

# Weeds

NSW  
21st

NSW & VIC COMBINED CONFERENCE

discover through recovery

## Conference Program Booklet

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Albury Entertainment Centre  
21 - 24 March 2022





We are the boots on the ground, helping secure the future of agriculture and the environment for NSW communities.

Our programs and partnerships help grow farm productivity and healthy environments and play a vital role in helping to protect against pests, diseases and environmental threats. When it comes to weed management, our role is to:

- deliver the regional strategic weed management plans
- facilitate and coordinate regional strategic planning
- assist with education and community outreach programs.

We are here when it matters, connecting NSW landholders with knowledge, networks and experience.

Find out more about Local Land Services on our website [www.lls.nsw.gov.au](http://www.lls.nsw.gov.au)



**Local Land  
Services**

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# WELCOME TO ALBURY

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A natural meeting place in every way.

For thousands of years, people have gathered, shared and celebrated at this special place in the foothills of the Alps and on the banks of the mighty Murray River. Our warm, welcoming and entrepreneurial locals have come from here, and come from afar, to build a thriving regional community that is both cosmopolitan and laidback, culturally connected and naturally abundant.

We have every kind of nature at our doorstep. Whether you looking to get out and explore, or looking to relax and rejuvenate, you'll find it on our Murray River and Lake Hume, through our hill vistas and trails or walking and relaxing in our many parks and gardens. We have fresh air to breathe, adventure on tap and beauty to behold for every outdoorsy soul.

At Noreuil Park you'll find shady trees overlooking the lawns by the banks of the Murray River. Join the locals for some fishing, paddleboarding, canoeing or just relax and enjoy the view. Immerse yourself in nature and take a riverside walk along the Wagirra Trail and the Yindymarra Sculpture Walk, featuring striking sculptures by local indigenous artists, or head 15 minutes out of town and take in the awe-inspiring dam wall and the waters of Lake Hume (six times the volume of Sydney Harbor).

Albury Wodonga is home to a vibrant artistic and cultural community. There's always something new to see and experience, from our newest attraction Wodonga Library Gallery to the Murray Art Museum Albury, home to the best contemporary art to the region. Wander through a range of commercial galleries and find incredible street art around every corner.

At the center of an abundant food bowl, our eateries deliver delicious dining options that cater to every taste from local fresh produce to casual alfresco, and specialist whiskey and wine bars. You can't go past the River Deck Café overlooking the Murray or Junction Place offering award-winning dining at Miss Amelie, and authentic Italian street food served fresh from a re-purposed shipping container. Pull up a stool at Two Fingers, a specialist whisky bar, or Temperance and General, a boutique laneway cocktail bar well worth discovering.

From fresh food markets to quality boutiques and hidden treasures, the local retail scene has you covered. Home chefs should make their way to The Essential Ingredient, and to Harris Farm Markets where you can sip bubbly and pick fresh produce under the one roof.

Albury Wodonga is the perfect base to explore our nearby wine region, the high country or one of the many charming country towns. Organise a day tour and explore the many well-known wineries in nearby Rutherglen or take a historic drive to the town of Beechworth and wander the picturesque streets.

Albury Wodonga is much more than a place to visit. It's a place to come, stay for a while and live a little Albury Wodonga life with us. A place where unfiltered, uncomplicated refreshing connections just happen naturally.

Discover more at [visitalburywodonga.com](http://visitalburywodonga.com)

# STILL AUSTRALIA'S MOST TRUSTED WEED MANAGEMENT PROVIDER AFTER 30 YEARS!

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# WELCOME FROM PRESIDENTS

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On behalf of the Weed Society of New South Wales and the Weed Society of Victoria we welcome you to the 21st NSW Biennial Weeds Conference hosted by the Albury City Council.

Situated on the “mighty Murray River” and at the foothills of the Australian Alps, this combined NSW & VIC Weeds Conference showcases the latest research and ideas for managing the establishment, impact and spread of weeds.

The conference theme, Discover through Recovery is particularly pertinent for the region which was hard-hit by the 2019/20 bushfires that burnt over 17 million hectares across Australia. During this conference, you will meet speakers and delegates who will have inspiring stories

to tell, or who may adorn you with new knowledge and approaches, or who are just amazing people that you’ll want to collaborate with in future. Some of these people will get their due recognition at the NSW Weed Society Awards during the conference dinner. While others may win a prize from the photo competition run by the Weed Society of Victoria. Either way, well done to all the winners!

We would like to thank everyone involved in the organisation of this conference. The level of support and hard work from the committee while contending with the moving beast of the global pandemic is to be commended!

