



13 March, 2006

The Secretary,
Senate References Committee
Environment, Communications, Information Technology and the Arts
PARLIAMENT HOUSE
CANBERRA ACT 2600

Dear Dr. Dewar,

RE: Inquiry into Australia's National Parks, Conservation Reserves and Marine Protected Areas

Attached is a submission by The Wilderness Society which I hope will add weight to the many arguments supporting increased investment in Australia's protected area system.

An increase is needed for both private and public land acquisition for conservation purposes; to help secure a strong Marine Protected Area network; and to support significantly improved management of the conservation estate.

The submission also argues that the ecological services provided to all Australians from protecting nature need to be fully recognized and rewarded by Governments. Recognising the economic benefits flowing to all Australians from conservation could provide a powerful incentive for rural and indigenous Australians to stay on 'country' and manage their land for the ecological and biodiversity benefits we all seek for future generations.

The current scientific framework guiding the development of Protected Area networks should be significantly strengthened. And the same recommended scientific principles should be applied to help guide ecological restoration and natural resource management programmes. The Protected Area estate will fail to meet even its most basic biodiversity conservation objectives if it is treated as islands in an ocean of unsustainable land and sea management. There is an urgent need to develop a conservation planning framework which integrates protected area design and natural resource management to achieve biodiversity conservation objectives at a landscape scale.

**The Wilderness Society Inc
National Campaign Office**

1st Floor, Baileys Corner, 143 London Circuit, Canberra City, ACT
PO Box 188, Civic Square, ACT, 2608, AUSTRALIA
Ph: (02) 6249 6491 Fax: (02) 6249 1002
Email: campaign@wilderness.org.au Website: www.wilderness.org.au
ABN: 62 007 508 349

There is mounting evidence, particularly in Northern Australia, that changes to traditional land management practices across all land tenures is linked to extensive biodiversity declines in otherwise 'intact' ecosystems. Halting these declines may require a significant investment in supporting indigenous Australians to maintain or restore traditional practices and/or to help deal with new problems such as invasive species and inappropriate use of traditional homelands over the past two hundred years. Across Northern Australia, real partnerships between indigenous communities and businesses and non indigenous communities and businesses need to be encouraged and supported by all levels of Government to help achieve improved environmental outcomes.

I hope this submission proves helpful in the Committee's deliberation.

Yours Sincerely

A handwritten signature in black ink, appearing to be 'V. Young', with a long, sweeping horizontal stroke extending to the right.

Virginia Young
(WildCountry Program Coordinator).

THE WILDERNESS SOCIETY

The Wilderness Society (TWS) is a national, community based, not for profit conservation organisation dedicated to the protection, promotion and restoration of wilderness and natural processes across Australia for the survival and ongoing evolution of life on Earth.

Since it was established in 1976 to help save the Franklin River, The Wilderness Society has been involved in the protection of over 8.5 million hectares of irreplaceable wilderness and the cessation of destructive practices on about a further 20 million hectares.

Working with local communities and other state based and national conservation groups, places that all Australians now regard as irreplaceable parts of our national heritage have been protected. These include magnificent wild places such as Kakadu National Park, Fraser Island, Queensland's Daintree tropical rainforests, the old growth forests of Western Australia, the southern forests of New South Wales and Tasmania's Wilderness World Heritage Area.

In a world undergoing great change and environmental challenges, The Wilderness Society has developed a long-term vision and strategy to revolutionise conservation planning in Australia and give nature its best possible chance of survival in the future: *WildCountry*.

Using a new understanding of large-scale connections across the continent, WildCountry is developing a science-based, continent-wide approach to conservation planning that involves both *protecting* the best of what is left of Australia's natural environment, and *restoring* important areas. But the critical difference with WildCountry is its focus on maintaining and/or restoring ecological connections in landscapes and seascapes.

Establishing core protected areas, free from destructive and degrading practices, is a cornerstone of WildCountry. We know if we are to ensure the long term survival of species and ecosystems, we must establish resilient fully protected areas as well as significantly reduce the impacts of all human activity across marine and terrestrial environments. In this context, it is important that the establishment of highly protected areas should occur on both public and private lands and with support from both the public and private sector.

Importantly, WildCountry provides a scientific framework for tackling protected area network design, as well as for tackling threats to nature such as land clearing, intensive logging and damage to river, marine and other aquatic systems. WildCountry is providing a framework of conservation priorities which will give long term relevance to today's environmental issues and promote close cooperation with and integration across, a wide range of community, public and private conservation programs.

WildCountry will also address the needs of indigenous and rural Australians. A central element of WildCountry is to promote the development of 'conservation economies' in critical parts of the Australian landscape. It is particularly important that the ecological services provided to all Australians from protecting nature are economically recognized and rewarded and that real and sustainable employment and training opportunities are generated by the protection and restoration of nature.

TWS therefore has a strong interest in the role of Protected Areas in helping to secure a long term future for all species, landscapes and ecological processes and in underpinning a healthy environment essential to the social, cultural and economic well being of all Australians.

ECOLOGICAL CONTEXT

Attachment A illustrates the degree of change to Australian ecosystems since 1750.

The Table at Attachment B provides a salutary analysis of the extent of threat to Australian wildlife from unsustainable land management practices.

Attachment C provides an overview of Australia's public Protected Area system (IUCN categories (i)-(vi)). Importantly, less than 6% of the Australian continent is protected in 'dedicated and secure' conservation reserves (categories (i)-(iv)). It is noteworthy that 58% of the continent has been impacted by grazing.

Attachment D indicates the % of catchments in protected areas.

Attachment E illustrates the extent of disturbance to the Australian landscape.

Attachment F indicates the dispersive nature of our fauna. Birds in particular are known to track food and habitat resources. Species found in one part of the landscape one year may well be somewhere hundreds or thousands of kilometers away next year.

The ability to accommodate the often migratory needs of our wildlife is particularly important in Protected Area design as is the need to address changing habitat requirements in the face of human induced climate change. See Attachment G for an example of migratory bird movements.

The need to incorporate strong conservation objectives into all land management practices is urgent if we are to bequeath a healthy and diverse environment to future generations of Australians.

STRENGTHENING THE CONCEPTUAL AND SCIENTIFIC FRAMEWORK OF PROTECTED AREA NETWORKS

The conservation of biodiversity and our natural heritage demands a landscape-wide approach that recognises the importance of ecological connectivity. The processes that sustain and regenerate ecological systems and all their components operate across a range of spatial and time scales. Many, if not most, work at space and time scales that far exceed those at which humans manage land and natural resources. Thus, many important ecological processes involve connections at scales not considered by conventional conservation planning and management.

In 2001 The Wilderness Society formed a WildCountry Science Council to consider the challenge of biodiversity conservation in Australia and to help develop a new approach relevant to all stakeholders.

Co-chairs of the Science Council are Emeritus Professors Henry Nix and Michael Soulé. Other members of the Council are Professor Hugh Possingham, Emeritus Professor Harry Recher, Professor Richard Hobbs, Professor Brendan Mackey, Professor Jann Williams, Dr John Woinarski, Dr Rob Lesslie and marine science experts Dr Regina Souter and Dr Trevor Ward.

The work of the Science Council is being advanced through a WildCountry Research Hub established at the Australian National University and an Australian Research Council linkage Grant where TWS is the 'industry partner'.

The WildCountry Science Council has developed a new conceptual framework and a new set of integrated methods for the analysis and evaluation of biodiversity and ecological processes in order to advance the conservation of biodiversity on a landscape-wide basis, irrespective of land tenure.

Central to the approach being developed by the WildCountry Science Council is the need to evaluate biodiversity and identify priorities for biodiversity protection and restoration at a range of scales – continental, regional, landscape.

