ABSTRACTS & SPEAKER PROFILES

HOW IS GENETIC INFORMATION USED TO PREVENT WEED INVASION RISK?
DR ALEX FOURNIER-LEVEL - University of Melbourne

Most problematic weeds are invasive to multiple regions where they have adapted to the local environment. This leads to different weed populations having different genetic makeup that makes them more or less suitable to a particular environment. Analysing the genome of weeds from multiple locations helps to determine the match between genetic patterns and weediness in a given location. This allows us to anticipate invasion risk depending on the origin of the weed. This can be illustrated in ragweed, which is currently restricted to Northern New South Wales. European strains of ragweed could lead to high invasiveness in Victoria and South Australia, when strains from Florida could invade Queensland. In this context, DNA-based biosecurity monitoring can help prioritise management actions.

ABOUT THE SPEAKER

Dr Alex Fournier-Level is a senior lecturer and group leader at the University of Melbourne. With a background in grape breeding during his PhD, his research focuses on the genetics of plant adaptation to the environment, for the good or the bad. He has a strong expertise in weed genetics working on agricultural weed, particularly herbicide-resistant annual ryegrass, and ecological weeds such as common ragweed. His lab developed new computer modelling techniques and uses genome information to build decision tools to support Australia's biosecurity.

CHASING THE GRAIL: THE PROMISE AND CHALLENGES OF GENE DRIVES
PROFESSOR BEN PHILLIPS - Curtin University

Gene drives hold great promise for controlling pest species in Australia. Here I talk about that promise, but also about the social and technical challenges that need to be overcome if we are to meet that promise. On the technical side we have to contend with the ecological and evolutionary dynamics of drives. On the social side we have to contend with social licence, and with regulatory instruments. The technical hurdles are rapidly falling, and it is now possible to design drives that are containable. Nonetheless, winning approval for release will likely be a long road, and released drives will likely surprise us.

ABOUT THE SPEAKER

Ben is a Professor at Curtin University's School of Molecular and Life Sciences. He is a population biologist with a background in ecology and evolution and ,is particularly interested in how spatial processes influence population and evolutionary dynamics. Ben started his professional life as a field biologist, but has slowly morphed into a modeler. He is interested in developing models describing population and evolutionary dynamics, and applying these to real problems in agriculture, health, and environment.

ABSTRACTS & SPEAKER PROFILES

BIOLOGICAL CONTROL OF WIDESPREAD WEEDS - RESEARCH TO ACTION
GREG LEFOE - Department of Energy, Environment and Climate Action

Successful biological control programs can provide environmentally friendly, cost-effective, long-term control for invasive species. Classical biological control, for example, uses highly-specialised natural enemies including insects, mites and fungi, to control widespread weeds. We provide an overview of current and future weed biological control research in Victoria, and draw on three case studies, blackberry, gorse and serrated tussock, to demonstrate how scientists, producers, public land managers, and community groups work together to deliver on-ground weed control outcomes.

ABOUT THE SPEAKER

Greg Lefoe is a Senior Research Scientist with the Department of Energy, Environment and Climate Action's Agriculture Victoria Research Division, based at the AgriBio Centre in Bundoora. Greg has more than 25 years' experience in the biological control of weeds and pest insects. He currently leads research into the biological control of the weed silverleaf nightshade and biological control of horticultural pests. Past research projects include biological control of gorse, invasive brooms, bridal creeper and wandering trad. Greg's work encompasses the full range of classical biological control activities, including overseas exploration and field studies of new biocontrol agents, risk assessment and quarantine experiments, release of approved agents in conjunction with stakeholders such as farmers, public land managers and community-based natural resource management groups, integrated pest and weed management, and long-term impact assessment studies.

CONTROLLING WEEDS USING GOATS
COLIN ARNOLD - GrazeAway

Goats are a proven method for controlling invasive pest plants. Due to the community's lack of understanding, goats continue to be overlooked as a standalone control measure. There have been many instances where goats have provided the answer.

ABOUT THE SPEAKER

Colin Arnold is the owner of GrazeAway, a business started to better manage invasive weeds with goats. GrazeAway was started in 2007 in an attempt to control problematic vegetation without the use of herbicides.

As well as his work with GrazeAway, Colin has over 40 years' experience as a horticulturalist, working as a nurseryman providing tubestock for the bush regen industry. His knowledge of both indigenous plants, the habitats they grow in and the weeds that compromise those habitats, is broad. GrazeAway is presently working with organisations including Melbourne Water, City of Knox, Whitehorse, and Casey as well as Parks Vic, Landcare, Monash, Latrobe and Deakin Universities, as well as many private land managers.

