

Symposium

Managing Victoria's Biodiversity under Climate Change

What practical steps can we take to help Victoria's native species and ecosystems survive the impacts of climate change?



2015 OCTOBER 8-9

Ground floor conference room, Bio 21 Institute,
30 Flemington Road, Parkville VIC 3052



Organised by



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SYMPOSIUM PROGRAM

Day One – Thursday 8 October

9.00-9.05 **Housekeeping**

9.05-9.15 **Welcome Dr Bill Birch, President, Royal Society of Victoria**

9.15-9.45 **Setting the scene. Projections for Victoria's future climate**

Speaker: Dr Penny Whetton (Honorary Research Fellow with CSIRO's Oceans and Atmosphere Flagship)

Penny Whetton was formerly a Senior Principal Research Scientist with CSIRO. Dr Whetton has worked on the development of regional scenarios of future climate change for use in impact and adaptation assessment for the past 25 years. She had a leading role in CSIRO's latest climate change projections released in 2015. She was a lead author of the regionalisation and climate scenarios chapters of the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), the regional projections chapter of the Fourth Assessment Report of IPCC, and of the Australasia chapter of the Fifth Assessment Report.

9.50-10.30 **Alpine and sub-alpine systems**

Speaker: Adj Prof Dick Williams (CSIRO ret.; Charles Darwin University)

Dick Williams has been traipsing around the Australian High Country in the interests of science for 35 years. He completed a PhD in 1985 on shrub-grass dynamics on the Bogong High Plains. He moved to Darwin in 1991 to work for CSIRO. For the past 25 years he has been an active researcher in both alpine ecology and savanna ecology.

Facilitator: Dr Libby Rumpff (Post-doctoral researcher, School of BioSciences, University of Melbourne)

Libby is a plant ecologist by training, researching tree-line dynamics in Victoria during her PhD. Her current research and teaching at the University of Melbourne draws upon the practices of structured decision-making, adaptive management, and risk assessment. Her interests focus on exploring tools and techniques to help resolve the uncertainty that impedes decision-making.

Break (10.30-11.00)

11.00-11.40 **Tall/wet forests and rainforests**

Speaker: Dr Chris Taylor (Research Fellow, University of Melbourne)

Chris has conducted research in fields ranging from forest certification to spatial analysis of forest disturbance regimes through to analysing projected climate change on agriculture. He has served on the board of directors for the Forest Stewardship Council (FSC) Australia, performed audits of companies under the FSC and co-initiated the FSC's Controlled Risk Assessment Matrix in Australia.

Facilitator: Prof Rod Keenan (Ecosystem and Forest Sciences, University of Melbourne)

Rod is former Head of the Departments of Forest and Ecosystem Science and Resource Management and Geography at the University of Melbourne and was Director of the Victorian Centre for Climate Change Adaptation Research. He has research interests in forests and climate change, forest ecosystem services and forest and environmental policy. He is a member of the UN-FAO Advisory Group for the Global Forest Resource Assessment.

11.40-12.20 **Dry forests and grassy woodlands**

Speaker: Prof Ralph Mac Nally (Institute for Applied Ecology, University of Canberra)

Ralph Mac Nally has studied birds and other vertebrates in the open woodlands of central and northern Victoria for 30 years. He has led many projects documenting the patterns of faunal change and the probable drivers, including land-use and climate change and vegetation degradation.

Facilitator: Prof Andrew Bennett (La Trobe University & Arthur Rylah Institute)

Andrew Bennett is Professor of Ecology at La Trobe University with an associated role in Science Leadership at the Arthur Rylah Institute for Environmental Research. He has long-standing research interests in landscape ecology and conservation biology, with a particular focus on understanding how human land-use and landscape change affect native wildlife and ecological processes.

Lunch (12.20-1.20)

1.20-2.00 **Mallee/Wimmera**

Speaker: Prof Michael Clarke (Head, School of Life Sciences, La Trobe University)

Mike Clarke has a long-standing interest in the impact of fire upon fauna. He has published internationally on the ecology and conservation biology of birds, reptiles, mammals, fish and plants. He leads research, along with his colleague Prof Andrew Bennett, into the impact of fire in the Mallee, the Box-Ironbark forests, the Central Highlands, and Wilsons Promontory.