The fundamental principles underlying the approach being taken (some of which are not new) include:

- Conservation planning must take a large scale perspective (in space and time);
- The key elements to long term conservation planning include large, relatively undisturbed core areas, embedded within a landscape matrix of buffers and linkages;
- Core reserves must be complimented by appropriate off-reserve management that together ensure connectivity of key ecological patterns and processes, particularly at larger space/time scales; Off reserve management can involve formal private conservation reserves such as conservation agreements and nature refuges or wider regulatory approaches such as tenure blind protection to protect catchments values (eg the recent Wild Rivers legislation in Queensland) or the protection of vegetation through vegetation clearing laws and regulations; and,
- "Connectivity" is a foundational concept, and can be defined in terms of a set of ecological processes that demand large scale connectivity.

While these "connectivity processes" are well-recognised phenomena, to date they have not been brought together in an integrated framework and applied in a substantial way to inform and guide conservation planning. The set of connectivity processes being incorporated by the Science Council into a new conservation planning framework can be found at attachment H.

Other foundational concepts include the need to recognize the highly variable nature of 'landscape productivity' (the availability of food and habitat resources) in Australia. This variability is linked to highly variable rainfall patterns across vast areas of the continent. A unique analysis of that variability is provided in the attached CD. As previously mentioned, the table at Attachment F indicates the dispersive nature of much of our fauna (which track changes in food and habitat resources) and the map at Attachment I(1) provides a summary snapshot of the variations in

productivity across the Australian landscape. (The maps found in Attachment I(2) illustrate a rare, relatively stable area of moderate productivity encompassing the largest intact temperate woodland left on Earth). Ensuring that productive parts of the landscape receive secure protection needs to be an urgent priority for the reserve system.

Importantly, the work of the Science Council has highlighted the need to give greater emphasis to protecting large, intact, relatively undisturbed natural areas.

PROTECTED AREAS AND BIODIVERSITY CONSERVATION

What is biodiversity and why is it important?

Commonly the variety of life on Earth is referred to as biodiversity - the different plants, animals and microorganisms, the genes they contain and the ecosystems of which they form a part.

Biodiversity is not static but constantly changing: it is increased by genetic change and evolutionary processes and reduced by processes such as habitat degradation, population decline and extinction. The concept emphasizes the inter-relatedness of the natural world. It covers the terrestrial, marine and aquatic environments.

Usually biological diversity is considered at three levels: genetic, species and ecosystem.

Biodiversity is important not just for its own sake but for helping to meet the needs of humanity and all life on Earth.

Sustaining biodiversity provides us with the best options for dealing with and chances of adapting to, changing environments (eg. global climate change). Biodiversity not only provides us with all our food and many medicines and industrial products, it is integral to the provision and maintenance of a wide array of ecological services. The maintenance of hydrological cycles (groundwater re-charge, watershed protection and buffering against extreme events), climate regulation, soil production and fertility, protection from erosion, nutrient storage and cycling and pollutant breakdown and absorption are among the services. The benefits flowing from biodiversity are fundamental to the quality of our life and our economy but are mostly grossly undervalued. (reference: *The National Strategy for the Conservation of Australia's Biodiversity, Commonwealth of Australia, 1996*).

How can we improve the contribution made by Protected Areas to the protection of biodiversity?

Protected areas are a critically important but not sufficient means of protecting life on Earth. Current approaches to Biodiversity conservation (including through Protected Areas) are necessary but not sufficient if we are to meet this conservation challenge.

In particular we need to be wary of approaches to Protected Areas which suggest achieving % targets for reservation will secure biodiversity protection (such targets are always politically rather than scientifically based); approaches which focus on threatened species after they have crossed the extinction threshold; and approaches

which elevate 'species richness' above the integrity of characteristic biomes/ecosystems.

From a scientific perspective, success will require existing approaches to be supplemented by an approach which:

- Recognizes the evolved characteristics of biomes and ecosystems (ie, as representing the life forms and life history strategies best adapted to selective forces; and the biodiversity that is optimal given the environmental and disturbance regimes).
- Protects and restores processes that sustain system dynamics and evolutionary potential (ie, processes that constitute evolutionary selective forces (eg fire regimes); and generate and sustain system dynamics and habitat resources (eg productivity and condition); and,
- Recognizes that 'connectivity' needs to be defined with respect to integrity (functionality) of processes as well as patterns.

To implement these ideas some new analytical capabilities are required: a landscape classification system which defines characteristic biodiversity and the system drivers and responses; and analysis of vegetation condition and productivity (mapping and monitoring ecosystem dynamics and fluxes in habitat resources). These new tools have been developed by the WildCountry Science Council.

Combined with traditional biodiversity assessments, these new tools provide a basis for managing landscapes across all land tenures; identifying core protected areas; and identifying options for maximizing landscape connectivity inclusive of multi-scaled context and processes.

A new integrated approach to biodiversity conservation is needed where biodiversity outcomes are prioritized across all land tenures.

It is also important that a strategic approach be developed capable of incorporating the following considerations when determining future acquisitions for the Protected Area estate. Some or all of the following criteria may be relevant when considering an acquisition. In any event it should be asked whether the proposed acquisition would:

- **Have Regional Natural Heritage significance** in that it will protect Natural Heritage values of demonstrable scale importance which are otherwise poorly protected?
- **Enhance the conservation value of existing Protected Lands** (through being contiguous with existing protected lands or which otherwise clearly add to the conservation value of those protected lands)?
- **Enhance the manageability of existing Protected Lands** (through being contiguous with existing protected lands or otherwise clearly add to the manageability of those protected lands)?
- **Protect threatened Heritage Values** from development where there is no other effective means of protection available?
- **Protect vulnerable Heritage Values** which may be degraded by the existing land use or even a very small scale, low impact land use?
- **Enhance connectivity** at a regional or sub-regional scale?

- **Is available for purchase**, and though not of the highest priority, clearly have strategic longer-term benefits for natural heritage protection? (This is particularly relevant where the opportunity to purchase may not arise again in the foreseeable future.)
- **Facilitate Strategic management partnerships** with potential land managers? (Partners might include traditional owners, but could also be government agencies, NGOs or rural land owners.)

KEY ISSUES:

Connectivity

Some significant steps have been taken to integrate the National Reserve System into cross tenure biodiversity conservation initiatives. However, much more needs to be done to develop connected Protected Area Networks, with a significant increase in funding to support integrated private and public land acquisition, restoration and conservation management initiatives.

Exploring opportunities for the development of continent wide, connected Protected Area initiatives will be increasingly important for the survival of life in Australia – particularly in view of the highly dispersive nature of much of our fauna as they track highly variable year to year and seasonal variations in food and habitat resources

Productivity

There has been a past bias in reserve selection to favour the least productive components of ecosystems when selecting areas for protection. This bias has meant that many species ostensibly given protection through the reserve system are in marginal habitat.

It is imperative that the Protected Area system encompass as much undisturbed, biologically highly productive land as possible. Ensuring that wildlife is not continually pushed into more and more marginal country or entirely displaced will mean that trade-offs with extractive industries (especially clearing, logging and mining) will need to shift to favour the long term persistence of biodiversity.

Condition/Integrity

Ensuring that the National Reserve System encompasses areas of low disturbance and seeks to minimize threatening processes in adjoining lands should be a priority guiding reserve selection and protected area network design. Such an approach would help minimise management costs and provide greater security for biodiversity gains.

Insufficient investment in management of the National Reserve System seriously detracts from its conservation value, as does inappropriate management of adjoining lands. Ecologically damaging fire regimes, water extraction and invasive species are serious problems detracting from the efficacy of existing reserves.

The National Reserve System

Rather than set a finite % target for reservation, it would seem more sensible to set 5 and 10 year targets which maximize the public and private investment in developing

cohesive Protected Area networks and complementary natural resource management plans.

While the National Reserve System has picked up the concept of networks and has some notable success stories, much greater investment should be made in this area and both the scientific framework and level of community engagement could be strengthened. For plants and animals to have their best chance of surviving global warming, they must be able to move across bio-climatic gradients. Large, connected Protected Areas will be essential to species survival and ongoing evolution.

