



Southwest Australia  
Ecoregion Initiative

# Conservation Planning Symposium

**Poster Abstracts**

**Perth, Western Australia  
27-28 September 2006**

## ***The impact of Phytophthora Dieback on small mammals in the jarrah forest***

**<sup>1</sup>Rodney Armistead, <sup>2</sup>Mark Garkaklis, <sup>3</sup>Bernie Dell, <sup>4</sup>Ian Colquhoun and <sup>5</sup>Giles Hardy**

<sup>1</sup>Biological Sciences and Biotechnology, Murdoch University, South Street, Murdoch, Western Australia 6150. R.Armistead@murdoch.edu.au

<sup>2</sup>Department of Environment and Conservation, P.O. Box 1167, Bentley Delivery Centre, Western Australia 6983. Mark.Garkaklis@dec.wa.gov.au

<sup>3</sup>Biological Sciences and Biotechnology, Murdoch University, South Street, Murdoch, Western Australia 6150. B.Dell@murdoch.edu.au

<sup>4</sup>Alcoa World Alumina Australia, Huntly Mine, P.O. Box 172, Pinjarra, Western Australia 6208. ian.colquhoun@alcoa.com.au

<sup>5</sup>Biological Sciences and Biotechnology, Murdoch University, South Street, Murdoch, Western Australia 6150. G.Hardy@murdoch.edu.au

The plant pathogen *Phytophthora cinnamomi* kills many plant species in the jarrah (*Eucalyptus marginata*) forest. Many of these plants are structurally important and provide cover, nesting and nutrition to small mammal communities. This study compares the abundance of small mammals in *P. cinnamomi* infested and healthy forest. Trapping was conducted at Willowdale, about 10 km south of Dwellingup in Southwest Australia. Elliott trap, pitfall and cage traps grids were established in both diseased and healthy forest. Results are provided for the Chudich (*Dasyurus geoffroii*), the Pygmy Possum (*Concinnus cerniceus*) and the Mardo (*Antechinus flavipes*). Plant death and altered vegetation structure caused by *P. cinnamomi* clearly affects the abundance of 3 native mammal species. The number of captures for each species was greater at healthy forest sites than at the diseased sites. Since *P. cinnamomi* is a virulent pathogen and widely distributed throughout Southwest Western Australia, there is grave concern for other small and medium sized mammals in this region. The results of this study show the threat of this introduced pathogen for the conservation of ecosystems in Southwest Australia and the need to plan and implement disease management procedures.

## ***Australia's national reserve system***

### **Tim Bond**

National Reserve System Section, Department of Environment and Heritage, G.P.O. Box 787, Canberra, Australian Capital Territory 2601. tim.bond@deh.gov.au

Australia's National Reserve System (NRS) is a nation-wide network of reserves set up to ensure comprehensive, adequate and representative examples of our native ecosystems and species are protected for current and future generations. A policy framework, *Directions for the National Reserve System – a Partnership Approach*, endorsed by the Natural Resource Management Ministerial Council in 2005 guides development and management of the NRS.

Principles for development of the NRS are set out in *Australian Guidelines for Establishing the National Reserve System*, (ANZECC 1999). These include ensuring the NRS contains samples of all ecosystems, contains areas which are refugia or centres of species richness or endemism, considers ecological requirements of rare or threatened species, ecological communities and ecosystems, and takes account of special groups of organisms that depend on reservation for their conservation.

The Interim Biogeographic Regionalisation for Australia (IBRA) is the primary framework for planning and monitoring the NRS. Information on the established reserves in the States and

Territories is collated every two years into the Collaborative Australian Protected Area Database (CAPAD). To help determine priority for establishing new protected areas, information from CAPAD and IBRA is analysed with the best available information on threatening processes, species distribution, vegetation communities, etc.

The National Reserve System Programme was established by the Australian Government in 1997 under the Natural Heritage Trust to assist with the development of the NRS. The Programme works with stakeholders including governments, conservation and community groups, Indigenous landowners and private landholders to buy and establish protected areas. Since 1997 more than \$80 million has been invested by the NHT in establishing 20 million hectares of protected areas covering 286 properties.

