

# Plenary abstract

Stephen D. Hopper – Wednesday 28 November

## Hope, theory and practice: restoration ecology and global biodiversity hotspots in a rapidly changing world

**Stephen D. Hopper**

Royal Botanic Gardens, Kew; Plant Biology/Centre of Excellence in Natural Resource Management, The University of Western Australia

Hope is arguably the greatest gift each generation can pass on to the next. At a time of unprecedented global change, with continuing loss of biodiversity, it is vital that new ways of living sustainably and caring for nature are developed and demonstrated. Restoration ecology continues to offer promise as a critical component of such positive scientific problem-solving. It remains clear that much remains to be done in developing theory and practice in the discipline.

This paper focuses on the special challenge of global biodiversity hotspots, richest in threatened species, and their restoration. Are present theoretical frameworks in restoration ecology sufficient to deliver best on-the-ground outcomes? What does restoration practice tell us? Above all, is it reasonable to remain hopeful for the future? I will use a combination of personal learning experiences and global observations from a botanic garden manager's perspective to draw out themes and hypotheses that deserve urgent focus, especially in Australasia.

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# Plenary abstract

Leanne Liddle – Wednesday 28 November

## Aboriginal knowledge: Why should I care?

Leanne Liddle

Department of Premier and Cabinet

Despite the fact that Aboriginal knowledge has been applied within the Australian landscape for well over 40,000 years, many scientists remain sceptical about its current value and its contribution to conservation.

Often scientists ignore this critical knowledge which could be the key to maintaining important species within the landscape as they pose the question 'But where is the science in Aboriginal knowledge, and what are the positive outcomes for the environment?'

But to answer these questions, scientists need to know how this knowledge is accessed and have a greater appreciation and understanding of how this knowledge is translated and transferred within Aboriginal culture as well as the relationship that Aboriginal people have with both plant and animal species.

Understanding how Aboriginal knowledge should be applied to conserve the landscape is a key ingredient, to make key decisions that could enable you to become the best practitioner in conservation management.

This presentation will focus on the tangible and non-tangible elements which Aboriginal people use and know to maintain the integrity of the landscape of both plant and animals, including key behaviours, their relationship with other species, reproductive and flowering cycles, movements and reactions to climate including fire, floods and drought.

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# Plenary abstract

Hamish Jolly – Wednesday 28 November

## **The dawn of the symbiotes: when enterprise meets ecology**

**Hamish Jolly**

Dunbar Harper Pty Ltd

Through necessity, the development of what we now think of as ecological protection and restoration began in the roots of environmental militancy.

As the demand for intervention became more mainstream, a Government-led regime followed based on regulation and funding to foster bushland protection and revegetation, directly through environmental agencies and indirectly through subsidy of community and landowner-initiated projects.

The problem is that while legislation may help prevent more environmental damage, there will never be enough in the public purse to manage the escalating and perpetual future costs of reserve management, nor to pay for the multi-billion dollar revegetation and restoration effort at the scale required.

As more land is set aside in reserves, the budget per ha for management is spread thinner. Seismic shifts in investment quantum, focus and geography of each successive Government environmental program leads to dislocation among community and landowner groups, lack of continuity on long term projects and collaboration giving way to competition.

There are signs that, with the best intent, the model is unsustainable. We are observing a progressive and systemic deterioration in the effectiveness of our restoration efforts – the job is simply too big and there is not enough in the public purse to achieve it.

But what happens when the objectives of economic production and business converge with those of ecological restoration? Could we harness compliance and private capital hunting commercial returns to make restoration effective in the longer run.

In short, from militancy to political intent, is the next baton-change in the evolution of environmental protection and restoration a marriage between enterprise and ecology?

This presentation looks at recent examples where this might be so, and explores opportunities for greater integration of business in the environment, with environmental restoration the winner.

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# Plenary abstract

David J. Merritt – Wednesday 28 November

## **Doomsday vaults or ecosystem services? Energising seed banks for landscape restoration**

**David J. Merritt**

Kings Park and Botanic Garden, The University of Western Australia

Often promoted in the mainstream media as humanity's saviour to planetary-scale destruction, seed banks in reality, of course, have a myriad of purposes and contribute to serious and increasingly earnest efforts to conserve the world's rapidly declining plant biodiversity. Seed banks for wild species have historically been associated with Botanic Gardens and with the long-term ex situ conservation of biodiversity. However, increasingly, seed banking initiatives are involving local, national, and multi-national collaborative programs encompassing diverse institutions to co-ordinate large-scale seed collections for biodiversity protection.

Undeniably, these seed banking initiatives have achieved laudable conservation goals. Yet seed banks have a role to play beyond the capture and preservation of biodiversity. Seed banks must now turn their attention to restoration.

With contemporary restoration programs aiming to restore biodiverse plant communities at the landscape scale (100's to 10,000's of ha) the return of 10's to 100's of species will be required in many ecosystems. Such large-scale plant re-introductions necessitate the effective use of seeds. This in turn requires sufficient biological and technical knowledge to enable the collection and/or production of seeds, the viable storage of seeds, the reliable germination of seeds, and the efficient delivery of restoration-ready seeds into degraded landscapes. And all of this needs to be done using tonnes of seeds across a huge diversity of wild species.

To truly reverse the tide of species extinction in the wild, seed banks must now renew their goals and focus on the use of the seeds stored within, on their role as a science and technology provider enabling the effective use of seeds in the repair of degraded habitat, and on the formation of new partnerships with the businesses and communities that comprise the restoration industry to achieve landscape scale restoration.