FUTURE OPPORTUNITIES AND CHALLENGES IN INVASIVE SPECIES MANAGEMENT
BRINGING SCIENCE AND COMMUNITY TOGETHER

15 March 2024, 9am-3pm

Melbourne Museum - Treetops Venue

INVASIVE SPECIES FORUM
CONTEXT AND PURPOSE

Many landowners and land managers for years have worked hard to control pest plants and animals on their land. Blackberry, gorse, serrated tussock, rabbits, foxes, and deer can have huge impacts on agriculture and the environment.

Landowners spend considerable time, energy and resources performing on ground control including ripping, baiting, fumigating, shooting, spraying, mulching. Is there anything else on the horizon?

Science has already provided significant breakthroughs in invasive species management with a long list of successful research for the control of invasive pest species. This forum will be an opportunity to hear from leading scientists about what is on the horizon to solve these wicked problems.

ABOUT THE CONVENOR
VICTORIAN BLACKBERRY TASKFORCE

One of four Victorian Community Pest Management Groups, the Victorian Blackberry Taskforce encourages and supports community grass-roots action, with partnerships and collaboration a key focus. This approach has reinvigorated blackberry control efforts across Victoria, and public and private land managers are working together to reduce blackberry and protect economic and environmental values.

Taskforce members oversee implementation of the Victorian Blackberry Strategy and provide state-wide leadership in blackberry management.

The Taskforce's Community Partnership Program supports communities to motivate local land managers to work together to manage blackberry across landscapes. The Taskforce also provides feedback to policy makers on successful community approaches to blackberry control and helps drive research and innovation in blackberry control measures.

Funded by Victorian State Government

VICTORIA State Government

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FUTURE OPPORTUNITIES
AND CHALLENGES IN INVASIVE
SPECIES MANAGEMENT

BRINGING SCIENCE AND COMMUNITY TOGETHER

PROGRAM

9:00 - 9:30	Arrive - registration, tea / coffee
9:30 - 9:45	Welcome / Welcome To Country - Lyn Coulston, Victorian Blackberry Taskforce, Chairperson
9:45 - 10:05	**Controversies and challenges of managing invasive species in Australia** Professor Euan Ritchie, Deakin University
10:05 - 10:25	**Learning from rabbits and instilling environmental biosecurity habits** Ms Shalan Scholfield, Department of Agriculture, Fisheries & Forestry
10:25 - 10:45	**Tools to manage deer now and into the future** Dr Annelise Weibkin, National Deer Management Plan Co-ordinator, Department of Primary Industries and Regions SA, Adelaide, SA
10:45 -11:15	Morning Tea
11:15 - 11:35	**Genetic biocontrol for invasive vertebrate pests** Dr Stephen Frankenberg, University of Melbourne
11:35 - 11:55	**How is genetic information used to prevent weed invasion risk?** Dr Alex Fournier-Level, University of Melbourne
11:55 - 12:15	**Chasing the grail: the promise and challenges of gene drives** Professor Ben Phillips, Curtin University
12:15 - 1:00	Lunch
1:00 - 1:20	**Biological control of widespread weeds - research to action** Greg Lefoe, Senior Research Scientist with the Department of Energy, Environment and Climate Action's Agriculture Victoria Research Division
1:20 - 1:40	**Controlling weeds using goats** Colin Arnold, GrazeAway
1:40 - 1:50	Summing up
1:50 - 2:20	Afternoon tea / Finish

ABSTRACTS & SPEAKER PROFILES

CONTROVERSIES AND CHALLENGES OF MANAGING INVASIVE SPECIES IN AUSTRALIA

PROFESSOR EUAN RITCHIE - Deakin University

Australia is home to extraordinary biodiversity, but since European colonisation many species have suffered severe range and population declines or been driven to extinction, and ecosystems spanning the continent are now showing signs of collapse. A primary reason is invasive species. I will give an overview of the controversies and challenges of managing invasive species in Australia, and the opportunities for better biodiversity outcomes that exist through new tools and ways of thinking.

ABOUT THE SPEAKER

Euan Ritchie, Professor of wildlife ecology and conservation, leads the Applied Ecology and Conservation Research (AECR) Group, within the School of Life and Environmental Sciences at Deakin University. AECR's work spans diverse research fields, including behavioural-, community-, population- and landscape-ecology, conservation biology, and wildlife management. Their work has a strong focus on the significance of species interactions and ecological functions of Australian mammals, fire, invasive species, and ecosystem management. This research is aimed at more effective environmental policy, management actions, and biodiversity conservation. Euan is also a passionate and prolific science communicator, and a Councillor within the Biodiversity Council.