Facilitator: Prof Don Driscoll (School of Life and Environmental Sciences, Deakin University)

Don did his degree at the University of Melbourne, and PhD at the University of Western Australia. All of his research has conservation biology as a central theme, with a focus on how species use whole landscapes, particularly the role of dispersal. Recent major projects have examined habitat fragmentation and fire in mallee communities.

2.00-2.40 **Riverine/wetland systems**

Speaker: Prof Max Finlayson (Institute for Land, Water and Society, Charles Sturt University)

Max Finlayson has worked on the inventory, assessment and monitoring of wetlands, in tropical and temperate zones, including vulnerability assessment and adaptation to climate change. He participated in global assessment of climate change, ecosystem services and biodiversity, and has been a technical adviser to the Ramsar Convention on Wetlands since the early 1990s.

Facilitator: Prof Peter Gell (Environmental Management, Federation University)

Peter Gell has over 30 years' experience as a palaeoecologist studying records of forest and wetland change over management relevant time frames from across Australia, Brazil and France. For 13 years he has been a leader within the 'human-climate-environment interactions' focus of the IGBP Project Past Global Changes where he is now a member of the Scientific Steering Committee.

Break (2.40-3.10)

3.10-3.50 **The coastline and Port Phillip Bay**

Speaker: Prof Jon Barnett (School of Geography, University of Melbourne)

Jon is an Australian Research Council Future Fellow in the School of Geography at Melbourne University. He is a political geographer who researches the impacts of and responses to environmental change on social systems in Australia, East Asia and the South Pacific.

Facilitator: Prof Mick Keough (Marine Ecology, University of Melbourne)

Mick Keough is a marine ecologist with a focus on the resilience of nearshore marine communities in the face of disturbance from natural and human sources and an expert on marine monitoring. He has served on a range of government advisory groups and is currently a Program Leader in the Centre for Aquatic Pollution Identification and Management.

3.50-4.40 **People in Victorian ecosystems: how can ecosystem services (water, microclimates, carbon capture, gene pool etc.) be maintained?**

Speaker 1: Assoc Prof Sarah Bekessy (Global, Urban and Social Studies, RMIT University)

Sarah leads the Interdisciplinary Conservation Science research group at RMIT University. She is interested in the intersection between science and policy in environmental management and is currently involved in an interdisciplinary range of research projects, including an ARC Future Fellowship titled 'Socio-ecological models for environmental decision making' and a project funded by the Myer Foundation titled 'Reimagining the Suburb: planning for biodiversity in the urban fringe'.

Speaker 2: Assoc Prof Kathryn Williams (School of Ecosystem and Forest Sciences, University of Melbourne)

Kathryn Williams is Associate Professor in environmental psychology at the University of Melbourne, and Director of the University's Office for Environmental Programs. Her research is concerned with the psycho-social dimensions of environmental management, particularly the emotional and cognitive factors that shape conservation behaviour and public response to environmental policy and management.

4.40-5.00 **Summing up**

Caitlin Griffith (Community Education and Engagement Manager, Victorian National Parks Association)

Day Two – Friday 9 October

9.00-9.10 **Welcome (Chris Smyth, Acting Executive Director, Victorian National Parks Association)**

9.10-9.15 **Welcome to Minister: Prof Karen Day, Dean of Science, University of Melbourne**

9.15-9.30 **Hon Lisa Neville, Minister for Environment, Climate Change and Water**

9.30-9.50 **Setting the scene. The past and the future: a palaeoecological perspective**

Speaker: Prof Peter Gell (Faculty of Science and Technology, Federation University Australia)

Peter Gell has over 30 years' experience as a palaeoecologist studying records of forest and wetland change over management relevant time frames from across Australia, Brazil and France. For 13 years he has been a leader within the 'human-climate-environment interactions' focus of the IGBP Project Past Global Changes where he is now a member of the Scientific Steering Committee

9.50-10.30 **Managing fire and its impacts**

Speaker: Prof John Handmer (Research and Innovations, RMIT University)

John Handmer leads RMIT's Risk and Community Safety research group. He is a member of the national committee revising the Australian Emergency Risk Assessment Guide. He led the NCCARF Network for Climate Change and Emergency Management, and the community safety program of the Bushfire CRC. He works on the human dimensions of emergency management and climate change adaptation.