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# Plenary abstract

David J. Pannell – Wednesday 28 November

## **Economic perspectives on ecological restoration**

**David J. Pannell**

Centre for Environmental Economics and Policy, University of Western Australia

Ecological restoration decisions are economic decisions. By this, I don't mean that they are decisions that necessarily generate financial benefits, but that they are the types of decisions that economists tackle routinely using robust theories and models. Features of restoration decision problems that conform with standard economic decision problems include the following:

Restoration projects can be implemented at many different scales or using different strategies (e.g. different policy mechanisms), and there are many alternative restoration projects that could be chosen. Decisions must be made amongst these options.

Restoration projects require resources. Those resources may be in limited supply, or they may need to be obtained at the expense of other competing uses of those resources. The cost of the resources required for a project typically increases at an increasing rate as project scale increases.

Restoration projects require time. Benefits and costs may occur for long periods of time and/or occur at different times, requiring a method to allow valid comparisons between them.

Restoration projects involve risk and uncertainty. For example, there is often uncertainty about the cause-and-effect relationships between management actions and environmental outcomes. There are various risks that may lead to project failure. These risks and uncertainties vary between projects and need to be considered when project benefits are evaluated prior to investment.

Restoration projects affect things that humans value. The types of values affected and the extent to which they are affected varies between projects. Values vary depending on the scale of benefits from a project, often increasing at a decreasing rate as the project scale increases.

Restoration projects usually require cooperation from people, potentially including private landholders, businesses, or other organisations or agencies. The realistic likelihood of achieving that cooperation varies between projects and is important in evaluating the likely benefits of a project.

Economics can help environmental managers achieve the most valuable restoration outcomes for the available resources. It can identify those restoration projects that offer the best value for money, and help make the case for funding of these projects. Economic models provide an under-utilized tool for integrating ecology with other information to support strong decision making about restoration.

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# Plenary abstract

Pavan Sukhdev – Thursday 29 November

## Can today's corporation deliver tomorrow's economy?

**Pavan Sukhdev**

Research Scholar, Yale University, and Founder-CEO of GIST Advisory

Today's dominant economic model has delivered wealth and pulled millions out of poverty, but it is recession-prone, leaves too many unemployed, creates ecological scarcities and environmental risks, and widens the gap between rich and poor. It creates serious looming threats such as climate change and social unrest.

Several hundred billion dollars per year of perverse subsidies (for fossil fuels, unsustainable agriculture and fisheries) and barriers to entry for newer, greener products and services maintain 'business-as-usual'. Also, the associated environmental and societal costs are not taken into account when calculating either corporate performance or national performance.

Viable 'Green Economy' solutions to these problems with our current economic model do exist, but we need to move beyond macro-economic and sectoral proofs and policy tinkering into micro-economic actions and reforms for any significant change to happen. This is because 60% of GDP and 70% of jobs globally are in the private sector.

Corporate influence is the largest determinant of policies. The corporation is the most important institution of our times, driving economic direction and resource use. The challenge is how to deliver tough solutions which cut across policy, self-regulation, and legislation in a manner that does not halt human progress.

A critical dimension of this challenge is that it must achieve change in a very short time – I argue by 2020 – because planetary boundaries are being approached (in some cases, surpassed) at an alarming rate. I argue that the four big changes we must prioritize out to 2020 are all in the realm of 'micro' policy, the operating environment for Corporations.

They include calculating and disclosing corporate externalities (negative externalities such as GHG emissions, water use, pollutants, etc., and positive externalities in the areas of employee education & training, etc.). They include setting limits to corporate leverage to prevent 'too-big-to-fail' corporations from seeding systemic chaos when they fail. They also include replacing taxes on corporate profits with usage charges and resource taxes on resource use and extraction. And finally, they include setting ethical standards in advertising, a key driver of excessive demand.

The new Corporation that will emerge from these changes is 'Corporation 2020', the subject of my lecture, the engine of a green and inclusive 'Economy of Permanence.'

# Plenary abstract

Lesley Hughes – Friday 30 November

## **The biodiversity fund and beyond: triumphs, challenges and risks**

**Lesley Hughes**

Macquarie University, Land Sector Carbon & Biodiversity Board

The Biodiversity Fund is a key component of the Land Sector Package, under the federal government's Clean Energy Future Plan. The Fund is investing around \$946 billion over six years (2011–2016) in projects aimed at helping both private and public land managers store carbon, enhance biodiversity and build greater environmental resilience across the Australian landscape in the face of climate change. Funding is allocated under three, non mutually-exclusive themes: to improve landscape connectivity via new, biodiversity plantings; to protect and enhance existing native vegetation; and to manage threats to biodiversity, especially invasive species.

The first round of funding (2011–2012) was deliberately broad in its reach with grants awarded across all states and territories to 313 projects (from over 1500 applications) to the value of \$271 million. The second round will be targeted to specific regions considered high priority areas owing to their potential to store carbon and/or level of species richness and endemism, but which are significantly threatened by fragmentation and/or invasive species.

The Biodiversity Fund represents the largest single environmental investment by any Australian government, but the challenges to maximize the positive outcomes are immense. These include communication between the administering department and landholders, and development of appropriate targets, guidelines and monitoring programs within the constraints of government financial agendas.

But the greatest fundamental challenge is that "business as usual" in conservation and restoration practice will be inadequate to meet the challenge of an uncertain climatic future, regardless of the size of the funding bucket. Creative thinking, and a willingness to challenge traditional practice are sorely needed.

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