, a group of conservation NGOs and representatives of Tasmanian government programs came together, each recognising the importance of the region for conservation and responding to the lack of progress towards establishing reserves using the available mechanisms.

The participating NGOs and programs were:

- Bush Heritage Australia, a national conservation NGO primarily using land purchase as a conservation tool, with substantial land holdings across Australia and significant expertise in conservation land management.
- The Tasmanian Land Conservancy, a Tasmanian conservation NGO using a range of tools (purchase, revolving fund, covenant, and stewardship agreements) to conserve land in Tasmania.
- The Tasmanian Government's Private Land Conservation Program, combining a number of state and federal government project initiatives to develop a private reserve system primarily using conservation covenants.

Deciding to collaborate towards the conservation of biodiversity in the region, the group formed an initiative called 'Midlandscapes'.

Using The Nature Conservancy's Conservation Action Planning (CAP) process, the groups collaborated to identify and map conservation targets and identify parts of the region with high concentrations of values – termed 'focal landscapes' (Figure 1). Within focal landscapes, the groups began discussions with key land owners to share knowledge and identify opportunities to work together. This process was by no means easy, with discussions between conservation interests and land owners breaking down on occasions due to unrealistic expectations about what the discussions could deliver in the short term – i.e. land owners seeking rapid financial outcomes and conservation groups seeking enduring conservation security. However, over time, quality dialogue led to an understanding of the ecological needs of the landscape and the needs of both land-owning and conservation interests.

The following were key issues within this dialogue:

- The remaining grasslands and grassy woodlands are in good condition when they are carefully grazed (and possibly burned) as part of a farming enterprise, but not when they are converted, ploughed, or fertilised.
- Remaining key grasslands and grassy woodlands are under significant threat of conversion as they occur on sites that have considerable agricultural potential for cropping, orcharding, and irrigated agriculture.
- Land owners who wish to retain grasslands need to be recognised for foregoing the opportunity for converting the native grasslands to other more profitable land uses.
- Land owners do not wish to (or in some cases due to the nature of the ownership structure of their properties, cannot) encumber future generations of land owners with legal restrictions, so perpetual covenants are not always desirable or possible.
- Land owners wish to be recognised for their conservation activities as a service to the community, and financially rewarded for at least part of that activity.
- Conservation groups and their financial supporters are wary of providing funds in return for short-term agreements as they risk not meeting the long-term objectives of conservation.

The discussions led to the development of a concept for a new and innovative type of conservation agreement that was not perpetual, but medium-term, regularly renewable (rolling) and provided annual funds to recognise conservation outcomes. The intention is that this type of agreement will allow for flexible long-term conservation agreements between conservation groups and land owners over multiple generations. The immediate consequence of this type of agreement was the need for a long-term reliable source of funds so that conservation groups could make the annual payments associated with the conservation agreements.

The conservation NGOs agreed to jointly form a company that could hold and invest funds raised for conservation in the Midlands and provide the resources for the annual payments. In 2011, the Midlands Conservation Fund was established as a company with a board drawn from representatives of Bush Heritage Australia and the Tasmanian Land Conservancy. Philanthropic foundations and trusts have provided seed funding to the fund and further fundraising efforts are under way with the aim of building the capital of the fund to $10 million.

Key innovations of Midlandscapes

The two key innovations of Midlandscapes have been the recognition of the need for a medium-term, rolling conservation agreement and the establishment of the Midlands Conservation Fund to financially underwrite it.

Midlands Conservation Fund will guarantee the future capacity of the conservation groups to honour financial commitments made in conservation agreements. This is an Australian first as all previous conservation agreements have been either perpetual and associated with a single capital payment, or short-term and funded for a set number of years with no guaranteed options to continue. As most conservation agreements have been established through government programs, it is very difficult for governments to make promises for ongoing payments for indefinite time periods.

The key innovation of Midlandscapes is the private NGO sector and philanthropic interests recognising the need for more flexible, medium-term conservation arrangements to meet the particular ecological and social needs of a landscape, and to complement the inflexible, perpetual or short-term arrangements that governments can enter.

At the time of writing this chapter (August 2012) the Midlands Conservation Fund has been established as a company, seed funding has been committed, and the conservation groups were in the process of establishing the first medium-term rolling agreements.

Key challenges

Many challenges lie ahead, foreseeable and, no doubt, unforeseeable.

Known challenges include:

- Raising sufficient funds to invest for meaningful returns that can protect the extent of the target areas
- Measuring the conservation outcomes and the success of agreements
- Retaining land owners in the agreement for the long run and at generational change, particularly if the differential between the payments that conservation groups can make fall well behind the profits that could be earned from alternative enterprises.

The model is capital intensive and likely to have upfront investment needs similar to the purchase of land. Unlike the purchase of land, the model agreed by land owners and conservation groups is a medium-term (12 year) rolling agreement that can be regularly renewed by land owners for a further full term. While there is no guarantee that this method will achieve long-term conservation goals and conservation groups have no control over whether land owners remain in the agreement in the longer term, it is seen by both parties as optimising flexibility and conservation security.

There is strong optimism from both conservation groups and land owners that this type of agreement will be the foundation of a long-term relationships and partnerships for the management of important conservation assets that can recognise the needs of all the parties involved.

While this mechanism for conservation is capital intensive and does not guarantee long-term success, it has potential to bring together diverse groups into close partnerships that can share conservation objectives and recognise each others' particular circumstances and needs.

Future opportunities

The mechanism may have relevance to other regions where there are significant conservation values embedded in landscapes which are being highly pressured by land use change, and where there are land-owning communities that have a sense of long-term ownership and stewardship of the landscape.

Midlands land owners, Simon Foster and John Cameron (left; middle) discuss conservation opportunities with visiting American rancher, Sheldon Atwood (right). ©Photo: Louise Gilfedder

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Biography

Nathan Males is a conservation and business professional with over 15 years of experience. He was the founding president of the Tasmanian Land Conservancy in 2001 and the organisation's founding CEO from 2003-2011. Nathan has an undergraduate degree in Environmental Studies and Education from the University of Lancaster, UK and an MSc in Protected Landscape Management from the International Centre for Protected Landscapes. Nathan has also worked with Bush Heritage Australia and the Tasmanian Government.

Ngarrindjeri futures: negotiating a future through Caring for *Ruwe/Ruwar* (lands, waters and all living things)

Steve Hemming and Daryle Rigney

The Ngarrindjeri nation in southern South Australia, located in the Coorong, Lower Lakes and Murray Mouth region, use the term *Ruwe/Ruwar* to encapsulate the interconnection between country, body, and spirit. This interconnection is fundamental to wellbeing and it is for this reason that healthy lands and waters are critical to healthy Ngarrindjeri people and culture. Creation ancestors such as Ngurunderi give Ngarrindjeri traditional responsibility to care for *Ruwe/Ruwar*.

The regional, peak Indigenous organisation, the Ngarrindjeri Regional Authority (NRA), is leading negotiations and agreement-making with South Australian authorities to transform the existing natural resource and heritage management regimes in the region towards recognition and support for healthy Ngarrindjeri *Ruwe/Ruwar*. The strategy is structured around agreement-making and significant resourcing aimed at capacity building, and a 'cultural' shift in regional government programs. This cultural shift in natural resource management (NRM) requires a comprehensive, long-term effort by both Ngarrindjeri and non-Indigenous institutions and programs.

A shift in the relationship between the Ngarrindjeri nation and the State

Ngarrindjeri leaders argue that non-Indigenous respect for their beliefs and traditions is fundamental to social justice and is crucial in programs aimed at positive community development if 'closing the gap' between Indigenous and non-Indigenous Australians is to be achieved. In the twenty-first century, Ngarrindjeri have identified as a crucial challenge the creation of a future centred on caring for Country, which incorporates respect for traditions, cultural responsibility, self-determination and economic development. Reconciliatory and broader educational initiatives require a parallel, strategic socio-political plan for a healthy future for Ngarrindjeri people. The severe drought devastating the Murray-Darling Basin in the 2000s framed this ongoing Indigenous community challenge. Ngarrindjeri leaders sought a path through this environmental disaster that brought with it a greater opportunity for the community to develop a long-term caring for Country program aimed at education, training, employment and a sustainable Ngarrindjeri regional economy.