### ***Managing the threat of *Phytophthora Dieback* during mining in the jarrah forest***

#### **Ian Colquhoun**

Alcoa World Alumina Australia, Huntly Mine, P.O. Box 172, Pinjarra, Western Australia 6208.  
ian.colquhoun@alcoa.com.au

Phytophthora Dieback is the disease that has caused the decline of thousands of hectares of jarrah forest. The disease was previously referred to as “jarrah dieback” because jarrah (*Eucalyptus marginata*) trees were most obviously affected. The disease is caused by the microscopic organism *Phytophthora cinnamomi* (Pc). Over 2000 plant species in Western Australia are thought to be susceptible to Pc. Pc spores spread in soil and water, not in the air. Natural spread is about 1m per year uphill but downhill spread can be far greater because spores can move in water running through the soil or in water moving along the caprock under the soil. However, the organism is mainly spread by the activities of people and moving infested soil and plant material can spread Pc over long distances.

Phytophthora Dieback is a major threat to the biodiversity of Southwest Western Australia. Any operations that move soil in native ecosystems, such as mining, must plan to conserve the existing vegetation community by minimising the risk of spreading the pathogen. During mining operations, the company moves about six million cubic metres of soil a year so the risk of spreading Pc is high. Currently there is no known, practical method of eradicating Pc once it is established in the forest. Minimising the spread of Pc during mining operations is one of the most important objectives of Alcoa’s environmental program. Alcoa has developed intensive management procedures to meet this objective and these are presented in the poster.

Re-monitoring for the presence of Pc in forest areas known to be free of disease prior to mining has shown that the level of spread is very low – about 0.003 ha of spread for every hectare mined. An added benefit from this monitoring is that it identifies the causes of spread; these causes are then addressed to decrease the risk of it happening again.

### ***Regional recovery of threatened species and communities***

#### **<sup>1</sup>Alan Danks, <sup>2</sup>Sarah Comer and <sup>3</sup>Deon Utber**

<sup>1</sup>Department of Environment and Conservation, 120 Albany Highway, Albany, Western Australia 6330. Alan.Danks@dec.wa.gov.au

<sup>2</sup>Department of Environment and Conservation, 120 Albany Highway, Albany, Western Australia 6330. Sarah.Comer@dec.wa.gov.au

<sup>3</sup>Department of Environment and Conservation, 120 Albany Highway, Albany, Western Australia 6330. Deon.Utber@dec.wa.gov.au

The Department of Environment and Conservation (DEC) in partnership with SCRIPT and the Australian Government Department of Environment and Heritage are nearing completion of a Regional Recovery Plan for Threatened Species and Communities in the South Coast Natural Resource Management (NRM) Region.

The primary objective of the Plan is to improve the conservation status of threatened species and ecological communities in the Region. This will be achieved by improving integration of recovery actions across multiple species and enhancing cooperation in the recovery of threatened species within the Region.

One hundred and forty two threatened species, including ten threatened mammals, are known to occur in the Region. Key threatening processes in the region include habitat fragmentation, predation by the European fox and inappropriate fire regimes. A changing climate may also be detrimental to many species confined to small populations and is likely to exacerbate current threatening processes. The project is investigating how resilience to climate change may be improved by, for example, identifying and protecting potential climate refugia.

The Regional Recovery Plan will include all threatened and priority species of flora and fauna (marine and terrestrial) and threatened ecological communities that occur solely within the SCRIPT Region, plus those that have wider distributions. It will be used by SCRIPT to inform the ongoing development of Regional NRM plans and investment strategies.

Priority areas in the plan have been identified using a GIS analysis tool that has been used to identify:

- areas where there are high numbers of threatened species in the region and prioritise recovery actions on this basis;
- areas where integrated threat management is critical on a regional scale and prioritise threat abatement activities on this basis; and
- the distribution and numbers of threatened species and the threat operating within a single or multiple catchments.

This tool can be used at regional through to sub-catchment scales and will be available to SCRIPT, state government agencies, catchment groups and natural resource management officers to better inform strategic investment decision and benefit the long term protection of threatened species.

