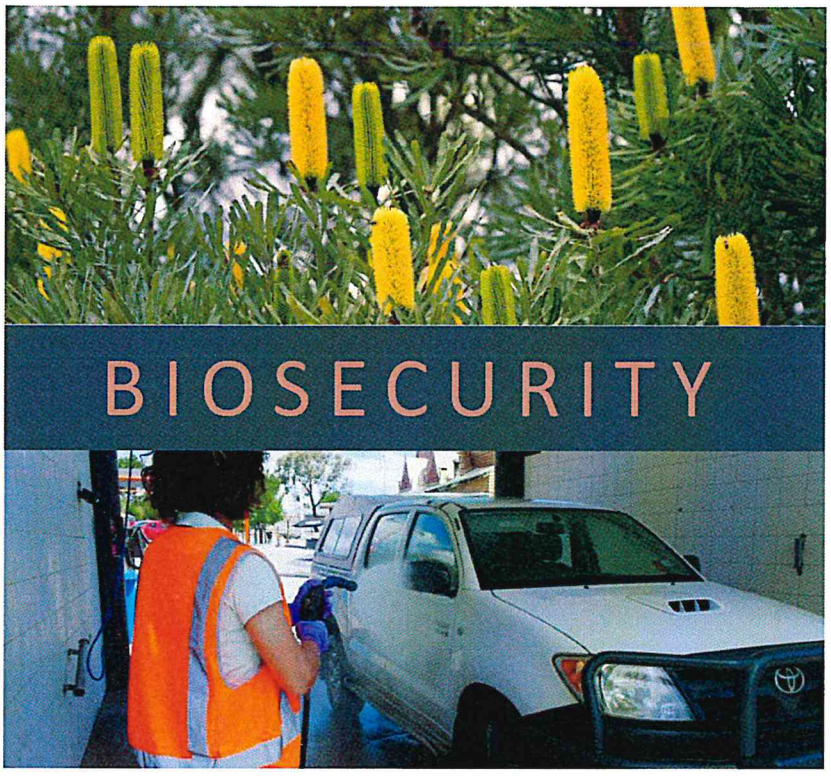
# Dieback Information Group

# Conference 2015

FRIDAY 31ST OF JULY, KALAMUNDA PERFORMING ARTS CENTRE
KALAMUNDA, WESTERN AUSTRALIA

# PROGRAM

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## Welcome to the 2015 Dieback Information Group (DIG) Conference at Kalamunda!

Now in its 14th year, the DIG conference continues to bring together people from industry, government and community seeking answers and solutions to one of the greatest challenges to face the native ecosystems of Western Australia and a key threatening process to Australia's native plants and ecosystems. The Dieback Working Group Management Committee thank you for your continued support of this conference and for being a part of this great network. We hope you enjoy the conference and get involved.

The DWG Management Committee

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# DIG Conference 2015

BIOSECURITY



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# 2015 Dieback Information Group Conference
# Speaker Program

| | | | |
|---|---|---|---|
| Pre conference tea and coffee | | | |
| 8:45am to 10:00am | 8:45 – 9.00 | **Steve McCabe**<br>Dieback Working Group | Conference Welcome |
| | | **Gail Wynne**<br>SWLSC | Welcome to country |
| | 9:00 – 9:20 | **Kevin Goss**<br>Biosecurity Council of Western Australia | Recent focus of biosecurity in WA and the current work of the Biosecurity Council of WA. |
| | 9:20 – 9:40 | **Dr Emer O'Gara and Dr Ian Moore**<br>Dept. of Parks and Wildlife | An update from the Department of Parks and Wildlife Plant Diseases Program |
| | 9:40 – 10:00 | **Ryan Hepworth**<br>Dept. Mines and Petroleum | Dieback management in the mining and exploration sector. |
| Morning tea break | | | |
| 10:40am to 12:20pm | 10:40 – 11:00 | **Dr Ian Horner**<br>The New Zealand Institute for Plant & Food Research | Kauri Dieback – a killer of giants |
| | 11:20 – 11:40 | **Assoc. Professor David Cook**<br>University of WA | Evaluation of potential responses to invasive species with structured decision making |
| | 11:40 – 12:00 | **Assoc. Professor Treena Burgess**<br>CPSM | Quest for best-practice protocol for the fast and reliable detection of *P. cinnamomi* |
| | 12:00 – 12:15 | **Dr Bill Dunstan**<br>CPSM | Seeking *Phytophthora* on the other side - reinforcing the adage, 'expect the unexpected' |
| Lunch break | | | |