A framework along the lines of that being developed by the WildCountry Science Council would be helpful to guide development of integrated landscape wide conservation plans in which governments at all levels, private conservation bodies, ENGO's and local and indigenous communities were provided with incentives to participate. Such a planning framework would ensure strong integration of conservation goals across all land tenures.

Through our own work on large scale, cross tenure conservation initiatives (illustrated in Attachment J) we are aware of strong community interest in participating in such initiatives, particularly when the drivers for implementation include strong community and NGO participation.

Marine Protected Areas

Without a comprehensive, adequate and representative network of fully protected marine protected areas for Australia which ensures high productivity areas are protected and adequate connectivity, the long term health of our marine environments and wildlife will remain at risk.

Australia's initiative increasing the level of protection for the Great Barrier Reef to 33% has been warmly welcomed by TWS. However, progress since that successful initiative has been slow.

In 1990 the Australian government committed to the expansion of Australia's marine reserve system through the Ocean Rescue 2000 program. The states and territories agreed with this when they signed the *Intergovernmental Agreement on the Environment in 1992* that began the process of implementing the National Representative System of Marine Protected Areas (NRSMPA). Australia further committed to the protection of marine biodiversity and ecological integrity, and the sustainable use of marine resources by ratifying the *Convention of Biological Diversity* (UNEP 1994).

At the 2002 World Summit on Sustainable Development, global leaders committed to establishing representative networks of MPAs worldwide by 2012. The Australian Government agreed to this target. This target was similarly embraced by leaders at the 2003 World Parks Congress and 2004 World Conservation Congress.

The 2003 World Parks Congress acknowledged that the percentage of the world's oceans within protected areas was far below that found on the land, and thus recommended that at least 20-30% of each marine habitat in the world's oceans be strictly protected (in 'no-take' areas) by 2012.

Despite these commitments by the Federal and State governments, only 7% of the waters in Australia's Exclusive Economic Zone (8.1 million square kilometres) is within MPAs, and less than 4% of these waters are strictly protected (no-take).

There is an urgent need to substantially increase the overall Marine Protected Areas estate, particularly on the continental shelf, the upper slope, sea mounts, deep sea canyons which intrude onto the continental shelf and Upwellings.

Indigenous Protected Areas

Indigenous Protected Areas (IPA) form an important component of the National Reserve System, particularly in Northern Australia. Although significant progress has been made in the development of Indigenous Protected Areas in some parts of Australia, two outstanding issues need to be addressed.

The first involves ongoing management funding support for existing and future Indigenous Protected Areas. The need for active management of northern environments is now well documented. However, few mechanisms exist to ensure ongoing public and private sector funding and management support for IPA's. It is critical that Commonwealth and State Governments recognise the important biodiversity, scenic and cultural heritage benefits which accrue to the Australian community through the voluntary declaration by traditional owners of IPA's; and that Governments agree to provide ongoing support to enable traditional owners to build and maintain management capacity based on Australian and International best practice standards. A related issue is the need to ensure that the management activities of other land managers, such as Parks and Wildlife Services, are coordinated and integrated with those of traditional owners.

A good example of this potential for mutual integration and support can be found in the case of the management arrangements negotiated between the Queensland Parks and Wildlife Service and traditional owners as part of the creation of the new Jack River National Park in South Eastern Cape York Peninsula. The benefits of such an approach include cost savings, capacity building and training opportunities and heightened cross cultural awareness and support.

It is also critical that policy obstacles be identified and removed to allow private sector interests, including industry, to actively support and fund management operations for Indigenous Protected Areas.

The second outstanding issue relates to the potential development of a nationally agreed hierarchy of funding and management support for classes of Indigenous Protected Areas along the lines of IUCN Protected Area categories (i)-(vi). At the top of this hierarchy would be a small number of highly protected and well funded 'Indigenous National Parks' of outstanding natural and cultural heritage value which would be cooperatively managed between traditional owners and Parks agencies on lease back arrangements as found in the Northern Territory.

Indigenous Sea Country:

The Wilderness Society acknowledges the inherent rights and custodial responsibilities and aspirations of indigenous people and their contribution to Australia's marine and terrestrial environments. In many regions across Australia, the strong indigenous connection to sea country should be recognised through negotiated

agreements regarding co-management arrangements. To develop these agreements, traditional owner groups' rights and responsibilities in relation to customary marine tenure, and their contemporary aspirations, should be fully determined.

TWS notes that the customary marine tenure of traditional owners is not fully reflected in, or protected by, common and statute law definitions of native title and may receive lesser treatment than corresponding terrestrial title, despite there being no distinction to traditional owner groups between customary tenure on land or sea. TWS is extremely concerned that the proposed establishment of Marine Protected Areas may fail to address in any comprehensive manner the recognition and incorporation of native title rights and responsibilities.

Funding for Management/Monitoring/Response

It is imperative that all levels of Government cooperatively agree to establish standards of best practice management for protected areas; agree to fair and transparent management funding; and incorporate capacity building requirements in all Protected Area programmes. There is a need to identify both public and private sector funding streams for Protected Area acquisitions and management and identify and remove policy obstacles in support of the above. It is recommended that through the COAG process, Commonwealth and State Governments agree to develop regional level funding targets for the management of Protected Areas and identify opportunities for, and barriers to, best case management. A leadership role in the development of such an initiative should be played by the Commonwealth Department of Environment and Heritage.

It is undeniable that insufficient attention has been paid to ongoing management of our Protected Areas. A recent study commissioned by The Wilderness Society, "Cape York Parks in Crisis" (See <http://www.wilderness.org.au/pdf/CYP-ParksReport.pdf>), found that annual funding for the management (capital and operational funding) of Cape York's Protected Areas was only \$1.30 per hectare. This was significantly short of the commonly agreed 'best practice' in Northern Australia for Kakadu National Park which receives \$10.80 per hectare, which in turn lags far behind international best practice of Yellowstone National Park which receives \$55 per hectare.

This level of chronic under funding has negative impacts both on biodiversity protection and on the potential economic spin offs from well managed Protected Areas. In 2001, the Queensland Environmental Protection Agency estimated that each dollar invested in National Park management generated \$40 in related economic activity.

Invasive Species

Australia has several successful examples of controlling alien invasive species. Notable recent success stories include the cat eradication programme on Macquarie Island and suppression of the crazy ant infestation on Christmas Island. However, we are still plagued by extensive threats to biodiversity from a wide range of invasive plant and animal species. There is an urgent need for Australia to show leadership in this area and to vastly increase the level of funding and resources being targeted at alien invasive species eradication and control.

Private Conservation Initiatives

Private conservation initiatives are playing an increasingly important role in helping to deliver biodiversity conservation objectives. This role could be strengthened and rewarded through increased government incentives, including: taxation benefits; providing greater Commonwealth matching funding for acquisition; providing funding to assist with management; and providing funding to assist with training and involvement of local and indigenous communities.

Economic Benefits

The economic value of Australia's Protected Areas needs to be better documented. Iconic natural areas underpin nature based tourism which is second only to mining in terms of contribution to Australia's GDP. It is salutary to consider the projected increase in demand (see SEQ RFA docs for refs on projected increase) for nature based tourism experiences and to ponder where the increase in supply of the natural resource base will come from?

There seems to be an assumption that existing Protected Areas will be able to meet this increase in demand without compromising or seriously damaging the natural and cultural values for which they were created.

The contribution of Protected Areas to water quality and quantity is self evident for many of Australia's major population centres. For cities like Melbourne and Sydney, the highest economic value of forested catchments is their water value. However, less well recognised is the contribution Protected Areas make to helping ameliorate and adapt to climate change. Some natural ecosystems contain carbon stores as high as 1500 tonnes per hectare (Dean *et al*, 'Growth Modelling of *E. regnans* for Carbon Accounting at the Landscape Scale', CAB International 2003, Modelling Forest Systems, eds, A. Amaro, D. Reed, P. Soares). One of the well recognised benefits of ending tree clearing in Queensland was the substantial reduction in Australia's greenhouse gas emissions.