Younghusband Peninsula in Coorong National Park. ©Photo: DEWNR

The NRA includes in its vision for Ngarrindjeri people, the following overarching statement:

> *Our Lands, Our Waters, Our People, All Living Things are connected. We implore people to respect our Ruwe (Country) as it was created in the Kaldowinyeri (the Creation). We long for sparkling, clean waters, healthy land and people and all living things. We long for the Yarluwar-Ruwe (Sea Country) of our ancestors. Our vision is all people Caring, Sharing, Knowing and Respecting the lands, the waters and all living things.* (Ngarrindjeri Nation 2006, p. 5)

This vision makes clear the essential link between the wellbeing of individuals, families, communities, their unique 'world view' and their right and responsibility to care for Ngarrindjeri lands and waters. This world view is gaining high level acceptance in the non-Indigenous context through South Australian Government recognition of the *Ngarrindjeri Nation Yarluwar-Ruwe Plan* (Ngarrindjeri Nation 2006), Kungun Ngarrindjeri Yunnan (KNY) agreements, and regional NRM planning.

Since the 1980s, educational programs such as *Camp Coorong: Race Relations and Education Centre* have developed and promoted an understanding of the Ngarrindjeri world view. Cultural values and histories are also communicated through publications, contributions to State education curricula, and cultural exhibitions in museums and art galleries (see Hemming et al. 2010). In recent years the political strategy, relying on a positive shift in non-Indigenous acceptance of Ngarrindjeri beliefs and traditions, has challenged the South Australian Government to provide Ngarrindjeri with the capacity to take a leading role in caring for Country.

Kungun Ngarrindjeri Yunnan agreements, the Murray-Darling Basin and Ngarrindjeri futures

In 2009, the Ngarrindjeri nation in South Australia negotiated a new agreement with the State of South Australia that recognised traditional ownership of their lands and waters and established a process for negotiating and supporting rights and responsibilities for country *Ruwe/Ruwar* (see Hemming et al. 2011). In line with Ngarrindjeri political and legal strategies, it takes the form of a whole-of-government contractual agreement between the Ngarrindjeri nation and the State of South Australia, called a *Kungun Ngarrindjeri Yunnan* agreement (KNY – 'Listen to what Ngarrindjeri have to say'). It provides for a resourced, formal structure for meetings and negotiations between the Ngarrindjeri nation, as represented through the Ngarrindjeri Regional Authority, and government, universities, and other non-Indigenous organisations (see Ngarrindjeri Nation 2006).

The 2009, the whole-of-government KNY agreement was set in place to frame the strategy for negotiating Ngarrindjeri interests in NRM and, in particular, to enable community a key role in the South Australian Government's long-term plan for the Coorong, Lower Lakes and Murray Mouth. This is a legal, binding agreement entered into between Ngarrindjeri and various Ministers of the Crown in South Australia to articulate specific rights and obligations that provide the beginnings of a new, more just relationship. Recitals D and E (Hemming et al. 2011, p. 110) provide an indication of the intentions of the agreement:

North Coorong Lagoon and the Mouth of the Murray River. ©Photo: DEWNR

D. The Ministers have expressed a desire for a new relationship between the State of South Australia and Ngarrindjeri based upon mutual respect and trust acknowledging that Ngarrindjeri consider protection and maintenance of culture and cultural sites upon its land and water central in every respect to Ngarrindjeri community well being and existence.

E. By this Agreement the Ministers wish to provide support and resources to the Ngarrindjeri Regional Authority Inc and enter into negotiations and consultations with the Ngarrindjeri about the maintenance and protection of Ngarrindjeri culture and cultural sites and the natural resources of the Land [lands and waters].

This KNY agreement provides for the establishment and funding of a joint taskforce, creating a formal context for the NRA to negotiate with the South Australian Government regarding its programs on Ngarrindjeri *Ruwe/Ruwar*. The agreement also includes recognition of Ngarrindjeri traditional ownership, the NRA as the peak body, and an agreement to negotiate on key long-held objectives such as the 'hand-back' of the Coorong National Park. KNY taskforce meetings provide a forum for the NRA to work with the State Government to build Ngarrindjeri caring for Country programs, and to secure the resourcing and expertise to effectively respond to government requests for 'informed consent' and 'participation' by the community in the state's environmental programs.

Through a Federal/State Regional Partnership Agreement, the 2009 KNY agreement, and the Ngarrindjeri Partnerships Project (part of the State's Murray Futures Program), the NRA has secured the establishment of specialised positions that support the ongoing responsibility of Ngarrindjeri people for maintaining the wellbeing of *Ruwe/Ruwar*. These funded programs also prioritise the development of employment, training and economic opportunities associated with caring for Country.

Over the last decade, the authors of this chapter have been working closely with the Ngarrindjeri nation on community-based research programs. This work has focused on building capacity in cultural and natural resource management, economic development, and community governance. As part of this developing program, Rigney and Hemming have established the Ngarrindjeri Regional Authority (NRA) Research, Policy and Planning Unit (NRARPPU), hosted by Flinders University. NRARRPU is now the unit responsible for advising on NRA research and policy issues, with a particular focus on natural and cultural resource management. A key outcome of this strategic research and planning direction is that significant resourcing has been secured for NRA capacity-building from the South Australian Government's *Murray Futures* programs. This will ensure that the NRA's research development, training, employment and economic programs will be significantly supported through state and Commonwealth NRM programs for at least five years from 2011 to 2015.

Ngarrindjeri graduation ceremony: (standing left to right) Aaron Long, Simon Wanganeen, Heather Osborne, Arnold Love, Craig Sumner, Ron Clarke, Raymond Rigney, Russell Rigney and Daryl Long; (kneeling left to right) Joe Koolmatrie, Hon Paul Caica MP (Minister for Sustainability, Environment and Conservation), Anthony Camilleri, Cyril Trevorrow, Laura Long and Tim Hartman. ©Photo: DEWNR

Long-term planning, negotiation and the broad education of government officials has been essential for the Ngarrindjeri nation (using the KNY agreement strategy) to bring about such a significant change to the landscape of Indigenous affairs in the Lower Murray region. The usual model of engagement was for government to consult with the 'Aboriginal community', often represented as stakeholders, through funded consultants or government departments, in an attempt to obtain 'support' for government plans, project and agendas. The NRA took the position that this kind of engagement must be radically re-configured and its colonising power relations transformed with resources being re-directed to the NRA for capacity building and long-term community development. This political move was grounded on a critical Indigenous place-based strategy. It required hard negotiations led by lawyers, ongoing independent legal advice, research and planning, and a willingness to take a principled stand on the basis of future benefit. The majority of work conducted in this establishment phase was not resourced and Ngarrindjeri leadership's contributions of time have continued to be largely voluntary.

Conclusion

With formal agreements, careful planning and funded programs, the NRA has designed a strategic approach to secure improved Ngarrindjeri wellbeing for community, family and individuals. This approach to addressing Indigenous disadvantage and resultant poor health requires strong and experienced Indigenous leadership, independent legal advice, partnerships with universities and other non-Indigenous institutions and generous government support. Governments need to support Indigenous self-determination through long-term, coordinated and regional programs.

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Daryle Rigney is Ngarrindjeri and an Associate Professor in Indigenous studies/education at the Yunggorendi First Nations Centre at Flinders University and Dean of Indigenous Strategy and Engagement. Recently he has worked with Ngarrindjeri leaders to develop relationships between Indigenous nations internationally on matters of mutual interest, including cultural and scholarly exchange. He is a co-chair of the United League of Indigenous Nations and Co-Director of the Ngarrindjeri Regional Authority's Research, Policy and Planning Unit.

Brookfield – a new approach to the management of public land

Tricia Curtis and Joanne Davies

Over recent decades Australia has witnessed the significant growth of the public and private conservation estate. This estate now provides a stronger basis for protection of Australian biodiversity, landscapes and cultural assets. This growth has also brought with it major challenges for managers, not least of which are the need for more management resources and effective engagement with communities (Kahrimanis et al. 2001). Conservation Volunteers Australia (CVA) has established itself as an important partner for land managers in meeting these challenges. Furthermore, to enhance its volunteer experience and to assist in ongoing fundraising, CVA has become a land owner and manager in its own right. This chapter outlines the role of CVA in its special lease arrangement for Brookfield Conservation Park in South Australia as a model for community management of public land.