Facilitator: Tom Fairman (Department of Ecosystem & Forest Sciences, University of Melbourne)

Tom Fairman has a background in forestry, urban forest research, forest carbon assessment and modelling, and is progressing through a PhD on the ecology of temperate eucalypt forests under increasingly frequent wildfires.

Break (10-30-11.00)

11.00-11.40 **Managing weather impacts: drought, flood, CO₂, extreme temperatures**

Speaker: Prof Janette Lindesay (Fenner School, Australian National University)

Janette Lindesay is Professor of Climatology and Deputy Director of the Fenner School of Environment and Society at the Australian National University, and Deputy Director of the ANU Climate Change Institute. Her research focuses on the nature of climate variability and change and their impacts; seasonal climate forecasting; and climate change science in relation to adaptation.

Facilitator: Dr Holly Foster (A/Manager Research Coordination & Innovation, Emergency Management Victoria)

Holly has a diverse background in emergency management issues, including water pricing during drought, climate change policy and depicting the 'future state', and identifying changes across Victoria in emergency management. In recent years, Holly's role has been to oversee the Research Coordination Unit at EMV, implementing the Victorian Research Foundation's Strategy across emergency management agencies.

11.40-12.20 **Managing invasive species**

Speaker: Prof Steven Chown (School of Biological Sciences, Monash University)

Steven Chown is an environmental physiologist and ecologist whose work on macrophysiology and Antarctic biodiversity is most widely known. A key area of his research is forecasting the differential success of indigenous and invasive species under conditions of environmental change. He has advised the Antarctic Treaty Parties and organisations in Australia and South Africa on biosecurity policy and regulation.

Facilitator: Andrew Cox (CEO, Invasive Species Council)

Andrew has led community-based campaigns to protect threatened bushland areas, has worked for the NSW National Parks and Wildlife Service, and was executive officer for the National Parks Association of NSW for nine years. He has provided strategic and policy advice to a broad range of environmental organisations, and to state and federal governments.

Lunch (12.20-1.20)

1.20-2.00 **Connectivity and restoration (benefits and threats)**

Speaker: Dr Jim Radford (Science and Research Manager, Bush Heritage Australia)

Jim has national oversight of Bush Heritage's science and monitoring program and manages their research partnerships, several of which focus on ecological restoration and enhancing connectivity in the context of a changing climate. Jim has a research background in landscape ecology, and evaluating and managing the impacts of land-use change on biota.

Facilitator: Pip Walsh (Director, Community Solutions)

Pip is currently Director at Community Solutions - specialising in working with teams to develop, implement and improve conservation and community projects. She has over 20 years' experience in the not for profit sector working in senior roles at WWF, Greening Australia and Bush Heritage Australia.

2.00-2.40 **Identifying and managing refugia**

Speaker: Dr Andrew Weeks (School of Biosciences, University of Melbourne)

Andrew is an ecological geneticist who specialises in applying genetic principles to the conservation of Australian wildlife. His current research interests include translocations as a way of genetically rescuing populations from inbreeding, and developing translocation strategies that aim to enhance a population's ability to adapt under climate change. He actively participates in several threatened species recovery teams in Australia.

Facilitator: Tony Varcoe (Manager of Science and Management Effectiveness, Parks Victoria)

Tony Varcoe has worked professionally in park management for 25 years across a wide range of roles including park planning and policy, senior operational roles and environmental and social research and evaluation.

Break (2.40-3.10)

3.10-3.50 **Triage: setting realistic priorities (threatened species and ecosystems)**

Speaker: Professor Michael McCarthy (School of Biosciences, University of Melbourne)

Michael McCarthy has an undergraduate degree in Forest Science, and PhD in stochastic population ecology. He has worked on organisms ranging from giant Gippsland earthworms to tiny sap-sucking insects, and from mountain ash trees to mountain pygmy possums. He is Deputy Director of the ARC Centre of Excellence for Environmental Decisions.