Almost all nations rich in biodiversity now recognize its economic value. Some governments have moved to ensure financial benefits accrue to the public from bio-prospecting. Issues with regard to 'the fair and equitable sharing of benefits from the use of genetic resources will of course arise. Our perspective is that any commercial exploitation of this 'global commons' needs to recognize the community interest in, and rights to benefit from, commercialization. This will be of particular relevance to and concern for, indigenous communities and a potentially very tangible way in which they could derive direct economic benefits from protecting biodiversity.

It is also important to remember that it is 10-100 times more cost effective to protect healthy intact ecosystems than to attempt to restore them (Morton *et al*, 'Sustaining our Natural Systems and Biodiversity', report to the Prime Minister's Science, Engineering and Innovation Council, 2002).

Integration with Natural resource Management:

While the level of public investment in Natural Resource Management (NRM) dwarfs the public investment in Protected Areas, NRM bodies seem to have little expertise in and capacity to integrate biodiversity needs into NRM planning. Unless NRM frameworks make a far more serious attempt to integrate biodiversity conservation

objectives into their planning frameworks and their level of expertise and capacity is very significantly increased, NRM bodies will continue to seriously under-perform on, or undermine, biodiversity needs.

It is also imperative that we learn the lessons and avoid the costly repair associated with clearing and land use change in southern Australia. "The case against land clearing in this country is so clear; and ending land clearing has so many benefits (greenhouse gases, biodiversity, dryland salinity, water quality – the list goes on) that it is imperative that governments at all levels have strict controls over clearing. Not only is the case against tree clearing unequivocal, but it has been said loudly and repeatedly in voice and print by the scientific community for well over a decade. We must change the current paradigm where nothing is stopped until it is too late." (Professor H. Recher, pers. comm.)

Similarly with our rivers - we must move to give firm legislative protection to Australia's remaining healthy rivers. The driest inhabited continent on Earth simply cannot afford to make further costly mistakes with our precious rivers and fresh water systems.

These steps are essential for any Protected Area system to work.

RECOMMENDATIONS

Long term conservation planning must include large, relatively undisturbed core areas, embedded within a landscape matrix of buffers and linkages.

Core reserves must be complimented by appropriate off-reserve management that together ensure connectivity of key ecological patterns and processes, particularly at larger space/time scales.

A new integrated approach to biodiversity conservation is needed where biodiversity outcomes are prioritized across all land tenures.

Important "connectivity processes" must be applied in a substantial way to inform and guide conservation planning.

Ensuring that productive parts of the landscape receive secure protection needs to be an urgent priority for the reserve system.

The new scientific tools developed by the WildCountry Science Council should be incorporated into traditional biodiversity assessments, to improve the basis for managing landscapes across all land tenures; help identify core protected areas; and help identify options for maximizing landscape connectivity inclusive of multi-scaled context and processes.

Five and 10 year biodiversity conservation targets should be set which maximize the public and private investment in developing cohesive Protected Area networks and complementary natural resource management plans.

Ensuring that the National Reserve System encompasses areas of low disturbance and seeks to minimize threatening processes in adjoining lands should be a priority guiding reserve selection and protected area network design.

The National Reserve System should be strengthened by incorporating new science into the scientific framework; substantially increasing investment in the development of integrated Protected Area Networks; and by increasing the level of community involvement.

A framework along the lines of that being developed by the WildCountry Science Council should be developed to help guide development of integrated landscape wide conservation plans in which governments at all levels, private conservation bodies, ENGO's and local and indigenous communities are provided with incentives to participate. Such a planning framework would ensure strong integration of conservation goals across all land tenures.

A strategic approach should be developed which asks whether proposed Protected Area acquisitions would; have regional natural heritage significance; enhance the conservation value of existing protected lands; enhance the manageability of existing protected lands; protect threatened heritage values; protect vulnerable heritage values; enhance connectivity; are available for purchase; and/or facilitate strategic management partnerships.

The Marine Protected Areas estate should be significantly expanded to include important areas, particularly on the continental shelf, the upper slope, sea mounts, deep sea canyons which intrude onto the continental shelf and Upwellings.

A comprehensive, adequate and representative network of fully protected Marine Protected Areas should be developed which ensures high productivity areas are protected and adequate connectivity.

It is critical that Commonwealth and State Governments recognise the important biodiversity, scenic and cultural heritage benefits which accrue to the Australian community through the voluntary declaration by traditional owners of IPA's.

It is recommended that Governments agree to provide long term support to enable traditional owners to build and maintain management capacity based on Australian and International best practice standards.

The management activities of other land managers, such Parks and Wildlife Services, should be coordinated and integrated with those of traditional owners.

It is also critical that policy obstacles be identified and removed to allow private sector interests, including industry, to actively support and fund management operations for Indigenous Protected Areas.

A nationally agreed hierarchy of funding and management support for classes of Indigenous Protected Areas along the lines of IUCN Protected Area categories (i)-(vi) should be developed.

It is important that the establishment of Marine Protected Areas provide an opportunity to address in a comprehensive manner the recognition and incorporation of native title rights and responsibilities.

It is imperative that all levels of Government cooperatively agree to establish standards of best practice management for protected areas; agree to fair and

transparent management funding; and incorporate capacity building requirements in all Protected Area programmes.

It is recommended that through the COAG process, Commonwealth and State Governments agree to develop regional level funding targets for the management of Protected Areas and identify opportunities for, and barriers to, best case management. A leadership role in the development of such an initiative should be played by the Commonwealth Department of Environment and Heritage.

Funding to deal with alien invasive species eradication and control must be substantially increased.

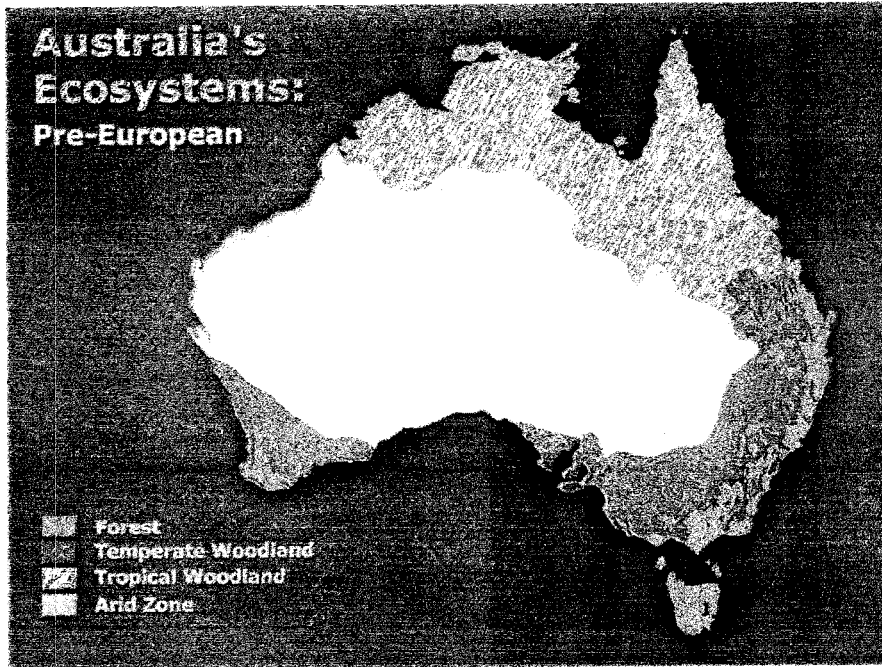
The role of private conservation should be strengthened and rewarded through increased government incentives including: taxation benefits; providing greater Commonwealth matching funding for acquisition; providing funding to assist with management; and providing funding to assist with training and involvement of local and indigenous communities.