About Conservation Volunteers Australia

Conservation Volunteers Australia is a not-for-profit community-based organisation. CVA's mission is to attract and manage volunteers to participate in projects that protect or enhance Australia's environment and heritage. In 2012, CVA celebrated 30 years of community conservation programs covering all states and territories of Australia. From urban to remote, coast to desert, city to outback, the organisation has extensive experience in managing over 12,500 volunteers each year in a range of practical conservation and research projects, making a significant contribution to our environment. CVA delivers a range or programs including conservation partnerships, endangered species 'Wild Futures Programs', fundraising and corporate partnerships, land management, ecotourism, the Volunteer Interpreter Program, education and safety training, and carbon farming (see www.conservationvolunteers.com.au).

Brookfield Conservation Park

In 1971, a 5,534 hectare property named Glen Leslie Station was purchased by the Chicago Zoological Society for the conservation of the Southern Hairy-nosed Wombat (*Lasiorhinus latifrons*) and named the Brookfield Zoo Wombat Reserve. It was subsequently gifted to the Government of South Australia in 1977 and in 1978 proclaimed as the Brookfield Conservation Park under the *National Parks and Wildlife Act 1972*. Brookfield is 130 kilometres north-east of Adelaide in the Riverland region of South Australia and forms an integral part of a major area of mallee vegetation within the South Australian Murray-Darling Basin.

Bluebush in Brookfield Conservation Park. ©Photo: Conservation Volunteers Australia

The park is characterised by gently undulating to flat plains with consolidated dunes running in a north-west to south-east direction. The soils are shallow and cover a thick calcrete layer over Miocene limestone. Located in the rain-shadow of the Mount Lofty Ranges, the park falls within the southern-most extension of the arid zone of South Australia. Three major vegetation formations are found in the park: Open Mallee (multi stemmed *Eucalyptus* trees); Arid Woodland including Sugarwood (*Myoporum platycarpum*) and Dryland Tea-tree (*Melaleuca lanceolata*); and Arid Shrubland dominated by Bluebush (*Maireana* spp). The understory contains a number of forbs and grasses. One of the most conspicuous features of the understory of the Park is the extreme variation between good and poor seasons – after a good wet season, there are expanses of fresh green spear-grass, intermingled with many small ephemeral flowering plants.

The Southern Hairy-nosed Wombat, which is the South Australian fauna emblem, is a key feature of the park. Although once widespread in semi-arid regions of South Australia, it is now restricted to isolated populations which are now at risk of further loss of numbers. Brookfield is also rich in other wildlife including Fat-tailed (*Sminthopsis crassicaudata*) and Common Dunnarts (*S. murina*), Red (*Macropus rufus*) and Western Grey Kangaroos (*M. fuliginosus*), Emus (*Dromaius novaehollandiae*), Ground Cuckoo-shrikes (*Coracina maxima*) and Australian Owlet-nightjars (*Aegotheles cristatus*) as well as the nationally vulnerable Malleefowl (*Leipoa ocellata*), and many reptile species.

Brookfield has remained an important location for ongoing research. Approximately two-thirds of the park is closed to the general public and used for a range of scientific research programs being undertaken by both local and international researchers, with a new emphasis on citizen science.

Forming a partnership

After an 18 year relationship with the government, CVA entered into discussions about the benefits of CVA directly managing Brookfield Conservation Park. The Department of Environment, Water and Natural Resources (DEWNR) recognised CVA's capacity to engage the community and expand the opportunities for 'community science', to increase funding opportunities through grants and corporate engagement and to reinvigorate the research activities. This would be the first time a non-government organisation had been leased the management of a Conservation Park in South Australia.

The Department's management philosophy for the park is "A park, valued and managed by the community for its biodiversity, scientific research and heritage values" (DEH 2005). One of the motivations for the Department in developing an agreement with CVA was its view that ecosystem conservation and high value scientific research should have primary importance in the management of Brookfield. The Department recognised that this was a function that CVA was well set up to deliver.

In December 2008, a ten-year lease agreement for the management of Brookfield has been signed between CVA and South Australian Minister responsible for the *National Parks and Wildlife Act 1972*. What makes this agreement innovative for the government is that CVA does not receive any funds from DEWNR to manage the park.

The details of the lease include:

- Initial ten year term, plus ten year right of renewal
- There will be no change/restriction to access to the public zones
- Management will be based on the legally adopted *Brookfield Conservation Park Management Plan*
- A detailed review by the Brookfield Advisory Group will occur in year six
- CVA will be responsible for built assets
- The Brookfield Lease Management Committee (comprising DEWNR and CVA representatives) will undertake strategic and operational review requirements for the park and to assist the lessor and lessee in managing the lease

The striking White-winged Fairy-wren *(Malurus leucopterus)* is one of the many bird species that find a haven in Brookfield Conservation Park. ©Photo: David Cook Wildlife Photography

- The Brookfield Advisory Group (comprising CVA, DEWNR, Friends of Brookfield Conservation Park, representatives of the community, surrounding landholders, and conservation and research sectors) provides advice to the Brookfield Lease Management Committee.

The vision of the partnership is to manage Brookfield as a best practice conservation park providing superior quality and authentic experiences that are ecologically sustainable, culturally and socially appropriate, include science and education, inspire people to strengthen their conservation ethic, and generate revenue to fund critical conservation projects including monitoring indicators of climate change. The vision is also for Brookfield to become a leading conservation volunteer research centre in South Australia and a showcase for similar enterprises across Australia.

Managing the park

The conservation management of Brookfield is underpinned by an operations plan, which identifies the activities and programs CVA proposes to undertake during the lease. The operations plan provides a strong and important contribution to the effective management and protection of the park. It has been developed in accordance with the objectives and strategies outlined in the *Brookfield Conservation Park Management Plan* (DEH 2005) and CVA's vision for the park.

The operations plan also includes a series of Key Performance Indicators (KPIs). The aim of KPIs is to ensure that the park's environmental assets are not significantly degraded during CVA's lease. A brief KPI report is presented annually to the Brookfield Lease Management Committee. Failure to meet and report on the KPIs could lead to the cancellation of the lease. The Brookfield Lease Management Committee oversees the lease and ensures the objectives of the management plan are met. An Operations Committee, comprising CVA staff, and nominated partner organisations, is responsible for overseeing the day-to-day operations of the park.

There are five Key Performance Indicators which are reported on:

1. Conserve native vegetation and fauna, especially those species and communities of conservation significance.

   CVA's main management activities are undertaking photopoint and vegetation association condition monitoring twice a year. Southern Hairy-nosed Wombat populations are monitored and wombat warren activity is mapped. A third of the park has been mapped to date and this data is currently being used to assist in the estimation of abundance of the wombat in the region. There is limited data on abundance of wombats and therefore, CVA is helping to provide much-needed data.

   Data from Malleefowl monitoring on Brookfield is fed into the National Malleefowl database, while CVA is assisting DEWNR with baseline monitoring of other bird species and will assist with annual surveys in future. Kangaroo monitoring has occurred annually to date, and is to be increased to bi-monthly to ensure densities are remaining at baseline levels.

2. Maintain and restore wildlife habitat

   Through an ongoing CVA presence at the park (CVA staff, volunteers, researchers, students), off-road activity has been reduced (visual surveys) and the occurrence of illegal animal shooting has reduced (anecdotal evidence). CVA has managed vehicular and people access which is assessed by DEWNR and by photopoint monitoring.

3. Control and if possible eradicate introduced plants and exotic animals

   CVA has undertaken monitoring and control of goats four times a year and uses baiting programs against rabbits, cats and foxes. This particular threat abatement program has encouraged other adjoining landholders to coordinate their threat abatement efforts with CVA's, resulting in a more regional approach.

   An ongoing program of mapping and control on declared and introduced plants is being undertaken trialling different methods for the effective control of a common introduced plant – onion weed. This weed is of current concern as it has been identified as one of the plants out competing spear-grass (*Austrostipa* spp.), the preferred food source of the wombats. Control has been difficult to date; therefore CVA is taking an active role in trialling different methods and herbicides to determine options for the region.

4. Manage fire to ensure the protection of life and property, the maintenance of biodiversity and the protection of the natural, cultural and built values

   This KPI is pursued through fire management including risk assessments, prevention activities and suppression preparedness.