*Please submit a question for our speakers during the tea or lunch breaks

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# Speaker Program

| | | | |
|---|---|---|---|
| 12:45pm to 2:00pm | 12:45 – 1:00 | **Elissa Forbes (nee Stewart)** South Coast NRM & Project Dieback | Project Dieback - action and opportunities for protecting biodiversity assets |
| | 1:00 – 1:15 | **Bruno Rikli** Dept. Agruiculture and Food | The community coordinated approach to managing established pests |
| | 1:15 – 1:30 | **Tilo Massenbauer** South Coast NRM & Project Dieback | Dieback Information Management System: - DIDMS |
| | 1:30 – 1:45 | **Dave Hancock** Natural Area Consulting Management Services | Towards new nursery industry protocols for *Phytophthora* control |
| | 1:45 – 2:00 | **Dr Chris Dunne** Dieback Working Group | Dieback Working Group update |
| Afternoon Tea | | | |
| 2:30pm to 4:00pm | 2:30 – 2:45 | **Dr Paul Barber** ArborCarbon | *Phytophthora* in urban environments |
| | 2:45 – 3:00 | **Colin Crane** Dept. Parks and Wildlife | Host susceptibility and disease |
| | 3:00 – 3:15 | **Sarah Sapsford** CPSM | Biotic and abiotic factors predisposing marri (*Corymbia calophylla*) to canker disease caused by *Quambalaria coyrecup* |
| | 3:15 – 3:30 | **Jamba Gyeltshen** CPSM | A field trial to study the feasibility of a non-stick compound in preventing potential spread of *Phytophthora* infested soil through anthropogenic activities |
| | 3:30 – 3:50 | **Q & A Panel Session** | All speakers who are still in attendance |
| | 3:50 – 4:00 | **Steve McCabe** Dieback Working Group | Wrap up & close DIG |
| You are welcome to join us after the conference for networking at the Kalamunda pub | | | |

*Please submit a question for our speakers during the tea or lunch breaks

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# 2015 Dieback Information Group Conference
# Speaker Profiles

## Kevin Goss

Biosecurity Council of Western Australia, Deputy Chair

Kevin Goss is Deputy Chair of the Biosecurity Council of Western Australia. He will explain the role of Council in his talk. Although 'semi-retired', Kevin enjoys keeping busy as Deputy Chair and Non-executive Director on the Board of the Rural Industries Research and Development Corporation; an Honorary Research Fellow with The University of Western Australia; and the independent chair of the Western Australian Marine Science Institution's R&D.

Committee. Kevin's career is best described as 'research management' spanning agriculture, water resources and natural resource management. He has held several senior executive roles in cooperative research centres, the Murray-Darling Basin Commission and the Western Australian Department of Agriculture and Food. Kevin studied agricultural science at the University of Western Australia; communication and rural sociology at Michigan State University

## Dr Emer O'Gara &

Department of Parks and Wildlife (WA), Plant Diseases Program Coordinator

I've been working with *Phytophthora* spp for 17 out of the past 23 years. Much of that time has been spent in research where I have been involved not only in the science of the diseases but also in developing management recommendations. My role as Coordinator of the Department of Parks and Wildlife Plant Diseases Program (since February 2014) is very much operationally focused. This is a big change, but a challenge I'm really enjoying.