A detailed analysis of the economic benefits derived by all Australians from Australia's Protected Area network needs to be conducted which recognizes the full value of the ecological services provided to the community. Landholders (including government agencies) who protect these values should be economically rewarded

NRM frameworks must incorporate biodiversity conservation objectives into their planning frameworks and their level of expertise and capacity on understanding the role of Protected Areas and biodiversity conservation must be very significantly increased.

Attachment A

Maps of broad vegetation cover prior to European settlement, and present day.



Map derived by The Wilderness Society from: vegetation data, which is © Australian Surveying and Land Information Group, Commonwealth Government and; wilderness data, which is © National Wilderness Inventory, Commonwealth Government 1995. Clearing in the Northern Territory since the NWI was compiled is indicative only.

Attachment B:

Australia's biodiversity crisis

Total recognized threatened species compared with EPBC list

Animal class	Freshwater Fish	Frogs	Reptiles	Birds	Mammals
Total number of species in each animal class for continental Australia	230	214	633	675	378
Number of species listed as threatened in State, Territory or Commonwealth legislation					
Western Australia – Wildlife Conservation Act 1950	2	3	19	30	49
New South Wales – Threatened Species Conservation Act 1995 plus NSW Fisheries Management Act 1994	9	25	34	98	83
Victoria – Flora and Fauna Guarantee Act 1994	18	9	25	52	29
South Australia – National Parks and Wildlife Act 1972	0	2	39	111	64
Queensland – Nature Conservation Act 1992	10	45	84	64	64
Tasmania – Threatened Species Protection Act	12	2	8	18	7
A.C.T. – Nature Conservation Act 1980	4	1	2	6	2
N.T - Territory Parks and Wildlife Conservation Act 2001	10	1	15	38	52
Commonwealth – Environmental Protection and Biodiversity Conservation Act 1999; bracketed values indicate % of total spp in each animal class	27 [12%]	26 [12%]	45 [7%]	70 [10%]	99 [26%]
Accumulated species statistics for each animal class					
Number species listed as threatened by non-legislative assessments, including insufficiently known, but not included in any legislation	42	24	85	50 mostly subspecies	61
Number species given any IUCN threat class (except "least concern") accumulated over all jurisdictions plus non-legislative assessments*; square bracketed values indicate percentage of total number species in animal class	97 [42%]	92 [43%]	262 [41%]	269 [40%]	214 [57%]
* Including 13 listed as "least concern" in the Action Plan * Where only one subspecies or differentiated populations is threatened it is included in both the species total and subspecies total					

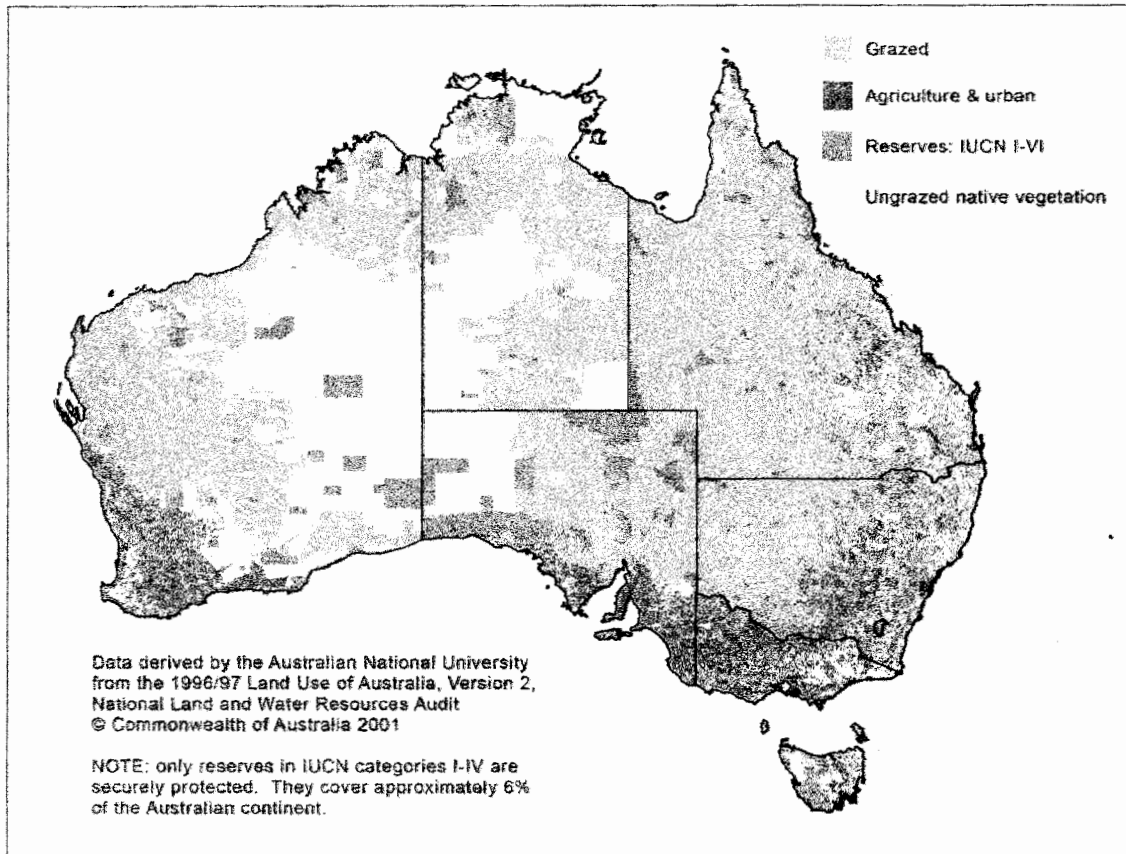
Official national story

Real national story

Table compiled by Professor Brendan Mackey, Australian National University.

Attachment C:

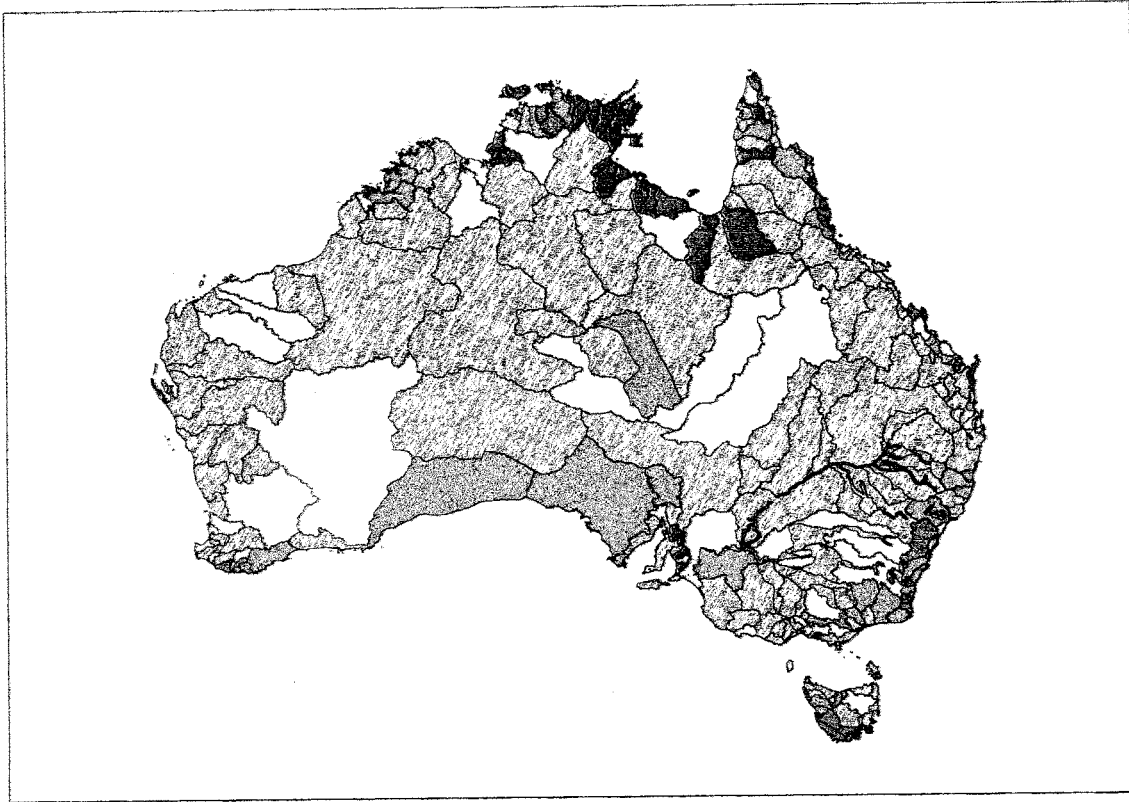
Much of Australia's native vegetation has been removed or modified. Approximately 6% is securely protected.