5. Provide safe and effective infrastructure within the Park

   CVA achieves this through asset maintenance and management.

In managing the park CVA works closely with the Friends of Brookfield Conservation Park, one of many volunteer groups formed to support parks in South Australia under the banner of Friends of Parks Inc. Many parks in Australia have small community groups that help the field staff with specific environmental and visitor management activities. The Friends of Brookfield Conservation Park were formed in the 1980s by concerned local and interested community members when a park ranger was no longer required at Brookfield. These 'Friends' wanted to support the ongoing maintenance of the park and over the past 16 years have collected information on photo points, collected rainfall data, assisted with long-term wildlife and vegetation monitoring, and restored the original shearing shed.

CVA has also developed partnerships with land managers of surrounding private and public properties to establish biological links with nearby areas of habitat. Brookfield is becoming a hub for a regional network of sanctuaries and private land owners, ensuring best practice management across the landscape and becoming a focal conservation volunteer and research centre in South Australia.

Benefits for government

The Brookfield model has delivered substantial benefits to government by mobilising additional management resources to implement the management plan for Brookfield Conservation Park. The 100-plus volunteers who visit the park annually increase on-ground presence which assists in many management tasks and provides security against possible harm to wildlife. Labour-intensive management tasks such as monitoring are conducted in more cost-effective ways through CVA-managed conservation and research projects than would be possible through salaried government employees.

The agreement has delivered a new model to share learnings and assess future opportunities for innovative partnerships to more effectively manage protected areas that may otherwise receive lesser focus within a large protected area estate.

Benefits for Conservation Volunteers Australia

Conservation Volunteers has also derived many benefits from the Brookfield model. Principally, our management has provided an excellent setting for enhanced volunteer experiences as we can offer a range of monitoring, research and practical conservation activities at Brookfield.

Research activities have increased during CVA management of the park and currently include studies such as wombat behaviour and abundance; determining grazing pressure from herbivores; the impact of climate change on the Southern Scrub-robin (*Drymodes brunneopygia*); and the re-establishment of lichens after destocking. Field trips with universities and surveys with ornithological groups are also regular activities. CVA facilitates the delivery of cutting-edge science at the park by assisting scientists in the long-term monitoring of wildlife to better understand how they are responding to climate change, and ultimately how to better manage their populations.

The park is located near Goyder's Line, which enables this kind of research to be undertaken. George Goyder, a surveyor in South Australia during early settlement, developed Goyder's Line of rainfall, a line used to indicate the boundary of land suitable for agriculture; beyond this line he deduced that the land would only be suitable for grazing. It is suggested that due to the effects of climate change, this 'line' is moving south, reducing the amount of arable land available in South Australia. Baseline data collection is one of the main priorities for this research, which includes surveys and monitoring of plants and wildlife.

CVA has also seen Brookfield as an opportunity to build partnership programs with other organisations and properties to support conservation outcomes across the landscape, not just Brookfield. Partnerships have been formed with the Natural History Society of SA, Nature Foundation SA and Australian Wildlife Conservancy, all of whom have neighbouring properties. Through joint applications for funding, CVA endeavours to assist with their on-ground environmental management, including feral animal control and volunteer participation in management. Other landholders from the farming community and owners of Heritage Agreement properties (a form of private protected area; see chapter by Leaman and Nicolson in this publication) are also included in the landscape activities undertaken by CVA, and research activities connected to Brookfield such as bird surveys. The presence of iconic species, such as the Southern Hairy-nosed Wombat and Malleefowl, can leverage fundraising opportunities and corporate support.

Brookfield provides an excellent 'canvas' to illustrate tangible outcomes and measure the benefits from this unique and innovative partnership between a government protected area management agency and private conservation organisation. Although CVA has been managing the park for nearly four years, on the surface, it may appear that there has been little change to the park. It is important to note however that CVA views this as a long-term venture, and accordingly has implemented long-term strategies and monitoring programs. As an example, CVA is managing threats (feral plants and animals) and allowing natural regeneration of native species to occur as opposed to a 'quick fix' of revegetation. Revegetation of certain areas is part of the long-term plan, but other activities such as best practice weed eradication will be trialled and managed first. Therefore, the park is managed with a long-term view of constant improvement.

Acknowledgements

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Joanne Davies is the National Manager – Nature Holidays, for Conservation Volunteers Australia. Joanne has had a career in championing environmental outcomes through sustainable tourism. She has worked with the ecotourism industry including private enterprise, not-for-profit, protected area managers, government, tourism industry, community, private conservation reserves and landholders. Joanne has been employed by Conservation Volunteers Australia since 2000 and has been responsible for the development of all the Eco Tourism Packages offered by Conservation Volunteers under the banner of the Naturewise Packages. Joanne is also a member of the IUCN World Commission on Protected Areas.

Southern Hairy-nosed Wombat in Brookfield Conservation Park. ©Photo: June and Alan Wooldridge

Protecting Queensland's Channel Country and the flows to Lake Eyre

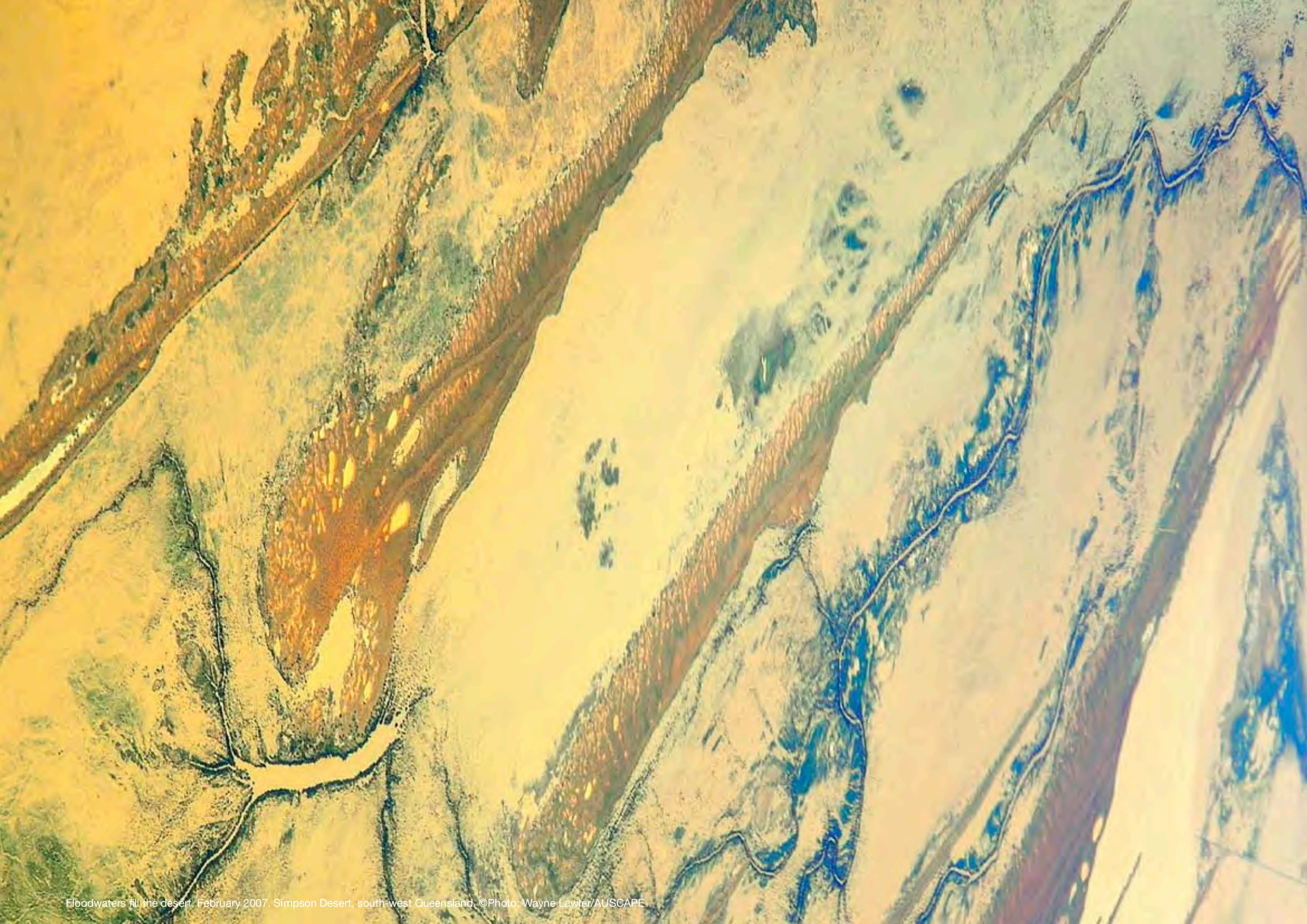
Rupert Quinlan and Barry Traill

Effective and permanent protection of rivers, floodplains and associated wetlands is difficult. Rivers usually flow through a range of lands with different tenures. Protected areas established over individual wetland areas will usually not protect vital incoming water flows, especially in larger catchments. In a powerful model of how effective protection of aquatic ecosystems can work well, the Queensland Government protected the Cooper Creek, and the Georgina and Diamantina Rivers under the Queensland *Wild Rivers Act 2005* in December 2011.