## Dr Ian Moore

Department of Parks and Wildlife (WA), Disease & Hygiene Standards Officer

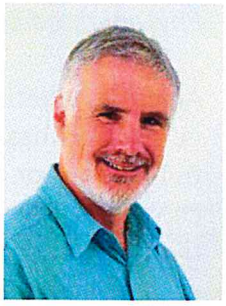
I commenced work with CALM in 1989 initially working in inventory for Forest Management Branch. I have since worked in Phytophthora Dieback for the last 17 years, 6 years of the 17 year period working in the private sector as the director of a company that mapped and advised on management of Phytophthora Dieback. My role in Ecosystem Health Branch within the Plant Diseases Program is Disease and Hygiene Standards Officer, where we manage risks associated with plant pathogens, manage the interpreter registration system and standards, provide Phytophthora Dieback management training and monitor and advise on hygiene management

# 2015 Dieback Information Group Conference
# Speaker Profiles

## Ryan Hepworth
Department of Mines and Petroleum

I joined DMP's Environment Division in October 2012. I am based in the South-west team where I primarily assess native vegetation clearing permits, but also mining and exploration applications. Before DMP I was an Environmental Officer at the Shire of Mundaring for 4 years where I was responsible for environmental assessment of planning applications, subdivisions and local structure plans. I graduated from Murdoch University with a Bachelor of Science in Environmental Science, and I am currently enjoying working in the regulation space and putting the consideration of environmental issues in the forefront of mine planning and operations.

## Dr Ian Horner
The New Zealand Institute for Plant and Food Research



He is a graduate of the University of Auckland (BSc & MSc) and Cornell University (PhD). For the past 35 years he has carried out research on soil-borne diseases of tree and vegetable crops including apples, stone-fruit, kiwifruit, strawberries and native forests. Various *Phytophthora* diseases have featured in his research.

## Assoc. Professor David Cook
University of Western Australia

David Cook hails from Katanning in the Great Southern. He is adjunct Associate Professor of Agricultural Economics with the University of Western Australia's School of Agricultural and Resource Economics and Senior Economist with Department of Agriculture and Food, Western Australia. David has been researching biosecurity-related issues for almost 20 years. He has authored more than 40 professional journal papers and book chapters, and managed various interdisciplinary projects researching issues related to prioritisation in plant pest and disease management.

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# 2015 Dieback Information Group Conference
# Speaker Profiles

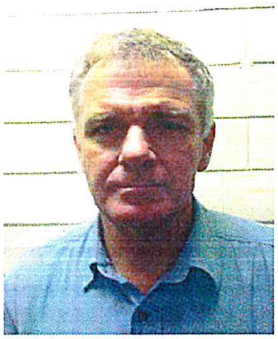
## Assoc. Professor Treena Burgess

Murdoch University, Director of the Centre for *Phytophthora* Science and Management (CPSM)

My research field is the biology, ecology and genetics of beneficial and detrimental microorganisms in natural ecosystems, plantation forestry and horticulture, with a focus on biodiversity and biosecurity issues. More recently my research has focused on the molecular systematics and evolutionary biology of *Phytophthora* and I am the current Director of the Centre for *Phytophthora* Science and Management (CPSM).

## Dr Bill Dunstan

Murdoch University, Post-Doctoral Research Fellow at the Centre of *Phytophthora* Science and Management (CPSM)



After completing a PhD at Murdoch in 2002 Bill went from studying ectomycorrhizal fungi (good 'true' fungi) to the dark side with *Phytophthora* in the same year. Most of his research effort within CPSM has been directed at controlling *Phytophthora cinnamomi* in natural and rehabilitated ecosystems in the south-west, in collaboration with government agencies (mainly DPaW) and private industry (ALCOA, Tronox, and others).