### ***Key biodiversity area delineation, Milne Bay pilot for New Guinea Wilderness***

**<sup>1</sup>Roger James, <sup>2</sup>David K. Mitchell, <sup>3</sup>Kristen J. Williams and <sup>4</sup>Randal J.L. Storey**

<sup>1</sup>Conservation International, Melanesia CBC, P.O. Box 780, Atherton, Queensland, Australia 4883. rjames@conservation.org

<sup>2</sup>Conservation International, Melanesia Centre for Biodiversity Conservation, Alotau, Milne Bay Province, Papua New Guinea. dmitchell@conservation.org

<sup>3</sup>CSIRO Sustainable Ecosystems, Tropical Rainforest Research Centre, P.O. Box 780, Atherton, Queensland, Australia 4883. Kristen.Williams@csiro.au

<sup>4</sup>Conservation International, Melanesia Centre for Biodiversity Conservation, P.O. Box 780, Atherton, Queensland, Australia 4883. rstorey@conservation.org

Conservation International's regional centre in Melanesia (Melanesia Centre for Biodiversity Conservation, CBC), is defining sites of global significance for biodiversity. The identification of sites, termed Key Biodiversity Areas (KBAs), forms part of an integrated strategy—considering species, landscapes and human livelihoods—to conserve the Earth's living heritage.

This poster, originally presented at CI's Global Symposium in Madagascar (June 2006), outlines the process and steps used in defining Key Biodiversity Areas in Milne Bay, a pilot for the New Guinea Wilderness.

With CSIRO, the Melanesia CBC developed an operational framework for implementing Conservation International's vision of a science- and data-driven approach for delineating Key Biodiversity Areas. This approach follows three basic steps: 1) consolidate information and knowledge about species that potentially trigger the identification of key biodiversity areas; 2) determine areas of known and potential habitat for these species; and 3) determine places where one or more of these species can be effectively managed. Each of these steps utilises professional skills in a team comprising data and species specialists. The final delineation of KBAs requires the oversight of field implementation teams to ensure land boundaries are consistent with community engagement and management objectives.

Areas of habitat were delineated for thirteen of the most globally threatened and restricted range species, endemic to Milne Bay. These areas resulted in the identification of five KBAs, encompassing part or most of the island regions of Goodenough, Fergusson, Normanby, Misima and Rossel. A sixth KBA has been identified for the Agaun region of the Milne Bay mainland but final delineation requires consideration of other significant species on the New Guinea mainland. Recently, the global biodiversity significance of these areas was discussed at a stakeholder meeting in Milne Bay, with encouraging feedback from landowners.

### ***A multiple-scale collaborative approach to conserving natural diversity in the Avon River Basin***

**<sup>1</sup>Alan Kietzmann, <sup>2</sup>Bernie Kelly, <sup>3</sup>Chris Curnow and <sup>4</sup>Murray Pentter**

<sup>1</sup>Department of Environment and Conservation, Department of Environment and Conservation, P.O. Box 354, Northam, Western Australia 6401. Allan.Kietzmann@dec.wa.gov.au

<sup>2</sup>Department of Water, P.O. Box 497, Northam, Western Australia 6401. Bernard.Kelly@water.wa.gov.au

<sup>3</sup>WWF-Australia, P.O. Box 4010, Wembley, Western Australia 6913. CCurnow@wwf.org.au

<sup>4</sup>Greening Australia (WA), 10-12 The Terrace, Fremantle, Western Australia 6160. mpentter@gawa.org.au

A collaborative partnership approach to biodiversity conservation has been initiated in the Avon River Basin – an area roughly the size of Tasmania – to deliver multiple-scale integrated natural diversity conservation actions. A suite of highest priority, multi-scale projects which were identified through the Avon regional Natural Resource Management (NRM) group (the Avon Catchment Council) are being delivered by the Avon Natural Diversity Alliance (ANDA) in an attempt to coordinate an approach to biodiversity conservation planning and delivery that assesses biodiversity assets, and the threats to them, at a hierarchy of scales.

ANDA comprises the Department of Environment and Conservation, Greening Australia WA, Department of Water and WWF-Australia. The Alliance is a NRM partnership which brings together the Avon community, non-government organisations and State Government agencies to achieve best outcomes through maximising the strengths of each organisation. The Alliance sees itself as delivering core elements of the regional strategy and investment plan for the Avon regional NRM group and not merely working to deliver its own core activities.