LEARNING FROM RABBITS AND INSTILLING ENVIRONMENTAL BIOSECURITY HABITS

SHALAN SCHOFIELD - Department of Agriculture, Fisheries & Forestry

Invasive species have a significant impact on Australia's biodiversity. This talk focuses on the broad-scale ecological, economic, social, cultural and agricultural impacts of invasive species and priorities for management from a threatened species perspective, with 230 non-native species listed as key threatening processes affecting Australian threatened taxa. Our national biosecurity system aims to provide an appropriate level of protection to Australia's people, our environment and economy from the biosecurity threats of today and tomorrow. Australia's biosecurity system has two focuses when it comes to invasive species, those that are already here and established, and those that pose a significant risk if they were to arrive. Through the Australian Government's Environmental Biosecurity Office, we work with a range of stakeholders to protect Australia's environment and cultural assets by preventing the spread of invasive pests, diseases, and weeds. This includes exploring new and emerging detection and control strategies, undertaking surveillance, incursion response and national coordination.

ABOUT THE SPEAKER

Shalan Scholfield is the Principal Director of the Environmental Biosecurity Office, Department of Agriculture, Fisheries and Forestry. Shalan's current role is focused on reducing the impact of exotic and established pests, diseases and weeds, strengthening environmental biosecurity outcomes, responding to incursions, building community understanding and supporting research, development and extension. Shalan is a graduate of the Australian Institute of Company Directors and has an honours degree in marine science. She has worked as a research scientist, joined the Australian Fisheries Management Authority in 2004 followed by the department in 2010, working with state and territory jurisdictions, non-government organisations and stakeholders on a range of priorities across operational, technical, compliance, program and policy roles in biosecurity, invasive species, fisheries, marine and resource management.

ABSTRACTS & SPEAKER PROFILES

TOOLS TO MANAGE DEER NOW AND INTO THE FUTURE

DR ANNELISE WEIBKIN - Department of Primary Industries and Regions SA

Australia's feral/wild deer problem is increasing. In just 30 years, land managers in both rural and urban areas have seen deer go from being a novelty to being widespread in many parts of the country. There is a need for coordinated and cost-effective approaches to actively suppress deer populations and prevent new ones, to reduce their impact on agricultural productivity, disease risk, environment, threatened species, places of high conservation or cultural value, and road safety. Because deer have only emerged recently as a nationally significant pest problem, there are fewer tools to manage them than for other vertebrates pests such as feral pigs, rabbits and foxes. This presentation will explore the challenges and opportunities for deer control tools, and highlight new developments, strategies and options for the future.

ABOUT THE SPEAKER

Dr Annelise Wiebkin is the National Deer Management Coordinator. Her work seeks to increase coordination and efforts to manage feral/wild deer in Australia, build capacity, networks and share best practice, support development of new control tools, and drive community awareness of the need to act early. Her project is supported by the Australian Government. Annelise has a background in ecology, land and natural resource management, policy in pest animals, and engagement in communities, agencies and organisations. Annelise's Deer Coordinator project is hosted by the Department of Primary Industries and Regions in South Australia.

GENETIC BIOCONTROL FOR INVASIVE VERTEBRATE PESTS

STEPHEN FRANKENBERG - University of Melbourne

Genetic biocontrol technologies such as 'gene drive' offer a potential silver bullet to many of Australia's invasive pest species, such as rabbits, foxes, cane toads and carp. Genetic biocontrol involves introducing a specific genetic modification into a pest population, which is then able to spread through the population by natural breeding while also reducing the population size. By targeting female fertility, genetic biocontrol is much more humane in comparison to many conventional pest management approaches. I will discuss some of the challenges and caveats associated with genetic biocontrol in Australia and how these may be addressed.

ABOUT THE SPEAKER

Dr Stephen Frankenberg is a zoologist/geneticist in the University of Melbourne's School of BioSciences. His early research career originally focussed on early embryonic development of mammals (especially marsupials), before expanding into broader aspects of reproductive biology of vertebrates. With a lifelong interest in evolution and ecology thrown into the mix, the seeds were sown for exploring the potential of genetic engineering for solving problems in conservation biology. His projects now range from protecting northern quolls from cane toad toxin, protecting frogs from chytrid fungus infection, and eradicating invasive vertebrate pests.