## Elissa Forbes (nee Stewart)

Project Dieback Leader at South Coast NRM, Western Australia

Elissa works for South Coast Natural Resource Management as Project Dieback Leader. Previously she worked with Project Dieback as Dieback Project Officer West before moving into the project leader role in late 2013. Elissa first began working in the Natural Resource Management (NRM) field in 2007 in the Perth northern metropolitan region. Since then she has undertaken varied NRM roles ranging from catchment management, water quality analysis, invasive species management and assisting and co-ordinating management strategies and planning.

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# 2015 Dieback Information Group Conference
## Speaker Profiles

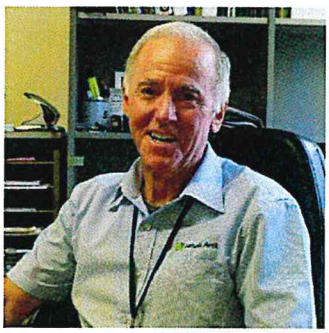
### Bruno Rikli
Department of Agriculture and Food (WA), Community Engagement Officer

Bruno Rikli is an environmental practitioner with a diverse career history in consulting, industry, local and state government roles in metropolitan and regional Western Australia. He is a member of the State and Busselton Dieback Working Groups and has a background in conservation biology, natural resource management, science and Phytophthora Dieback management over 20 years. He is currently a Community Engagement Officer in the Department of Agriculture and Food Western Australia working in a new team with communities on biosecurity across the South West Land Division.

### Tilo Massenbauer
South Coast NRM (WA), Spatial Information Officer

I have worked for South Coast NRM as the Project Dieback Spatial Information Officer since January 2013. After growing up Esperance, I completed a Bachelor of Applied Science in Natural Systems and Wildlife Management with the University of Queensland. I have worked in various roles with local government, Department of Parks and Wildlife and Consultancies for over 15 years. I apply decision tools to hydrology, plant disease and climate variability environmental problems. My technical experience includes strategic decision theory, botany, restoration ecology, wetland ecology, hydrology, and GIS.

### Dave Hancock
Natural Area Consulting Management Services, Founder



David is a Company Director qualified in Accounting , Finance and Business Law. He had a 22 year career in Banking with the majority in Commercial lending, Corporate Banking and Retail Administration to General Management Level throughout Australia. In 2001 he founded the Natural Area business in Perth, which has grown to be one of the largest suppliers of environmental contracting services in W.A. He serves on the management committees for The Revegetation Industry Association of WA, The Society for Ecological Restoration Australasia and The International Plant Propagators Society.

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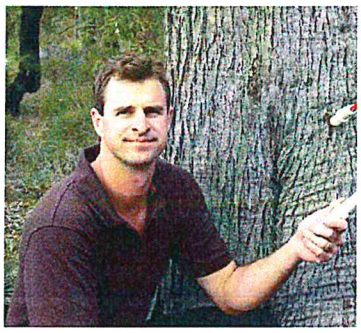
# Speaker Profiles



## Dr Chris Dunne

Dieback Working Group, Vice Chairman

Dr Christopher Dunne is the current Vice Chairman of the Dieback Working Group Inc. Since completing a PhD in plant pathology at Murdoch University in 2004 he has held research and management positions within industry, government, university and the not-for-profit community sector.

## Dr Paul Barber

ArborCarbon, Director

More than 20 years experience as a scientist, with an emphasis on the diagnosis, monitoring and sustainable management of urban, plantation, crop, and native vegetation health in Australia and Asia. Recognised as one of the leading experts in urban and plantation tree health management throughout the Asia Pacific region. Founding Director of ArborCarbon, a Perth-¬based environmental and arboricultural consultancy dedicated to providing novel and innovative solutions for the sustainable management of vegetation. Adjunct Associate Professor at Murdoch University, Australia.

## Dr Colin Crane

Department of Parks and Wildlife (WA), Senior Technical Officer – Plant Disease

Three decades ago, Colin began providing technical support for a Forests Department program breeding Phytophthora resistant *Pinus radiata* designed to secure future timber resources for the rapidly growing state of WA. Since that time he has provided similar roles within Department of Parks and Wildlife (and predecessors) in research projects covering aspects of the structural, functional and genetic diversity of fungal plant pathogens and their hosts within the South Western Australian Floristic Region. Since that first days employment in the Forests Department he was and has remained fascinated by fungi.