These three rivers flow from central and northern Queensland into the centre of South Australia. With irregular flooding from monsoonal rains in the north of the continent these rivers bring water into the arid heart of Australia. When in full flood they flow over 1,500 kilometres into the terminal wetlands at Lake Eyre, providing more than 80% of the river flow volumes in the entire Lake Eyre Basin. This catchment covers one-sixth of the Australian continent, and forms one of the few big river systems remaining on Earth that continue to flow unregulated (Puckridge et al. 1998).

The 2011 declaration under the *Wild Rivers Act 2005* of the three rivers of the 'Channel Country' of Western Queensland ensures that potential threats such as mining and irrigation will not impact on the values and ecological processes of this globally important region. The Pew Environment Group, in partnership with The Nature Conservancy, has been an engaged advocate of the protection of Western Queensland's Channel Country rivers over the last four years.

The Queensland Wild Rivers approach for protecting this river basin is particularly innovative for two reasons. Firstly the legislation model itself. Secondly, the local residents who chose to participate in an ambitious journey to protect the landscape and their long-term livelihoods. Aside from protecting core wetlands and floodplains from mining and major irrigation activities, a key challenge in Western Queensland is retaining people on the land, including families of all cultures, to ensure the long-term management and conservation of the land.



Floodwaters fill the desert, February 2007. Simpson Desert, south-west Queensland. ©Photo: Wayne Lawler/AUSCAPE

Legislation

The key aim of the *Wild Rivers Act 2005* is to directly protect sensitive wetlands and river courses, and in addition maintain the water flows that enter them. It does this through preventing major new water off-takes and by constraining potentially damaging activities from being established in and on designated rivers, wetlands and floodplains. These prohibited activities are largely major industrial projects and processes such as new irrigation projects (and dams in the 'High Preservation Areas'), mines, and oil and gas extraction. Such activities have potentially very adverse impacts if sited on wetlands or rivers (DEHP 2012). These constraints protect both water quality and quantity. The Act is structured to achieve both goals, across different tenures, and recognises and enshrines Indigenous rights, in addition to those of private landholders. Overall the legislative framework aims to give these rivers the best chance for clean and sustained flows.

In recent years there has been a major escalation of interest in mining in the Lake Eyre Basin. Figure 1 shows exploration licences and mining leases for oil and gas, including coal seam gas and shale oil gas, overlaid on the catchments of the Cooper Creek and the Georgina and Diamantina Rivers. Public concerns on this scale of potential mining include the use of current river water and aquifers, access to land, management of salt brought to the surface in waste water, pollution from tailings dumps and dams, and the overall transformation of natural and culturally valued landscapes into industrial zones.

Under the *Wild Rivers Act 2005*, within areas of rivers, wetlands, lakes, and floodplains classified as being 'High Preservation Areas', new or renewed mining is prohibited, as well as oil, coal seam gas and shale oil gas projects. Within these areas are the tightest controls in Australia to prevent such activities from altering river flows, and damaging waterholes and floodplains, or taking or diverting overland flows of water.

In the remainder of the catchment that is designated, proponents of mining and other development must demonstrate in a more transparent and public way that their activities would not negatively affect river flows and water quality. Given that these industrial projects – invited or not – are entering Western Queensland in a wave from the east and north, a balanced and robust planning control framework is needed.

People

Three years ago, local government leaders, in dialogue with the Pew Environment Group, agreed that there was a need to shape the Queensland Government plans for river protection to meet the needs of local communities and businesses, particularly pastoralism. A process was developed, driven skillfully by Ed Warren, Chair of Western Queensland's local government peak body, the Remote Area Planning and Development Board. This led to the release of a statement in May 2012 that was the product of intensive policy negotiations by the varied set of stakeholders, including Indigenous representatives, Agforce, local government, Desert Channels Queensland, catchment groups, and conservation groups (RAPAD 2010).

The statement's central element was the groups' consensus on three critical issues: amendment of the *Wild Rivers Act 2005* to ensure that grazing properties would not be affected; a stop to the expansion of irrigation; and, of particular importance, agreement on the value of the *Wild Rivers Act 2005* to protect Western Queensland rivers from deleterious impacts of mining. After the statement by the Remote Area Planning and Development Board, the Act was modified by the Queensland Government. Such a diverse group of stakeholders have not agreed on so many river basin management issues on such a scale – in advance of environmental degradation – before in Australia.

This foundation statement was driven by the simple vision that was constantly re-visited when negotiations became difficult: the importance of protecting the clean natural flows of the Channel Country rivers. Key personal behaviours that aided negotiations were willingness to compromise or move to common ground, and to be flexible, patient, transparent and humble.

In addition to this statement from all sectors, Traditional Owners of the region have unanimously supported the use of the *Wild Rivers Act 2005* to protect Queensland's Lake Eyre Basin rivers. In September 2011, nearly 100 Elders and leading Aboriginal representatives of peoples of the Lake Eyre Basin met in Tibooburra, New South Wales, hosted by the Lake Eyre Basin Intergovernmental Agreement Ministerial Forum. Participants came from South Australia, New South Wales, Northern Territory, and Queensland.