Facilitator: Dr Cindy Hauser (School of Biosciences, University of Melbourne)

Cindy Hauser develops models and decision tools that support environmental management and account for uncertainty. She's particularly interested in monitoring and surveillance designs, adaptive management and robust optimisation. Her research has encompassed systems as diverse as recreational waterfowl hunting, woodland regeneration, threatened species recovery and invasive species management.

3.50-4.20 **Final discussion forum**

Facilitators: Dr Kath Handasyde (School of Biosciences, University of Melbourne) & **Prof Andrew Bennett** (La Trobe University & Arthur Rylah Institute)

4.20-4.50 **Summing up and 'Where to from here?'**

Prof Ary Hoffmann FAA (School of Biosciences, University of Melbourne)

Ary Hoffmann works in the areas of climate change adaptation and pest/disease vector control. His group undertakes research on adaptation of organisms to environmental stresses including climate change and chemical pollutants, using field sites along eastern Australia, in the Victorian mountains, and in wetlands around Melbourne.

4.50-5.00 **Wind-up**

Prof Lynne Selwood (Royal Society of Victoria) and **Phil Ingamells** (Victorian National Parks Association)



Tongue Point, Wilsons Promontory National Park, 2009.

A likely climate scenario for Victoria in 2050

Assuming ongoing high levels of global greenhouse gas emissions:

- Temperatures in Victoria would be 1.2° to 2.5°C warmer on average than recent decades. Around the state, temperatures above 40°C in summer would occur two to four times more frequently, and heat waves would be more frequent and longer. There would be fewer frosts in winter. For any location its projected climate would resemble that of sites today hundreds of kilometres further north, or at significantly lower elevation. For example, Melbourne's climate would be roughly like the current one of Wagga Wagga.
- Along with the first decade of the century, later decades are likely to have rainfall below the long-term average, particularly in winter and spring. There are likely to be more intense downpours in summer, making it more difficult to store and use water. Increasing areas would be at risk from flooding during intense summer storms. Soil moisture for cropping and pasture would be much lower and more

inconsistent than now. Some drier summers are also possible.

- Major bushfires would be more common.
- In the mountains, snowpack would be reduced by 50%.
- The sea level could rise 25cm above 1995 levels, with low-lying bayside and coastal communities more frequently inundated.

How the symposium will work

Over two days, a series of speakers (see program within) will briefly outline the likely impacts of climate change on Victoria's ecosystems. Their presentations will address a likely scenario, or a series of scenarios, in 2050 (see above). Each talk will be followed by 20 minutes of discussion facilitated by a similarly qualified person.

All symposium participants are encouraged to take part in the discussions and recommend useful management actions that can be taken by State Government agencies, local councils, community organisations and/or private landholders.

After the symposium

After the symposium, the information that has emerged will be compiled by ecologist Dr Ian Lunt and published online, in a series of posts, at www.vicnature2050.org. Posts will also be made on a range of social media platforms.

Advisory group:

- Prof Ary Hoffmann FAA (School of BioSciences, University of Melbourne)
- Prof Lynne Selwood (University of Melbourne and Royal Society of Victoria)
- Dr Bill Birch (President, Royal Society of Victoria)
- Prof Andrew Bennett (La Trobe University & Arthur Rylah Institute)
- Phil Ingamells (for the Victorian National Parks Association)

The symposium has been organised by the Victorian National Parks Association, the Royal Society of Victoria and University of Melbourne.

Major sponsors: the Department of Environment, Land, Water and Planning; Parks Victoria.

MORE INFO

For more information call the Victorian National Parks Association on (03) 9341 6500 or email vnpa@vnpa.org.au. If you'd like to source further climate prediction information visit Climate Change Australia at www.climatechangeinaustralia.gov.au

Photos: Glenn Ehmke, Phil Ingamells, Clyde O'Donnell, Colin Totterdell.

www.vicnature2050.org