Note: 58% of the Australian continent has been impacted by grazing.

Attachment D:

The percentage of each catchment that is in a protected area



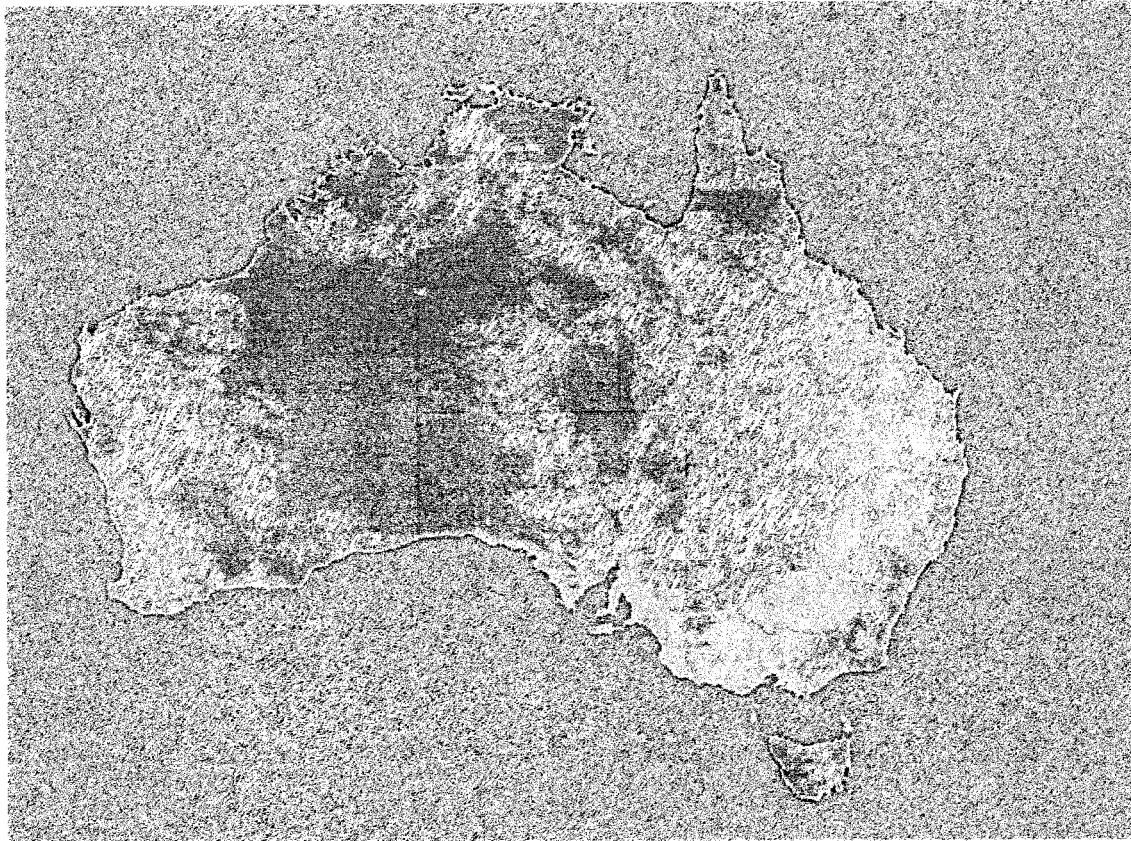
Key:

Red	= 0 %	within a protected area
Orange	= 0.1 to 5%	within a protected area
Yellow	= 5.1 to 10%	within a protected area
Light green	= 10.1 to 20%	within a protected area
Medium green	= 20.1 to 40%	within a protected area
Dark Green	= > 40%	within a protected area

This map contains protected areas data sourced from the 1996/97 Land Use of Australia, Version 2, National Land and Water Resources Audit, and Catchment boundaries sourced from ASWMA 2000 © Commonwealth of Australia (Geoscience Australia) 2000. Map produced by the Australian National University.

Attachment E:

Vegetation Assets, States and Transitions (VAST): vegetation condition in the Australian landscape.



Key to VAST map colours:

VAST	
cover class	
0 Bare	Intact
I Residual	
II Modified	Disturbed
III Transformed	
IV/V Replaced	Non-native
VI Removed	

Original map produced by Richard Thackway and Rob Lesslie, Bureau Rural Sciences, Australian Government Department of Agriculture, Fisheries and Forestry; this map adapted by The Wilderness Society.

Attachment F:

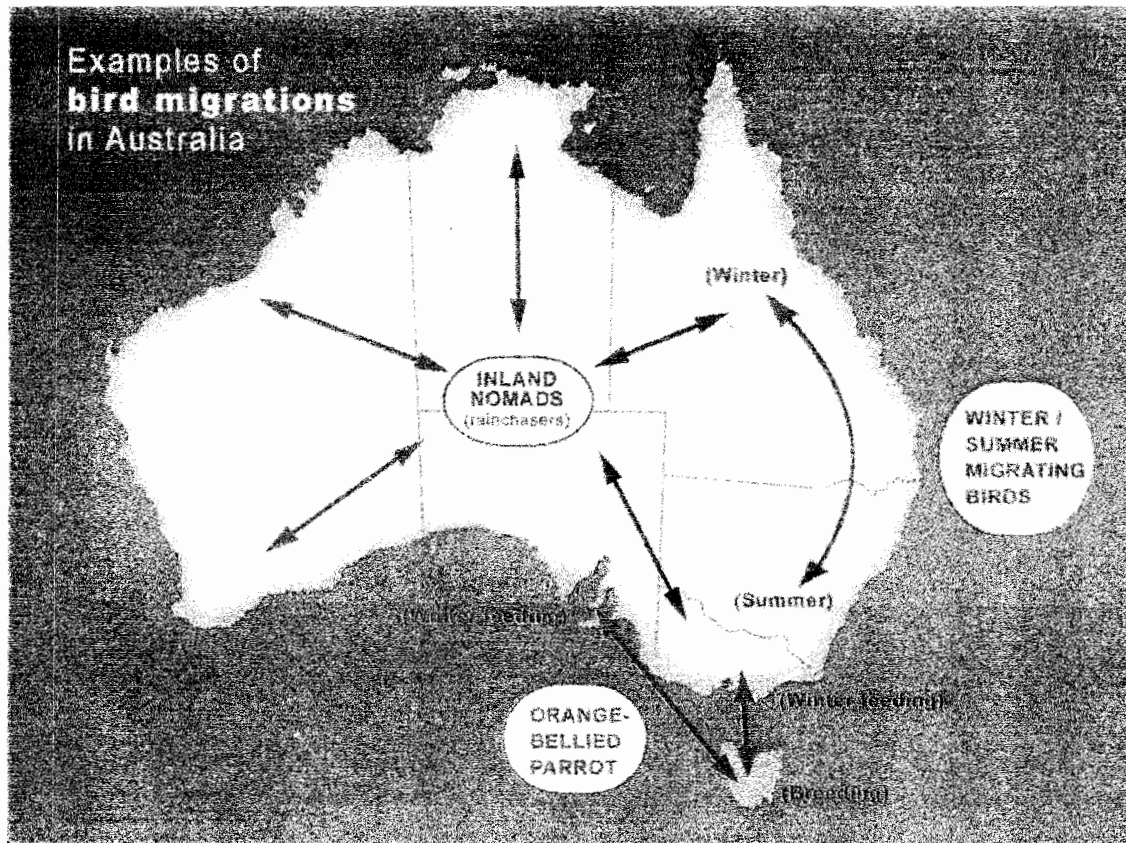
Analysis of Australian Continental Migrant Vertebrates