All four Alliance partners have a strong history of working in the region, and were integrally involved in the development of the Avon Catchment Council's Regional Strategy and other planning initiatives. Amalgamating their experience in conservation planning – in scales ranging

from ecoregional, regional, catchment and site – the Alliance partners have been able to ensure the Avon Regional Strategy is delivered in an integrated manner, with obvious advantages of knowledge-sharing, shared expertise, multidisciplinary team capacities, economies of scale, cost-effective project delivery, and greater effectiveness in achieving conservation project outcomes.

### ***Restoring the flora of the jarrah forest, Western Australia***

**<sup>1</sup>John M. Koch and <sup>2</sup>Melanie A. Norman**

<sup>1</sup>Alcoa World Alumina Australia, Huntly Mine, P.O. Box 172, Pinjarra, Western Australia 6208. John.Koch@alcoa.com.au

<sup>2</sup>Alcoa World Alumina Australia, Huntly Mine, P.O. Box 172, Pinjarra, Western Australia 6208. Melanie.Norman@alcoa.com.au

The jarrah (*Eucalyptus marginata*) forest is renowned for its diverse flora, being one of the world's most species-rich forests outside of tropical forests. Alcoa World Alumina Australia (Alcoa) has carried out bauxite mining in the jarrah forest since 1963, and currently clears, mines and rehabilitates approximately 550 ha annually at two mines. The current objective of the rehabilitation is to establish a self-sustaining jarrah forest ecosystem, planned to enhance or maintain water, timber, recreation and conservation values. Re-establishing the diverse flora is seen as one of the keys to re-instating the conservation value and ensuring rehabilitation is sustainable. Planning the rehabilitation process to maximise the likelihood of re-establishing conservation values is a key component of environmental management during mining. Efforts to improve plant richness in rehabilitated mines have included separately returning the seed-rich topsoil from the remaining overburden, seeding 70-100 native understorey species and planting greenstock of 'recalcitrant' (difficult to re-establish) species. Our botanical milestone for the species richness of rehabilitated sites states '*The number of indigenous plant species in 15 month old rehabilitation is 100% of the number found in representative jarrah forest sites with at least 20% from the recalcitrant species priority list*'. Species richness in rehabilitated sites has steadily increased from 1990 and in 2001 the goal of 100% species richness was achieved. The species that first establish on rehabilitated sites exert a long-term influence and recruitment of new species is minimal. Therefore, Alcoa aims for maximal species richness the first year following rehabilitation as an indication of botanical success. Alcoa recently developed a technique to concentrate the seed in the topsoil by screening out large gravel, thus ensuring fresh topsoil has been applied to all rehabilitated sites for the past two years. Research to optimise the use of the seed-rich topsoil, identify germination treatments for dormant seeds, and improve tissue culture production has contributed to the achievement of the botanical milestone.

### ***Fire mapping for conservation planning in Western Australia***

**Li Shu**

Department of Environment and Conservation, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983. Li.Shu@dec.wa.gov.au

Conservation planning requires information on vegetation and associated habitats. Fire disturbance in both can heavily affect the process of conservation. Fire Management Services in the Regional Services Division of the Department of Environment and Conservation runs a fire mapping programme under which all fire occurrences since 1972 have been mapped, predominately by automation from satellite data. Fourteen time-slices of Landsat data with a pixel

size equivalent to 30 metres by 30 metres on the ground, cover most of the state of Western Australia. Other remotely-sensed data are also used for fire attribution. Since 2001, research at Fire Management Services has made it possible to enhance images of fire scars by digital image processing so that the parameters of all fires can be automated and fire polygons can be generated to the cartographic standard. This provides clean, large scale, and attributed coverages and statistics of a 34-year fire history for conservation and planning. The outcome is a database that includes burn area, burn month, the year of last burn and fire frequency. The spatial accuracy of the mapped fire boundaries is within 75 metres and the areal accuracy greater than one hectare. The time accuracy is one month. This mapping has progressed from the south coast to the Pilbara region. By February 2007, most of the State except for part of the Kimberley Region in the north will have been mapped.