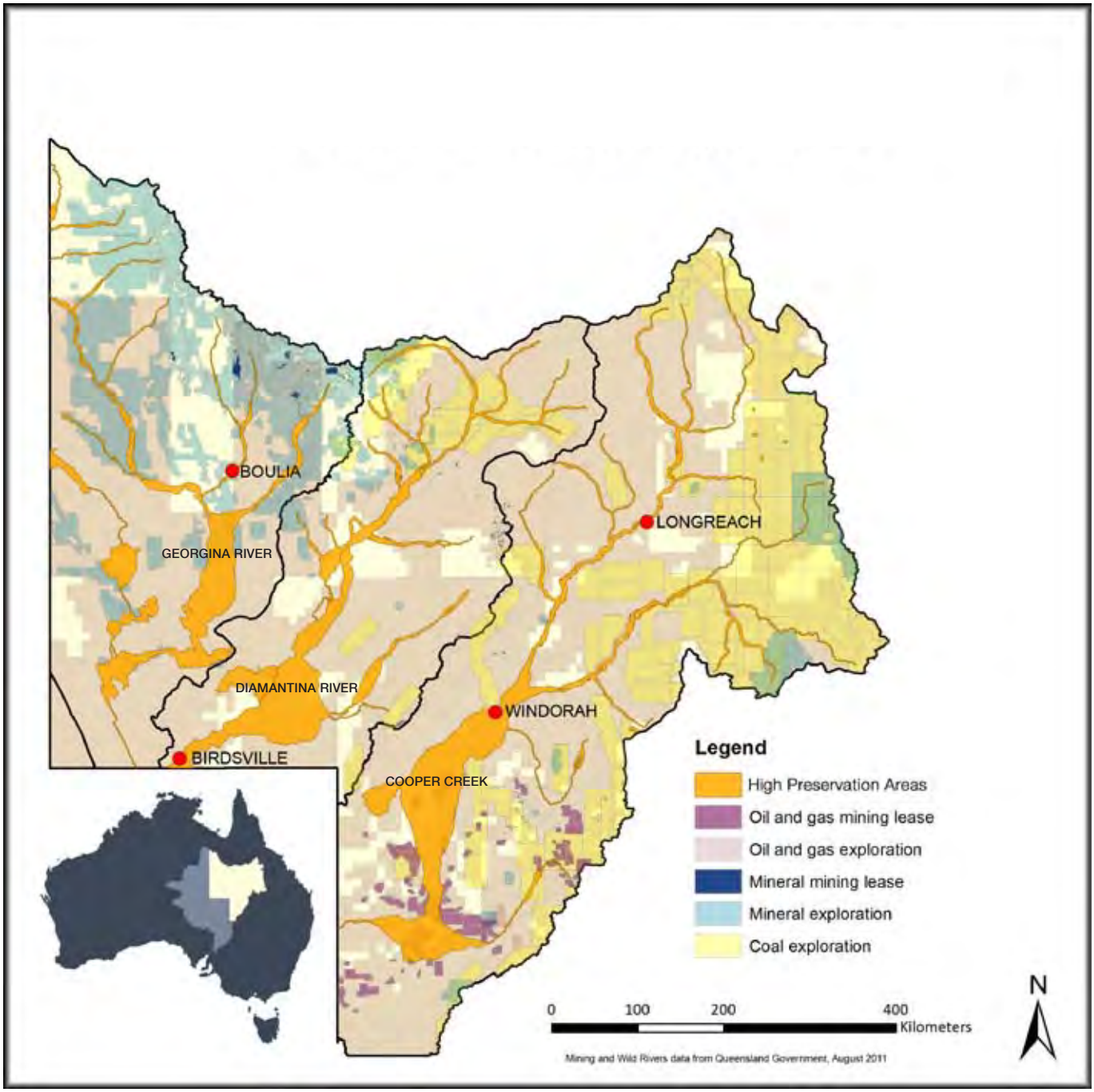


Figure 1. Mining tenements and Wild River declarations in Queensland's Lake Eyre Basin. The orange areas mapped are floodplains, rivers and wetlands, and places of conservation value which now have a high level of protection (i.e. the High Preservation Areas).

A formal resolution was issued (Lake Eyre Basin Aboriginal Forum 2011) that called for the Queensland Government to:

- Declare the Cooper Creek, Georgina and Diamantina Rivers as Wild River Areas under the *Wild Rivers Act 2005*
- Commit resources for Indigenous Rangers in the three river basins under its policy to deliver 100 Indigenous Land and Sea Rangers
- Support and resource an Aboriginal organisation which reflects their governance structure to oversee the Wild Rivers Rangers program within the Cooper Creek, Georgina and Diamantina Rivers for the Aboriginal Traditional Owners of these water systems
- Incorporate water allocations under each Wild River declaration to Aboriginal water allocation and for Traditional Owners to decide its use
- Exclude coal seam gas and shale gas projects, along with other mining and resource extraction, from the High Preservation Areas and Special Floodplain Management Areas
- Strongly regulate coal seam gas and shale gas activities in the Preservation Areas.

The resolution also called for the other jurisdictions in the Lake Eyre Basin to match the level of protection offered by the *Wild Rivers Act 2005* in their own parts of the Lake Eyre Basin.

Declaration

As a consequence of the community processes the Wild River declarations in Western Queensland were tailored in a number of ways to match the specific conditions of the ecosystems, rivers, floodplains and people of the region.

This conservation work in Western Queensland achieves connectivity in landscapes and between people, based on the support of local residents – Indigenous and non-Indigenous – for a protective regime. While national parks and property-based conservation initiatives by non-government organisations can achieve specific ecosystem or species conservation objectives, they can rarely deliver regional-scale objectives.

The Queensland *Wild Rivers Act 2005* delivers protection at huge scales, protecting ecological processes, giving species the ability to respond to climatic dynamics across tenures, while protecting economic enterprises that depend on the natural flooding. It is critical to understand, however, that this form of conservation approach is best realised through the establishment of substantive and enduring relationships.

Figure 1 shows the protective regime now in place. High Preservation Areas now cover 4.5 million hectares in the Channel Country in Queensland, which are now protected from mining and gas extraction. In addition the vital river-flows into these floodplains and wetlands will remain unfettered by major off-takes. An additional 5 million hectares of wetlands downstream in South Australia, including the Coongie Lakes and Lake Eyre, now have guaranteed inflows of water. The Wild Rivers approach has protected ecosystem resilience at a massive scale using what is probably the most potent and effective river and river basin protection legislation in the world.

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Cooper Creek Short-necked Turtle *(Emydura macquarii emmotti)*, photographed on bank of the Thomson River near Stonehenge. ©Photo: Angus Emmott

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Rupert Quinlan has worked with the Pew Environment Group since March 2010 as manager of the Channel Country campaign, in which he works with partner organizations to secure protection of Queensland's rivers as part of the state's *Wild Rivers Act 2005*. He has extensive experience in river and wetland conservation in Australia. Prior to Pew, Quinlan successfully advocated for the creation of the *Wild Rivers Act 2005* and then worked as part of a team in the Queensland Government to help draft it and supporting policies. He has also worked in London and New York in the petrochemical industry and on human rights issues. He holds a master's degree with honors distinction in aquatic ecology, hydrology and geomorphology from the University of Southampton.

Barry Traill joined the Pew Environment Group in 2007 as director of the Wild Australia Program, a joint program of Pew and The Nature Conservancy. He works with partner organisations to obtain protection for large wilderness areas in Australia on land and sea. Before joining Pew, Traill worked for 25 years as a conservation advocate and scientist for Australian state and national organisations. He dealt with private land conservation issues with Trust for Nature (Victoria) and on public land conservation issues with the Victoria National Parks Association, Environment Victoria and the Wilderness Society. He was a founder of the Northern Australia Environment Alliance and the Invasive Species Council. Traill holds a bachelor's degree and a PhD in terrestrial ecology from Monash University.

Innovative measures for establishing protected areas on private lands in South Australia

Greg Leaman and Clare Nicolson

South Australia's system of terrestrial protected areas covers over 28 million hectares, or around 29% of the State, and comprises public, private and Aboriginal-owned lands. In building this protected area estate, South Australia has endeavoured to be innovative and has pioneered new ways of achieving conservation on both public and private lands. This commitment to looking for new ways and partnerships is ongoing as further additions are required to ensure a fully comprehensive, adequate and representative protected area system that contributes to the goals of the National Reserve System.

Acknowledging the significant contribution that private protected areas can make to conservation efforts, South Australia is exploring a range of innovative measures to facilitate and encourage the further establishment of protected areas on private land. These measures aim to ensure that private protected areas meet agreed National Reserve System (NRS) criteria, including protection in perpetuity.

This chapter provides a brief overview of South Australia's protected area system and two strategic frameworks that will help shape its growth. It goes on to discuss current work underway in South Australia to develop an innovative legislative framework for establishing protected areas on private land that will put the state at the forefront of private protected area management in Australia.

The South Australian terrestrial protected area system

The majority of South Australia's protected areas (by area) occur on public land (**Figure 1**). The public protected area system comprises 403[1] areas protected under the *National Parks and Wildlife Act 1972*, *Wilderness Protection Act 1992*, *Crown Land Management Act 2009* and *Forestry Act 1950*, and continues to grow through strategic acquisitions.

Ten of the state's National Parks and Conservation Parks are co-managed with Aboriginal Traditional Owners. These cover approximately 3.9 million hectares or around 14% of the protected area system.

The state's public protected areas are complemented by an extensive system of private protected areas, encompassing 800,000 hectares or around 0.8% of the state.

1 As at 1 May 2012

Eastern side of Wilpena Pound, Flinders Ranges. ©Photo: DEWNR

Private protected areas are held by private landholders and non-government organisations with an interest in conservation. They are afforded protection through formal Heritage Agreements under the state's *Native Vegetation Act 1991* or as Sanctuaries under the *National Parks and Wildlife Act 1972*.

The South Australian Government has provided considerable financial assistance to non-government conservation organisations to purchase land for private protected areas and continues to work with those organisations with regard to their management.

The third component of the protected area system is protected areas over Aboriginal-owned lands. In 2004, innovative amendments were made to the *National Parks and Wildlife Act 1972* to enable formal reserves to be established over Aboriginal lands. The Mamungari Conservation Park (2.1 million hectares) in the Maralinga Tjarutja lands in the west of the state was the first to be established under these provisions. Eight Indigenous Protected Areas, covering around 6.1 million hectares, have also been established over other lands by agreement between the Aboriginal owners and the Australian Government.