	# species in Australia	# migratory species	% migratory species
Fish (freshwater)	228	36	16
Frogs	212	2	1
Reptiles:			
land & freshwater	828	5	0.6
marine	7	7	100
Birds:			
land & freshwater	677	342	51
marine	158	88	56
Mammals:			
land & freshwater	323	27	8
marine	56	28	50

Table produced by Professor Brendan Mackey, Australian National University.

Attachment G:

Examples of bird migrations in Australia



Map produced by The Wilderness Society

Attachment H

Connectivity processes being incorporated into a new conservation planning framework by the WildCountry Science Council include the following phenomena.

Trophic relations:

The Wildlands Project in North America has argued the need for large-scale connectivity in order to reintroduce top-of-the-food-chain predators. The ecological significance of this conservation strategy lies in the cascading effects down the trophic hierarchy following such re-introductions, i.e. the absence of predators can increase herbivore densities, thereby changing vegetation dynamics, structure and composition. This general principle applies to any trophic level. For example, in the Australian context, the absence of ground foraging birds that feed on litter invertebrates can have ramifications both up and down the food chain.

Hydroecology:

Hydrology is usually considered in terms of physical processes (e.g. we speak of hydrogeology). The term hydroecology focuses attention on the closely coupled relationships between biota and water in the Australian environment. It is well established that the evolved vegetation/soil ecosystems regulate the flux of water through the landscape, and that broad scale clearing has significant environmental impacts. However, in addition to salinity problems, the modifications to hydrological flows from broad scale clearing also have serious ramifications for biodiversity by, *inter alia*, modifying the distribution and availability of surface water. Such changes can have profound affects on wildlife habitat, particularly in the semi-arid and arid centre and seasonally dry tropical Australia.

Long distance biological migration and dispersal:

A vast diversity and mass of biota and their propagules disperse relatively long distances, either seasonally, opportunistically (nomadically), or inadvertently (e.g. wind transported spores and pollen). Some of this long distance dispersal is terrestrial, but much biotic transport is via the atmosphere including birds, moths, locusts, spores, bacteria, virus, and seeds. Some of these dispersal phenomena are well studied (e.g. birds), while others are only poorly understood (e.g. virus, plant seed). In any case, the ecological implications of long distance biotic dispersal – in all its diversity - have yet to be integrated into conservation planning.

Ecologically appropriate fire regimes:

Most fire management is undertaken to reduce fire hazard to people and property, (as the result of legal, political and moral pressures). However, the conservation implications of ecologically inappropriate fire regimes can be substantial. Given its significance to Australian ecology, it is imperative we begin the difficult task of integrating the ecological implications of fire regimes into conservation evaluation and planning on a landscape-wide basis.

Climate change and variability:

The Australian climatic regime is characterized by extreme year-to-year variation in precipitation. Thus, in much of the Australian landscape (including, as noted above, the semi-arid/arid centre and the seasonally dry Top End) surface water is often at a premium. Through the Pleistocene, the continent was subject to extreme variability in both the thermal and precipitation regimes. Clearly, adaptation to climatic variability at various scales has been a critical influence on the evolution of Australia's biodiversity. The ability of species to persist on a continent subject to such variability and change must be closely related to the capacity for biota to disperse and re-establish in locations with climatic regimes that match their niche requirements. Again, while the significance of such processes is broadly recognized, their implications have yet to substantially influence conservation planning.

Land/coastal zone links:

The horizontal hydrological flows between land and coastal zones encompass another vital set of connectivity processes. For example, fluxes of carbon, nitrogen and phosphorous from coastal catchments have ecological ramifications for coastal zone ecosystems. A focus on the connectivity of land/coastal zone flows is particularly important given the density of the Australian population living in close proximity to the coastline.

Refugia:

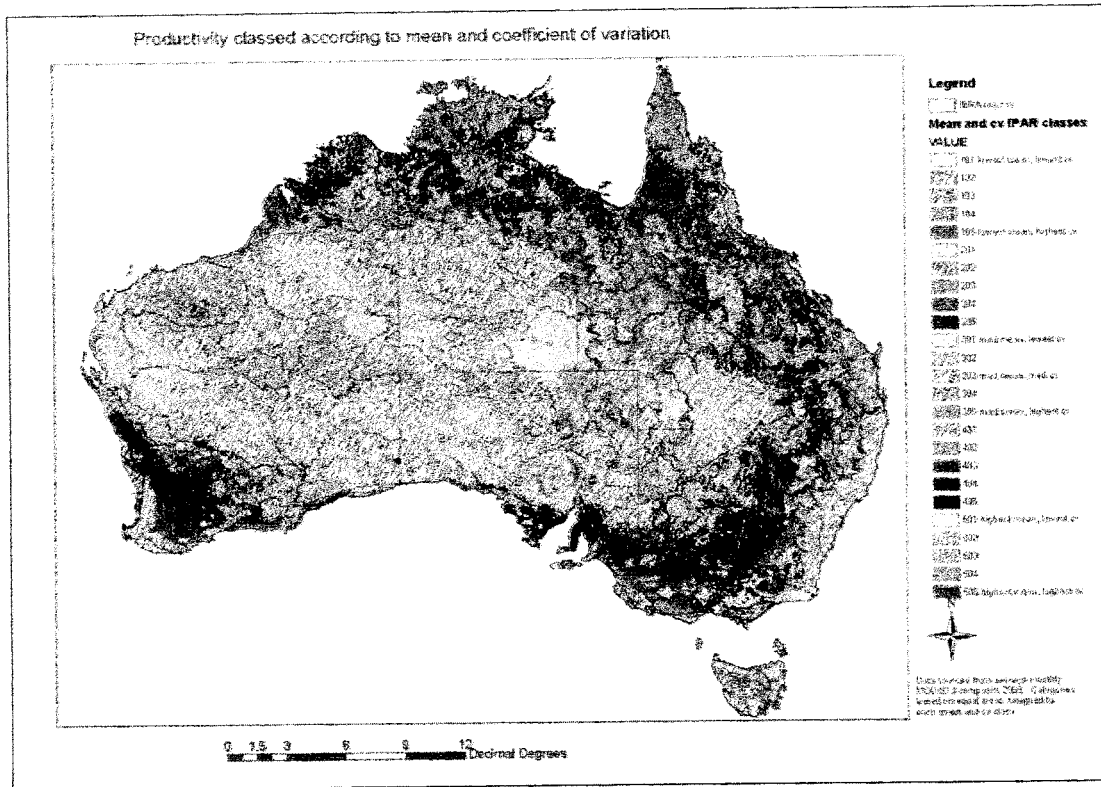
Refugia are locations where populations of a species are unaffected (or less affected) by a detrimental change occurring in the surrounding landscape. Refugia enable species to maintain their long-term presence in landscapes despite the affect of habitat-destroying perturbations such as fire events and climatic drought. Refugia can be defined at a range of scales and in respect to various threatening processes, including global climate change and ENSO-driven climate variability.