### ***Implementing a feral animal buffer zone to increase the core conservation area of Perup forest***

#### **Neil Pemberton-Ovens**

Warren Catchments Council, 52 Bath Street, Manjimup, Western Australia 6258.  
neilpo@southernforestlandcare.org.au

The Perup forest area is a jarrah forest of over 54 000 ha which has significant conservation values for native fauna populations including Western Ringtail Possum (*Pseudocheirus occidentalis*) and Numbat (*Myrmecobius fasciatus*). Perup adjoins other important conservation areas including the Ramsar-listed Muir-Byenup Lagoon and Kingston State Forest. In the 1970s, sustained, intensive 1080 baiting in the immediate Perup area resulted in a significant increase in numbers of native fauna predated by feral animals, particularly the European fox. More recently, a further 92 000 ha of surrounding forest has been baited by the Department of Environment and Conservation (DEC) under the Western Shield program. In the last four years, a successful feral pig control program has also been run in the Muir-Denbarker area.

In partnership with DEC, a buffer project is now being delivered by Warren Catchments Council under the South West Catchments Council Investment Plan, with State and Australian Government funding. The project began in 2005 and will continue to June 2008, with recent concerns about the collapse of Woylie (*Bettongia penicillata ogilbyi*) populations increasing focus on the importance of the project. The objective of this project is to improve the core conservation area of the Perup forest by implementing a feral animal control program on adjoining land. This will increase the available habitat due to the reduced impact of feral animals.

This native fauna conservation plan consists of baiting a buffer zone of 20-30 km (approximately 115 000 ha) surrounding the Perup forest. The project considers all properties, regardless of tenure and vesting, and includes private land and smaller, previously unbaited reserves. To date, an additional 13% of the Perup area has been baited as part of the project, and several fox shooting campaigns have occurred. Feral pig control efforts are continuing. Monitoring will be conducted in conjunction with intensive monitoring by DEC.

## ***FORESTCHECK – monitoring biodiversity in jarrah forest managed for timber harvesting***

### **Richard Robinson**

Science Division, Department of Environment and Conservation, Locked Bag 2, Manjimup, Western Australia 6258. [Richard.Robinson@dec.wa.gov.au](mailto:Richard.Robinson@dec.wa.gov.au)

Monitoring forms the basis for adaptive management, which is recognized as an appropriate strategy for managing under conditions of uncertainty and change. FORESTCHECK is an integrated monitoring system that has been developed to provide information to forest managers in Southwest Western Australia about changes and trends in key elements of forest biodiversity associated with management activities. The initial focus of FORESTCHECK is on timber harvesting and silvicultural treatments in jarrah (*Eucalyptus marginata*) forest and from 2002-2006, a total of 48 monitoring grids were established at five locations throughout the Southwest. Each two ha monitoring grid is assessed for attributes such as forest structure, soil condition and levels of litter and woody debris, as well as elements of biodiversity including vascular flora, vertebrate fauna (birds, mammals and reptiles), cryptogams (lichens, liverworts and moss), macrofungi and invertebrate fauna.

Integrated monitoring is a fundamental component of Ecologically Sustainable Forest Management (ESFM), and is necessary for reporting against the Montreal Process criteria and indicators for ESFM. FORESTCHECK was developed to meet a range of compliance conditions placed on the Forest Management Plan 1994-2003 through Ministerial Conditions and the Codd Report of 1999 and is included as an operational program in the current Forest Management Plan 2004-2013.

The Science Division of the Department of Environment and Conservation (DEC) has primary responsibility for the implementation of FORESTCHECK. The development of the program took place over two years and included input from scientists and managers within DEC, and from a number of external scientific agencies. The FORESTCHECK Concept Plan and Operations Plan along with Annual Progress Reports may be viewed on the DEC Naturebase website at <http://www.naturebase.net/science/science.html>

## ***Shared Land Information Platform***

### **Damian Shepherd**

Department of Agriculture and Food Western Australia, Locked Bag 4, Bentley Delivery Centre, Western Australia 6983. [dshepherd@agric.wa.gov.au](mailto:dshepherd@agric.wa.gov.au)

Work is currently under way in Western Australia to develop a Shared Land Information Platform (SLIP) for accessing data and information products from State repositories. State NRM agencies have set-up a pilot system for accessing a number of data and information products across a range of NRM themes including Salinity, Soils, Native vegetation, Wetlands and Other Aquatic Environments, Significant Native Species and Marine and Coastal environments. The pilot system can be accessed at: [spatial.agric.wa.gov.au/slip](http://spatial.agric.wa.gov.au/slip) (with no www.). This system can be accessed with Internet Explorer (version 4.0 or later).