Despite the extensive protected area system already in place, only 11 of the 17 IBRA bioregions that occur in South Australia have more than 10% of their area protected. At an IBRA sub-regional level, half of the 56 subregions have less than 10% protection (DENR 2012). South Australia's protected areas have been established largely opportunistically over the last 120 years and while some regions are well represented, others have more limited coverage. Development of the IBRA framework has allowed a more strategic approach over the last two decades. However, further work is required to establish a fully comprehensive, adequate and representative system.

Strategic frameworks: NatureLinks and the protected areas strategy

In 2002, the South Australian Government became the first in Australia to formally adopt a landscape-scale approach to conservation and incorporate the concept, termed *NatureLinks*, into policy and planning frameworks (DENR 2011a). The Government made a commitment to "develop a system of interconnected core protected areas, each surrounded and linked by lands managed under conservation objectives" (Australian Labor Party 2002). Five broad 'biodiversity corridors' were identified and incorporated into the South Australian *NatureLinks* strategy (Figure 2).

NatureLinks provides the overarching framework for Government agencies, conservation organisations, landholders and local communities to work together to restore and manage landscapes and seascapes within the five biodiversity corridors.

In 2009, South Australia partnered with the Northern Territory to develop the Trans-Australia Eco-Link (see chapter by Bridges in this publication). This aims to establish Australia's largest trans-continental biodiversity corridor extending from Spencer Gulf in South Australia to the Arafura Sea and Arnhem Land in the Northern Territory – a distance of approximately 3,500 kilometres (DENR 2011b) (Figure 2).

South Australia's protected area strategy *Conserving Nature 2012-2020: A strategy for establishing a system of protected areas in South Australia* (DENR 2012) recognises that it will require efforts beyond, but supported by, government to establish a fully comprehensive, adequate and representative protected area system. The strategy articulates a strategic framework for establishing protected areas on public, private and Aboriginal lands, including a priority to establish protected areas that will increase habitat connectivity across the landscape in accordance with *NatureLinks* principles.

A new framework for protected areas on private lands

In 2010, South Australia commenced development of a framework to provide a range of mechanisms for establishing and managing protected areas on private lands. The main objective is to make it easier for private landholders and conservation organisations to achieve their own conservation goals while also making an effective contribution to the formal, long-term protection of the state's biodiversity.

This work culminated in the release of a discussion paper in 2011 setting out options for supporting land owners to establish core areas for conserving nature (DENR 2011c). The options consist of two existing mechanisms (Sanctuaries and Heritage Agreements) and two proposed new mechanisms.

Sanctuaries

There are currently 81 Sanctuaries in South Australia covering over 170,000 hectares. Sanctuaries are established under the *National Parks and Wildlife Act 1972* as non-binding agreements that recognise the intent of the land owner to manage the land for

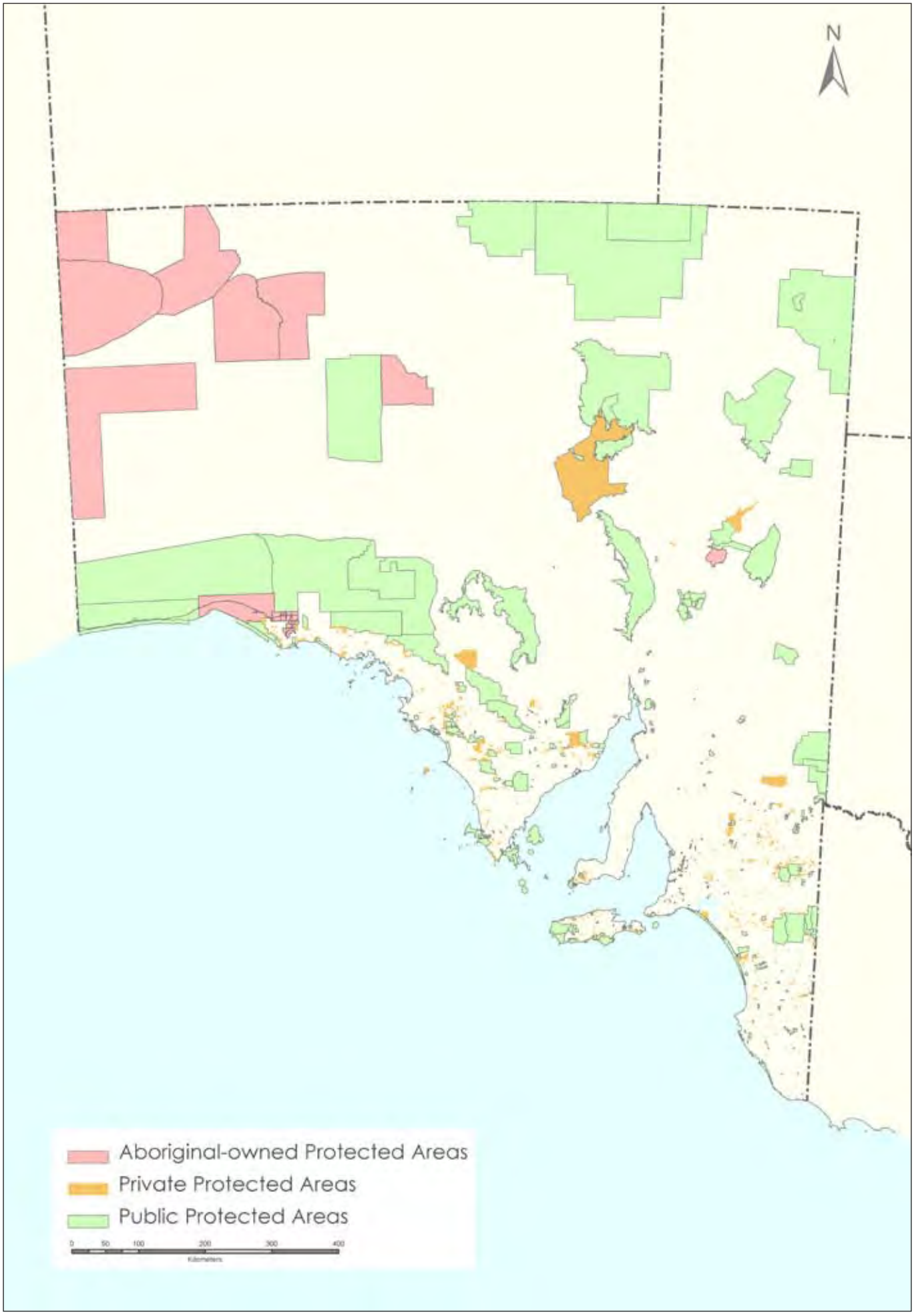

Figure 1. South Australia's protected area system at 1 May 2012.

conservation outcomes. They are not established in perpetuity and management activity is undertaken on a voluntary basis.

Sanctuaries provide a simple, obligation-free mechanism for land owners to manage their land for conservation outcomes, and many Sanctuary owners progress to entering into Heritage Agreements. Feedback through the consultation process associated with the release of the discussion paper indicated strong support for retaining this mechanism as it provides a valuable, entry-level point into conservation on private land.

Heritage Agreements

South Australia was one of the first jurisdictions in Australia to establish a statutory conservation covenanting mechanism to enable private land owners to enter into Heritage Agreements with the government to conserve and restore native vegetation on their land.

There are nearly 1,500 Heritage Agreements in South Australia established under the *Native Vegetation Act 1991*. These cover around 630,000 hectares of private freehold and leasehold land.

Heritage Agreements are registered on the land title and remain in place when ownership is transferred. They have a focus on the conservation of native vegetation, rather than the broader protection and management of conservation values. Although not the original intent, Heritage Agreements fulfil National Reserve System establishment criteria and make a valuable contribution to the National Reserve System in South Australia. As private protected areas they are reported to the Australian Government as Category VI protected areas under the IUCN's protected area management categories (due to their accessibility for exploration and mining).

The consultation process on the discussion paper indicated strong support for retaining Heritage Agreements as a valuable mechanism for ensuring long-term protection of native vegetation on private land.

'Updated' Heritage Agreements

One of the proposed new mechanisms was to create a new, updated form of Heritage Agreement. These would extend the existing focus on native vegetation to include broader conservation of natural and cultural values.