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# 2015 DIG Conference
# Speaker Profiles

**Sarah Sapsford**
Murdoch University, PhD Candidate

Sarah completed her Masters at James Cook University in Queensland in 2012 where she studied the population and disease dynamics of the amphibian chytrid fungus. She is now in her 2nd year of her PhD at Murdoch University where is she studying the biotic and abiotic factors predisposing marri trees to canker disease.

**Jamba Gyeltshen**
Murdoch University, PhD Candidate

Jamba Gyeltshen is currently doing a PhD (year 2) at Murdoch University. His research project is on studying the life stages and survival of *Phytophthora cinnamomi* in soil, roots and organic matter of mine site soils. Prior to joining Murdoch, he served as a teaching faculty at the Royal University of Bhutan (1990-2013) and has been teaching courses related to crop pest and disease management for the diploma and undergraduate degree students of agriculture.

## Recent focus of Biosecurity in Western Australia and the current work of the Biosecurity Council of WA

Presented by Kevin Goss
*kfgoss@me.com*

Kevin will describe the role of the WA Biosecurity Council, its current policy work and its relevance to dieback management in Western Australia. There is a national movement to 'biosecurity as a shared responsibility', which is causing a re-think of joint effort across government, community and industry sectors at a time of sharply reduced agency budgets. This makes important an agreement on the principles for shared responsibility and on methodology for making astute decisions to prioritise effort. Kevin will explain current thinking.

With Chris Dunne's help the Council recently explored what shared responsibility might look like in a dieback scenario in the Whicher Range, among other scenarios. Kevin will refer to this and take other questions that will help the WA Biosecurity Council continue its work.

## An update from the Department of Parks and Wildlife Plant Diseases Program

Presented and prepared by Dr Emer O'Gara and Dr Ian Moore
*emer.ogara@dpaw.wa.gov.au and ian.moore@dpaw.wa.gov.au*

The Department of Parks and Wildlife Plant Diseases Program is 18 months old, and the team have hit the ground running. In our presentation we will give a brief summary of our achievements to date, some of our current projects and how they are addressing the departments goal, as outlined in the 'Strategic Directions 2014-17', of more effective management of plant diseases. In September 2014 a new system for registering Phytophthora Dieback Interpreters and monitoring interpretation standards was launched and is now in full swing. Green Card Level 1 Phytophthora Dieback Awareness and Basic Hygiene training, and Myrtle Rust Awareness training has been delivered to over 500 staff since October 2014. The differences between the Green Card training offered by the DWG and that delivered within the department will be explained in our presentation. The team is currently developing a workshop on disease management planning for staff which will be delivered before the end of 2015. The new 'Policy 3 Management of Phytophthora Disease' (released January 2014) is providing direction for the current review of departmental Phytophthora Dieback management processes and tools including the '*Phytophthora cinnamomi* and the Diseases Caused By It: Volume 1 - Management Guidelines (2002)'. The minor use permit issued to the department by the APVMA for the use of phosphite in native vegetation has been renewed – and in our presentation we will discuss some of the issues around that.

## Kauri Dieback – A killer of giants

Presented by Dr Ian Horner
*ian.horner@plantandfood.co.nz*

Kauri (*Agathis australis*) is a giant tree that dominates forests in the northern part of New Zealand. But these forests are under threat from an insidious killer, *Phytophthora*. This new species of *Phytophthora* (*P. agathidicida*) has almost certainly been introduced to NZ sometime in the last century. Kauri trees are highly susceptible to this pathogen, and trees of all ages from seedlings to 1000-yr-old giants are being killed. In infected stands, few kauri trees survive the advance of the infection. While the pathogen has been found in a number of forests in Auckland and Northland, there are still many forests that appear to be free. The key to long term management of kauri dieback is to restrict its spread and prevent contamination of new forests. The Kauri Dieback Joint Agency Response team, with representation from the Ministry for Primary Industry, Department of Conservation, Regional Councils and Tāngata whenua oversees the response to kauri dieback, including research, management, public education and engagement.