## ***Managing forest mosaics in Southwest Australia***

**<sup>1</sup>Geoff Stoneman and <sup>2</sup>Martin Rayner**

<sup>1</sup>Forest Policy and Practices Branch, Department of Environment and Conservation, Locked Bag 104, Bentley Delivery Centre, Bentley, Western Australia 6983. Geoff.Stoneman@dec.wa.gov.au

<sup>2</sup>Forest Management Branch, Department of Environment and Conservation, P.O. Box 1693, Bunbury, Western Australia 6231. Martin.Rayner@dec.wa.gov.au

Mosaic based conservation management is based on the assumption that biodiversity and ecological function can be sustained in landscapes subject to human disturbance through the maintenance of habitat at the full range of spatial scales. In the forests of Southwest Australia, mosaics are provided by both spatial and temporal patterns. This poster outlines strategies and features that contribute to mosaics at the whole-of-forest scale, landscape scale and stand scale. Intervals between disturbance operations such as timber harvesting is a factor that contributes to mosaics through time. A new strategy, introduced in 2004 with the current Forest Management Plan, is that of fauna habitat zones, which contribute to spatial mosaics at the landscape and stand scales. The poster also identifies future developments and issues associated with this approach to biodiversity conservation.

## ***South Coast regional conservation planning 1986-2006***

**Deon Utber**

Department of Environment and Conservation, 120 Albany Highway, Albany, Western Australia 6330. Deon.Utber@dec.wa.gov.au

Regional conservation planning has evolved in the South Coast Region of Western Australia to underpin biodiversity conservation within the current regional Natural Resource Management (NRM) plan, Southern Prospects.

Prior to 1985, protected areas were managed under three separate State Government Departments. The establishment of the Department of Conservation and Land Management (CALM) saw an amalgamation of these protected areas, which in the South Coast Region led to a protected area network consisting of National Parks, Nature Reserves and a small number of Timber Reserves and State Forest equating to a total over 2.4 million hectares.

The CALM South Coast Region developed the Regional Management Plan 1992-2002 using a hierarchical model. The Regional Management Plan addressed bio-regional planning, indicative planning for detailed area management planning and recreational opportunity spectrum. The Plan also highlights the high levels of and importance to regional landscape connectivity along the South Coast and paved the way to recognizing potential linkages with a UNESCO Biosphere Reserve for the Fitzgerald River National Park.

The 'Macro Corridor Project' commenced in 1999 and assessed remnant vegetation across the South Coast Region within major 'corridor' reserves as potential links to improve habitat connectivity and the movement of fauna and flora between parks and reserves. The project conducted a GIS analysis to prioritize areas with high value for improved landscape connectivity and habitat values for linkages and stepping stones.

More landscape planning has followed with initiatives such as Gondwana Link, a collaboration of non-government organizations and community to maintain and establish major linkages between large areas of remaining bush using principles of functional landscape planning.

The principles and planning that have occurred on the South Coast since 1985 have been significant building blocks for biodiversity conservation within current NRM processes. NRM is now providing the opportunity for other regional scale conservation planning to occur such as the Regional Threatened Species Recovery Plan and Project Dieback - a regional project aiming to combat *Phytophthora cinnamomi*.