Interdependencies:

It is (almost) self-evident that all the above connectivity processes are in various ways interdependent. For example, ENSO climatic variability, hydroecology, fire regimes, refugia and long distance biotic dispersal are interdependent biophysical phenomena. The challenge is to recognize the critical linkages and factor these into continental and regional conservation evaluation and planning.

Attachment I (part 1)

Vegetation productivity and seasonal variability mapped over time.

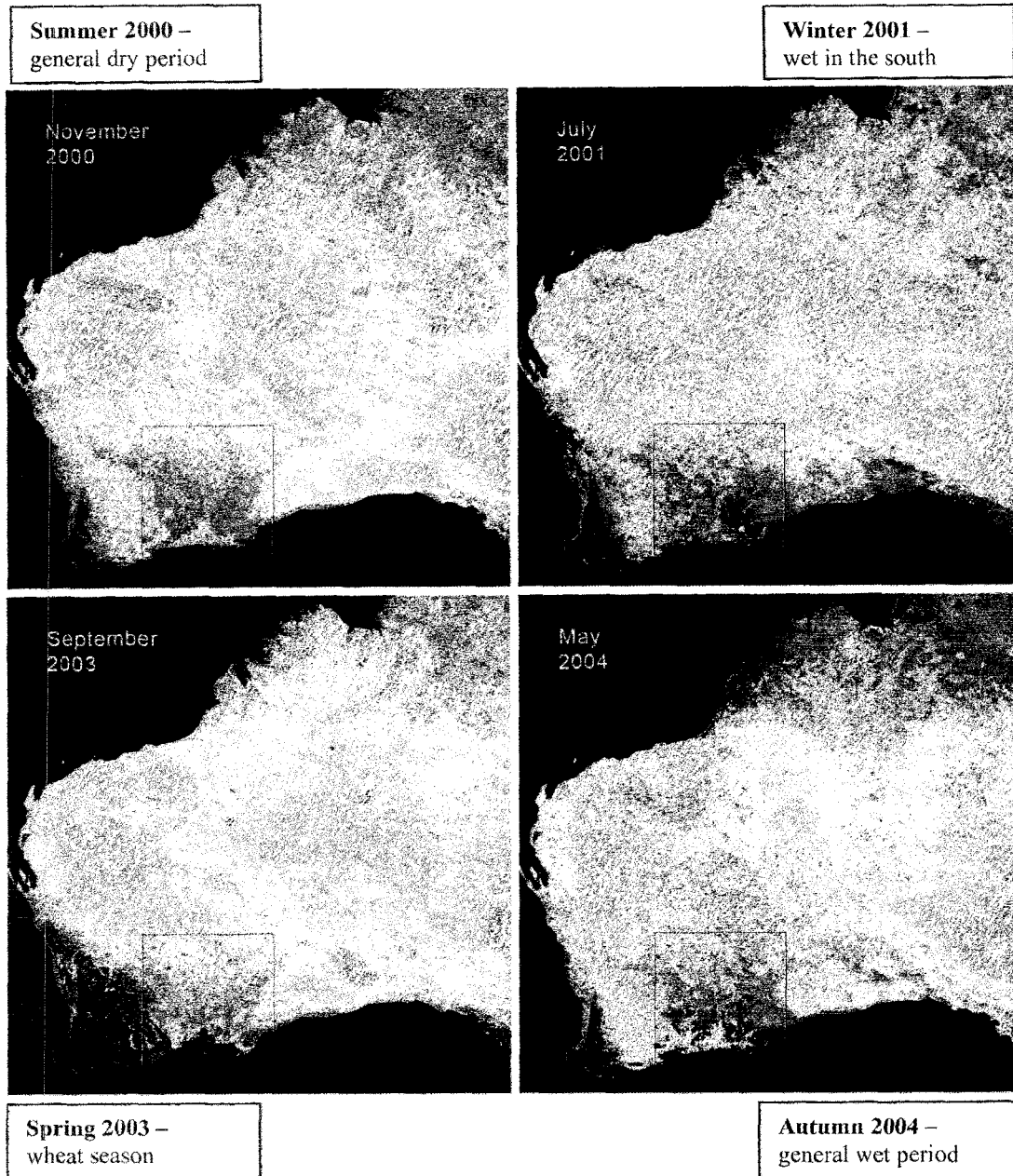


Produced by The Australian National University

Attachment I (part 2)

MODIS data, showing seasonal and year-to-year variation in photosynthetic activity.

Note that the highlighted area, the Goldfields woodlands of Western Australia, shows little variation regardless of continental variation.

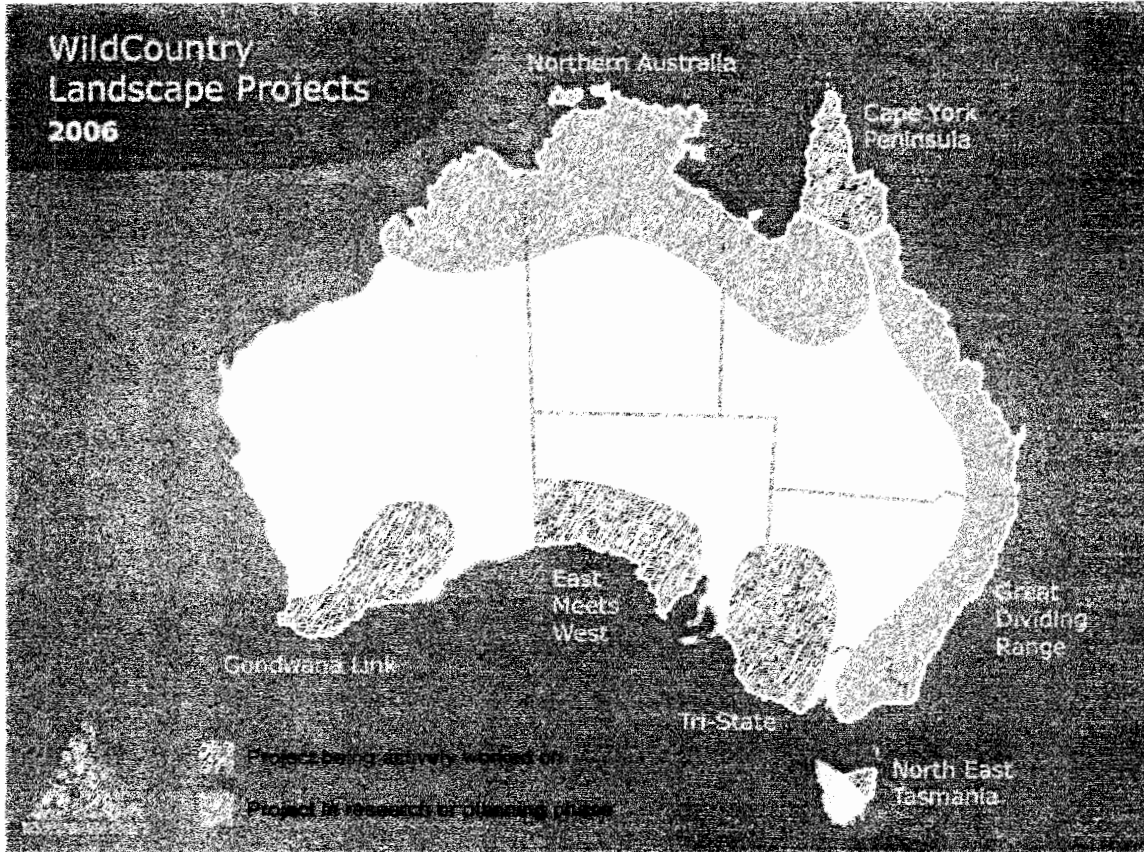


Maps produced by The Australian National University (and adapted by The Wilderness Society), using data from NASA's MODIS satellite.

Blue = high photosynthetic levels. **Orange** = low photosynthetic levels.

Attachment J:

Landscape-scale projects being guided by WildCountry Science Principles.



Map produced by The Wilderness Society