An overview of kauri dieback disease, its incidence and impacts, the response and the current research will be presented.

## Quest for best-practice protocol for the fast and reliable detection of *Phytophthora cinnamomi*

Presented by Assoc. Professor Treena Burgess
t.burgess@murdoch.edu.au

Over the past few years members of the Centre for *Phytophthora* Science and Management have conducted many experiments with the aim of improving the speed and reliability of *P. cinnamomi* diagnostics. In this talk I will give a run down of our progress and the problems we have encountered, and the current status of our findings.

## Evaluation of potential responses to invasive species with structured decision making

Presented by Assoc. Professor David Cook
*PO Box 1231, Bunbury, WA, 6231*
*david.cook@agric.wa.gov.au*

In managing invasive species incursions, there is an onus on responders to proceed quickly with eradication or control efforts to maximise the chance of success. Yet, decisions about how to proceed and how much to invest in responses don't lend themselves to rapid solutions. Response managers have to choose between complex and often competing environmental, social and economic objectives, and the impact of the response alternatives available to them are highly uncertain. To support to managers facing these challenges, we trialled the use of participatory structured decision making (SDM) to develop a response plan for the 2010 Myrtle rust (*Uredo rangelii*) incursion in eastern Australia. At the time of the study, the complexity surrounding the decision of how to respond to the initial outbreak led to a degree of inertial on the part of response managers. SDM breaks management decisions into key steps, including objective formulation; developing management alternatives; estimating consequences of implementing those alternatives, and; selecting preferred alternatives. By using this approach in a group setting, involving participatory workshops and interviews with community, industry and government stakeholders, we were able to quickly elicit key concerns and convert them into five objectives and five management alternatives. We then developed decision trees to graphically represent the essence of the decision response managers faced by displaying the relationship between uncertainties and decision points. Using this information a management plan was formed within two on-day stakeholder workshops. However, despite participatory SDM proving effective it remains an experimental approach and the plans we developed were never operationalised.

## Seeking *Phytophthora* on the other side - reinforcing the adage, 'expect the unexpected'

Presented by Dr Bill Dunstan
w.dunstan@murdoch.edu.au

We conducted a soil and stream survey over 70 km for an engineering project in south-central Victoria. Although there were few signs of disease that could be attributed to *Phytophthora, Phytophthora* was recovered from 34% of soil samples. In samples from which it was recovered, 22% yielded two or three species. Between one and three *Phytophthora* species were recovered from each stream baiting station, nearly all from the same group (Clade 6). Overall, at least 13 described species and three Clade 6 hybrids were recovered, with few species recovered from both water and soil. Patterns of distribution will be discussed, along with there relevance to Western Australia.

# 2015 Dieback Information Group Conference
# Speaker Abstracts

## Project Dieback - Action and opportunities for protecting biodiversity assets

Presented by Elissa Forbes (nee Stewart)
elissaf@southcoastnrm.com.au

Collaborative and well planned investment in Phytophthora Dieback management is needed to ensure a strategic and uniform approach to across industries and tenure. Project Dieback, facilitated by South Coast NRM in conjunction with project partners takes a multi-faceted approach to Phytophthora Dieback management and investment, including planning, communication and on-ground works. The tools developed are aimed at achieving effective and meaningful outcomes.

The State NRM funded project has developed a State Dieback Management and Investment Framework that identifies Priority Protection Areas across the south-west that are considered vulnerable to Phytophthora Dieback. The framework provides a logical process and tools that allow for a standardised approach to Phytophthora Dieback management cross tenure which can be utilised not only for the State level Priority Protection Areas but also management at local and regional scale by any group or organisation. The project is currently in its third year of funding and an update on the Framework and associated tools; its implementation; challenges faced and; where to next will be presented.