The new agreements would require that land owners manage consistently with, and report according to, contemporary National Reserve System standards and requirements as articulated in *Australia's Strategy for the National Reserve System 2009–2030* (NRMMC 2009). Both the existing, and 'updated' Heritage Agreements would be counted as part of the National Reserve System.

Feedback through the consultation process indicated support for updated Heritage Agreements. Stakeholders considered they would be a useful addition to the suite of mechanisms available for private land protection, particularly for land owners wanting to take a broader approach to conservation.

Private reserves

The second, more controversial mechanism that was presented in the discussion paper was to amend the *National Parks and Wildlife Act 1972* to allow the establishment of National Parks and Conservation Parks on private freehold and leasehold lands.

The 2004 amendments to the Act to enable the establishment of National Parks and Conservation Parks over Aboriginal freehold lands (at the request of the Aboriginal owners) created the precedent for such a proposal. Governance and management arrangements already exist within the Act, and it would be a relatively straightforward process to adapt these to privately owned or leased lands.

To establish a park under the Act on private freehold land, the land owner would enter into an agreement with the Minister, the park would be declared and a notation would be included on the land title. Leased land, such as a pastoral lease where the landholder does not hold underlying title, would require an agreement with the Minister responsible for the *National Parks and Wildlife Act 1972* and then the establishment of a new form of conservation lease over the land.

Under the model that was proposed, National Parks and Conservation Parks on private land would remain under the control and management of the landholder in accordance with a management plan prepared by the owner and approved by the Minister.

While there was strong support for the underlying concept during the public consultation phase, the idea of privately-owned and managed 'National Parks' and 'Conservation Parks' was a step too far for some.

There were concerns by some non-government organisations involved in protected area management that the terminology may create confusion between their efforts and those of government, and that this may affect their support and funding bases. Other

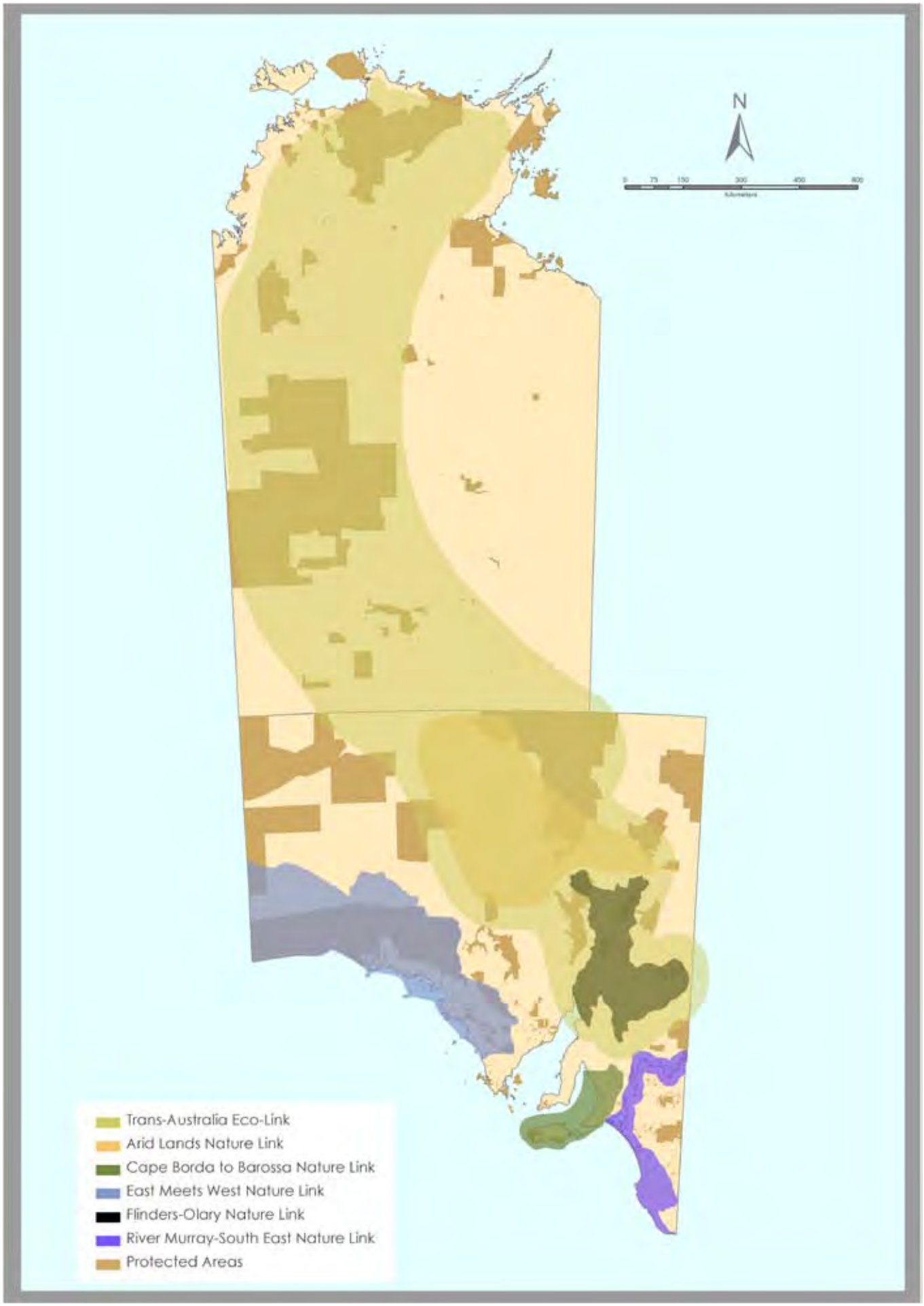

Figure 2. NatureLinks and the Trans-Australia Eco-Link.

stakeholders considered that 'National Parks' and 'Conservation Parks' should be community assets and therefore only managed by government.

As a result of the feedback, current thinking is to amend the proposal to maintain the underlying concept but move away from the terms 'National Park' and 'Conservation Park'. The term 'Private Reserve' seems to have broader acceptance and is being considered as an alternative.

Issues

While there were a number of issues raised during the consultation process, including the nomenclature of private reserves, two others in particular are worth highlighting.

The first related to public access. There were concerns, particularly in relation to the proposed private 'National Parks' and 'Conservation Parks', that there would be public expectations of visitor access and recreation opportunities. It was recognised that while some landholders may wish to offer such opportunities and benefit from them, others would prefer to avoid public access for a number of reasons including privacy, management control, and potential liability. To this end, all of the mechanisms outlined in the discussion paper placed management decisions, such as whether to allow visitor access, solely at the discretion of the landholder and manager.

Access for mineral and petroleum exploration and extraction was the other key issue. Controlled mining access is permitted in parts of the public reserve system and this decision to allow access is taken at the time a reserve is proclaimed. Private freehold and leasehold land is however generally available for mining access. It was proposed that a similar process would be followed for private 'National Parks' and 'Conservation Parks', where the decision on whether to continue mining access would be determined at the time that the reserve was proclaimed following consultation with the land owner and stakeholders. It was proposed that regulatory process would also be developed in consultation with the land owner and stakeholders to ensure that any exploration and mining on private protected areas is managed sustainably and does not compromise conservation values and objectives.

Both of these issues will require further consideration in developing the concept of a 'Private Reserve'.

Conclusion

South Australia has an extensive public protected area system and has made considerable progress in facilitating and encouraging the establishment and management of protected areas outside the public system. In doing so, South Australia has shown a willingness to both embrace and develop new forms of governance.

Arrangements are already in place for covenanting private conservation areas and co-managing Aboriginal-owned parks. The State Government has also provided considerable support to private landholders to purchase land for private protected areas and continues to support management of those areas.

Further work is underway to develop a framework for establishing protected areas on private lands that will strengthen conservation outcomes and provide more opportunities for private landholders to pursue conservation objectives. The extensive consultation undertaken to date, particularly through a discussion paper and input from organisations either involved or interested in establishing protected areas on private lands, has significantly benefited the process.

The South Australian Government believes there is considerable value in facilitating and encouraging private protected areas to continue building the protected area system. This will not only improve conservation outcomes but will also maximise the many other benefits that protected areas provide across the broader landscape. It is anticipated that the framework will be finalised in 2012, with a view to introducing the required legislative amendments in 2013.

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