### ***Auction for Landscape Recovery: Integrating market based instruments and systematic conservation planning***

**<sup>1</sup>Kristen Williams, <sup>2</sup>Dan Faith, <sup>3</sup>Cheryl Gole and <sup>4</sup>Michael Burton**

<sup>1</sup>CSIRO Sustainable Ecosystems, Tropical Rainforest Research Centre, P.O. Box 780, Atherton, Queensland, Australia 4883. Kristen.Williams@csiro.au

<sup>2</sup>Australian Museum, 6 College Street, Sydney, New South Wales, Australia 2010. danf@austmus.gov.au

<sup>3</sup>WWF-Australia, P.O. Box 4010, Wembley, Western Australia 6913. CGole@wwf.org.au

<sup>4</sup>School of Agriculture and Resource Economics MO 89, University of Western Australia, 35 Crawley Drive, Crawley, Western Australia 6009. mburton@fnas.uwa.edu.au

The Auction for Landscape Recovery (ALR) is a conservation auction—one of 11 national pilot projects testing the efficiency, effectiveness and flexibility of market-based instruments in Australia—which operated in the biodiverse Avon River Basin in the north east wheatbelt of Western Australia in 2004 and 2005. The project was managed by WWF-Australia through a diverse partnership. The project region is characterised by high levels of fragmentation due to clearing for agriculture and ongoing degradation due to weeds, grazing by livestock, and collection of firewood. In addition, dryland salinity and associated waterlogging caused by high water tables are major threats to biodiversity values. The ALR explored both the economic efficiency of calling for tenders for the provision of environmental services, as well as a new way to select tenders. Over two rounds of funding, landholders submitted tenders to undertake activities to protect and enhance biodiversity on private land. Landholders' tenders were accompanied by site assessments by trained field staff and consisted of management action proposals targeting particular threats to remnant vegetation and a sealed bid disclosing the cost for which the landholder was willing to undertake this work. Following the close of tenders, all bids were assessed for their complementarity contribution to regional biodiversity conservation targets and their value for money in terms of contributions to effective management and cost. One of the features of this project has been the integrative use, for the first time, of two methods of tender evaluation: an Environmental Benefits Index and a systematic conservation planning approach. The Environmental Benefits Index provided site-related information including vegetation condition and management benefit appraisals. The systematic conservation planning approach, previously utilised elsewhere for regional conservation planning purposes, was successfully operationalised for this project. Most landholders with successful tenders have agreed to long term Voluntary Management Agreements for periods ranging from 10 to 30 years. A range of types of biodiversity assets have been protected.

***Progress in defining the status and extent of a global high-biodiversity hotspot in Eastern Australia***

**<sup>1</sup>Kristen J. Williams, <sup>2</sup>Daniel P. Faith, <sup>3</sup>Andrew Ford, <sup>4</sup>Dan Metcalfe, <sup>5</sup>Petina Pert, <sup>6</sup>Dan Rosauer, <sup>7</sup>Cameron Slatyer, <sup>8</sup>Simon Ferrier, <sup>9</sup>Hal Cogger, <sup>10</sup>Chris Margules, <sup>11</sup>Roger James and <sup>12</sup>Steve Williams**

<sup>1</sup>CSIRO Sustainable Ecosystems, Tropical Rainforest Research Centre, P.O. Box 780, Atherton, Queensland, Australia 4883. Kristen.Williams@csiro.au

<sup>2</sup>Australian Museum, 6 College Street, Sydney, New South Wales, Australia 2010. danf@austmus.gov.au

<sup>3</sup>CSIRO Sustainable Ecosystems, P.O. Box 780, Atherton, Queensland, Australia 4883. Andrew.Ford@csiro.au

<sup>4</sup>CSIRO Sustainable Ecosystems, P.O. Box 780, Atherton, Queensland, Australia 4883. Dan.Metcalfe@csiro.au

<sup>5</sup>CSIRO Sustainable Ecosystems, P.O. Box 780, Atherton, Queensland, Australia 4883. Petina.Pert@csiro.au

<sup>6</sup>Natural Heritage Assessment, Department of the Environment and Heritage. dan.rosauer@deh.gov.au

<sup>7</sup>Natural Heritage Assessment, Department of the Environment and Heritage. cameron.slatyer@deh.gov.au

<sup>8</sup>NSW Department of Environment and Conservation, P.O. Box 402, Armidale, New South Wales, Australia 2350. simon.ferrier@environment.nsw.gov.au

<sup>9</sup>The Australian Museum, 6 College Street, Sydney, New South Wales, Australia 2010. halc@austmus.gov.au

<sup>10</sup>CSIRO Sustainable Ecosystems, Tropical Rainforest Research Centre, P.O. Box 780, Atherton, Queensland, Australia 4883. Chris.Margules@csiro.au