## The community coordinated approach to managing established pests

Presented by Mr Bruno Rikli
PO Box 1231, Bunbury, WA, 6231
bruno.rikli@agric.wa.gov.au

The Biosecurity and Agricultural Management Act 2007 (BAM Act) came into effect in May 2013 and provided the foundation for updating the Department of Agriculture and Food, Western Australia's pre and post border biosecurity policies, procedures and systems. Managing biosecurity is a complex task! For it to be most effective collaboration and partnerships are essential between all stakeholders. DAFWA is moving towards a more integrated approach to delivering biosecurity protection across Western Australia. This includes supporting the development of a model known as the "Community Coordinated Approach" that involves developing Recognised Biosecurity Groups (RBGs). RBGs have community/stakeholder leadership and are formally recognised by the Minister of Agriculture to control declared pests that impact on public and private interests i.e. they operate at a landscape scale and across tenures. RBGs are a mechanism to enable landholders and managers to develop a coordinated approach to control and manage declared pests of concern to them. RBGs are the Departments preferred future partnership arrangement for the management and control of declared pests. The work undertaken by RBGs is very important and can add value to pest control undertaken by individual landholders. This approach does not replace individual responsibilities under the BAM Act.

## Dieback Information Management System: - DIDMS

Presented by Mr Tilo Massenbauer
tilom@southcoastnrm.com.au

"Diddums"; Oxford Dictionary Meaning –
"Ironic British informal expression of commiseration to an adult."
Not to be confused with the acronym DIDMS,
**"Dieback Information Delivery Management System".**

DIDMS is a "user registered" web Geographical Information System (GIS) for storing, viewing, mapping and sharing spatial Phytophthora Dieback information. DIDMS is developed and hosted by Gaia Resources Pty in association with South Coast NRM.

DIDMS stores location and other attributes of Phytophthora Dieback disease status, management and planning information. DIDMS allows dieback stakeholders to share information across different tenures of land. The stored online information can be used to:

- Help manage existing infestations,
- Help plan infestation prevention of clean susceptible biodiversity areas, and
- For general educational purposes.

Registered DIDMS users can access a "User Manual" and online help functions to self-train. DIDMS is also compatible with desktop GIS such as QGIS and Esri Arcmap for managing bulk data and doing GIS dieback planning.

Publically available DIDMS data can be viewed on Dieback public map at http://www.dieback.net.au/about/dieback-map.html. To interrogate the dieback public map data and make maps, people should register for a DIDMS "user account" at http://www.dieback.net.au/about/it-tools.html or http://www.dieback.net.au/about/dieback-map.html. The DIDMS home page for registered users is located at http://didms.gaiaresources.com.au/grid/didms/accounts/login/?next=/grid/didms/home/.

## Towards new nursery industry protocols for *Phytophthora* control

Presented by Mr David J. Hancock
david@naturalarea.com.au

The threat to Australian plant life and biodiversity from existing and potential additional forms of *Phytophthora* is real and well documented.

Whilst there is a range of potential methods of pathogen transfer to valuable conservation estate areas, a very obvious and likely source is transmission via nursery sourced plant stock.

The current nursery accreditation standards and compliance are no longer considered adequate to address the current and prospective threat to Australian flora posed by *Phytophthora* and other soil borne pathogens.

The need for nurseries and buyers of plant stock to know and understand their responsibilities to the environment, the nursery industry and each other, has required broad stakeholder engagement and consultation. This presentation will go to the core of these issues.

This presenter will outline the latest progress to improve nursery *Phytophthora* control and its relevance to all stakeholders.

## Dieback Working Group update

Presented by Dr Chris Dunne
chris@dwg.org.au

The Dieback Working Group Inc have had a productive year. This talk will highlight the outcomes from projects run through Murdoch University, DWG Inc and Perth NRM. The DWG members have been busy with Green Card (DWG Inc) and Business Management Strategy development. The current outlook on forward financial year planning will be discussed in detail.

## *Phytophthora* in urban environments

Presented by Dr Paul Barber
p.barber@arborcarbon.com.au

Over the past five years we have conducted surveys of declining vegetation throughout Perth's urban forest with the intention of diagnosing the cause(s) of such decline. A wide range of abiotic and biotic disorders have been discovered including many different species of Phytophthora associated with native an non-native hosts. This presentation discusses the findings from these surveys, some novel methods of monitoring the spread of disease, and why it is important to manage *Phytophthora* in the urban forest.

## Biotic and abiotic factors predisposing marri (*Corymbia calophylla*) to canker disease caused by *Quambalaria coyrecup*

Presented by Ms Sarah Sapsford
s.sapsford@murdoch.edu.au

Marri is a keystone tree in Western Australia. A canker disease caused by the fungus *Quambalaria coyrecup* has devastated many marri stands. Disease incidence is higher in remnant stands that border cleared land such as road edges and farmland where there is greater anthropogenic disturbance, such as fertiliser, pesticide and herbicide use, and the introduction of plant pathogens. The progression of the decline strongly suggests a breakdown in the ability of the trees to maintain nutrient balance and we hypothesize that mycorrhizal fungi play a role in this process. The aim of this project is to examine the mycorrhizal species associated with marri and how these communities differ between intact and anthropogenically disturbed forest sites and whether pesticide use, changes in soil nutrition and/or soilborne pathogens are responsible for changes in communities of mycorrhizal fungi and hence canker disease incidence and severity. Seventeen sites were surveyed. Each site consisted of a disturbance gradient. Soil was collected from each transect and tested for nutrient composition, mycorrhizal composition and pathogens. Preliminary results demonstrate differences in soil nutrition between the disturbed transect and all intact forest transects. In addition, there are differences among the communities of fungi between the disturbed and intact forest transects. Disturbed transects show a higher proportion of pathogenic fungi particularly *Phytophthora* species, than in intact forest transects. Currently, the presence of pesticides and herbicides across the transects are being examined to determine their role in marri decline.

## Host susceptibility and disease

Presented by Dr Colin Crane
colin.crane@dpaw.wa.gov.au

At the species level susceptibility/resistance rankings of native host species are a useful tool, particularly for broad scale mapping of disease occurrence and are widely used in management decisions. There is a small body of research specific to the South-West Botanical Province that provides insight and depth into the grey area that exists between the extremes of the two rankings. Invasion by *Phytophthora* causes direct and indirect effects which can affect the susceptibility/resistance rankings markedly depending on environment and the scale of analysis.

## Application of Nanotechnology: A field trial to study the feasibility of a non-stick compound in preventing potential spread of *Phytophthora* infested soil through anthropogenic activities

Presented by Mr Jamba Gyeltshen
Produced by J. Gyeltshen, G.E. St J. Hardy, T.I. Burgess, W. Dunstan
*Centre for Phytophthora Science and Management, School of Veterinary and Life Sciences, Murdoch University, Murdoch, 6150, Australia.*
*j.gyeltshen@murdoch.edu.au*

The nanotechnology product, 'Ultra-Ever Dry', is used to coat an object and change it to a 'non-stick' surface so that it repels water and most materials including oil, mud, food, and paint. It has a commercial value in extending the life of a material treated with the product by preventing corrosion.
If the non-stick compound could be used in *Phytophthora* disease management, it would be cost-effective in the long run. Human activities such as walking and cycling through bush trails can inadvertently spread the soilborne pathogen. The infested soil sticking to footwear or bicycle tyres could be transported from one area to another and if the Ultra-Ever Dry product could stop mud sticking to these substrates, it could greatly contribute to maintaining plant hygiene.

The initial aim was limited to determining if 'Ultra-Ever Dry' could prevent mud sticking on shoes. If there were promising results, further research was to be considered.

# 2015 Dieback Information Group Conference

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protecting our bushland

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