<sup>11</sup>Conservation International, Melanesia CBC, P.O. Box 780, Atherton, Queensland, Australia 4883. rjames@conservation.org

<sup>12</sup>James Cook University, Townsville, Queensland, Australia 4811. stephen.williams@jcu.edu.au

Eastern Australia, from the tropical north to the temperate south, is a region of notable biodiversity with centres of endemism in both plants and animals. This region has also been extensively cleared for agriculture and many remaining uncleared areas are grazed. The coastal region supports large urban areas around the capital cities of Melbourne, Sydney and Brisbane, and a peri-urban zone that is rapidly expanding northwards. There are however, many iconic conservation areas and National Parks in relatively natural condition scattered throughout this region.

The combination of high-biodiversity and extensive habitat loss is what defines a global 'hotspot'. An area is considered a hotspot if it comprises at least 1500 endemic vascular plant species, and can demonstrate at least 70% loss of primary vegetation. Thirty four such areas have been identified across the globe, including the Southwest Australia Ecoregion.

In December 2004, through its partnership with Conservation International, CSIRO initiated the collection of evidence for an eastern Australia hotspot by a network of researchers across Queensland and New South Wales. Preliminary boundaries followed the two WWF Ecoregions - 'Queensland Tropical Rain Forests' and 'Eastern Australian Temperate Forests'. This poster presents work-in-progress and current direction.

The results to date demonstrate that vascular plant endemism easily exceeds the 'trigger' threshold of 1500 species; endemics make up 26% of species known to occur in the region. A preliminary assessment of vertebrate fauna endemism has identified approximately 12% of

species, with further endemics yet to be reviewed from wet tropics databases. A preliminary assessment of remaining areas of primary vegetation in Queensland found, at most, 32% intact natural habitats. A comparable analysis of the proposed region in NSW is under discussion.

***Strategic management of threats to biodiversity: Project Dieback, South Coast Natural Resource Management Region, Western Australia***

**<sup>1</sup>Joanna Young, <sup>2</sup>Gary Muir and <sup>3</sup>Annabelle Bushell**

<sup>1</sup>South Coast Regional Initiative Planning Team (SCRIPT), 444 Albany Highway, Albany, Western Australia 6330. young@denmarkwa.net.au

<sup>2</sup>South Coast Regional Initiative Planning Team (SCRIPT), 444 Albany Highway, Albany, Western Australia 6330. wow@denmarkwa.net.au

<sup>3</sup>South Coast Regional Initiative Planning Team (SCRIPT), 444 Albany Highway, Albany, Western Australia 6330. annabelle@script.asn.au

There are large and relatively intact areas of native vegetation in the South Coast (SCRIPT) Region of WA, however; their values are at serious threat from Phytophthora Dieback (*Phytophthora cinnamomi*), a nationally listed key threatening process. Phytophthora Dieback is caused by a soil-borne pathogen that attacks plants, impacting 40% of native plant species and threatening whole communities including fauna habitat.

Previous management approaches and information regarding the distribution for Phytophthora Dieback have been somewhat fragmented. To overcome this, the SCRIPT-managed Project Dieback aims to set regional priorities for Phytophthora Dieback management in each of the five natural resource management (NRM) regions participating in the Project. Project Dieback, funded primarily through the Natural Heritage Trust Regional Competitive Component, provides a tool for strategic investment into high-value areas of significance in relation to a region's biodiversity, community and industry assets supporting management against Phytophthora Dieback across the five participating NRM regions.

The Department of Environment and Conservation's (DEC) Forest Management Branch, partners to the project, have provided the support to complete the strategic mapping of Phytophthora Dieback in the South Coast Region and have developed a methodology to carry out a Dieback risk assessment in this region's identified high-value areas. The strategic mapping has produced a South Coast Dieback Atlas which illustrates (and rapidly communicates) areas that are currently free from infestation and isolated infestations that threaten pristine areas (priority protection zones).

The South Coast Regional Initiative Planning Team (SCRIPT) is the first NRM region to implement the project as a model by using mapping and risk assessment information to determine priority areas for operational scale mapping and hygiene management planning. It will also underpin the development of a Regional Phytophthora Dieback Management Strategy across all tenure in the SCRIPT NRM Region.