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## Wendy Gibney

President Weed Society of New South Wales



## Raelene Kwong

President Weed Society of Victoria





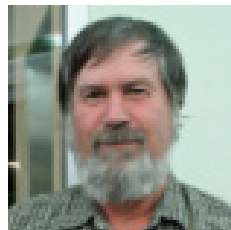
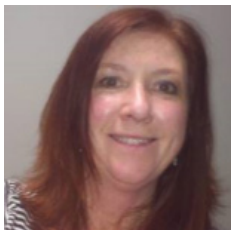
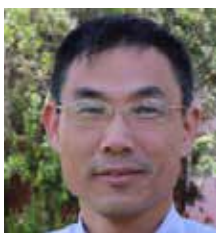
# Join us

## Benefits of joining the Weed Society of NSW:

- Opportunity to network with others interested in weed management
- Discounted registration for Society seminars and workshops
- Opportunity to apply for Society Travel Awards
- The Society newsletters, A Good Weed, and A Little Weed
- Discounted registration to attend the NSW Biennial Weeds Conference and the Australasian Weeds Conference
- Additional financial prizes for the winners of the Buerckner and Stephenson Weed Professionals Awards

*“Because of the great collaboration between our members, we get to know more about weeds and weed management than we are capable of knowing by ourselves.”*

*“I love being part of an organisation that supports weeds officers and students through their grants and awards.”*



To join us come and visit our conference stand.

Website: <https://wsnsw.net.au/>

Email: [secretary@wsnsw.net.au](mailto:secretary@wsnsw.net.au)





# GENERAL INFORMATION

## SOCIAL FUNCTIONS

Please refer to your registration details for your booked functions. If you are not booked for a particular function and now wish to do so, please contact the registration desk.

**Please wear your name badge to all social functions.**

## WELCOME FUNCTION

Date: Monday 21st March 2022

Time: 5.30pm – 7.30pm

Venue: Albury Entertainment Centre

Details: Finger food and drinks  
(dinner afterwards at own expense)

Dress: Smart Casual

Sponsor: **NSW Weeds Officers Association**



## CASUAL DINNER

Date: Tuesday 22nd March 2022

Time: 6.30pm – 10.00pm

Venue: The Kinross Hotel

Details: The dinner includes coach transfers, a casual buffet dinner, please pay for your drinks at bar prices.

Coaches depart from the Albury Entertainment Centre at 6.00pm and return from the Kinross from 9.30 to 10.00pm

Dress: Smart Casual

## GALA DINNER

Date: Wednesday 23rd March 2022

Time: 6.15pm for 6.30pm start – 10.30pm

Venue: Albury Entertainment Centre

Banquet Hall

Includes: Three Course meal, drinks and entertainment

Dress: Business Attire (dress up!)

Sponsor: **QuickCorp**



## CATERING AND SPECIAL DIETARY REQUIREMENTS

Morning and afternoon teas and lunches will be served in the Trade Exhibition areas. Lunches will be served as an informal stand-up buffet. Vegetarian options will be catered for in the main catering choices. Other dietary requirements noted on your registration form have been passed to the catering staff - please ask catering staff for assistance as they know about your requirements, but they don't know who you are! Should you require particular assistance (and did not mention this when you registered for the Conference), please see the staff at the registration desk.

## INTERACTING AT THE 2022 WEEDS CONFERENCE

Make sure you download the 2022 Weeds Conference App. You will have received the link via email – it's a conference specific URL based App (not on the App Store) so you need the link. If you need help see Bradley at the registration desk. Everything you need is in the App including the delegate list, agenda, speaker



abstracts, delegate networking function and general information.



**Haven't got the App?  
Download it here and then get  
your log in details from the  
registration desk.**



# CONFERENCE PROGRAM

## MONDAY 21 MARCH 2022

| Time        | Title  |
|-------------|--|
| <b>3:00</b> | <b>Registration desk opens Albury Entertainment Centre</b>   |
| 3:00        | WeedMap Pro users group meeting – Albury Entertainment Centre, Theatre Room  |
| 5:30        | Conference Welcome Function – Albury Entertainment Centre Proudly sponsored by NSW Weeds Officers Association      |
| 6:00        | Welcome from Doug Campbell, NSW Weeds Officer Association and Reg Kidd, Independent Chair NSW State Weed Committee |



## TUESDAY 22 MARCH 2022 - DAY ONE

| Time        | Presenter  | Presentation Title  | Location: Auditorium |
|-------------|--|---|----------------------|
| 8:20        | Chair – Nerilee Kerlake<br>Albury City Council     | Housekeeping  |                      |
| 8:35        | Aunty Edna Stewart                                 | Welcome to Country  |                      |
| 8:45        | The HON Sussan Ley<br>Minister for the Environment | Official Opening & Welcome  |                      |
| <b>8:55</b> | <b>Deirdre Griepsma</b>                            | <b>Collaborating after fire - Working together to manage threats to biodiversity following the 2020 fires</b> |                      |
| 9:35        | Elissa Van Oosterhout                              | Pathways to prohibited matter   |                      |
| 9:55        | Garry Rodda  | General Manager, Murray Local Land Services   |                      |

### 10:00 Morning Tea Break - Meet the Sponsors

#### Concurrent Sessions

|       | Auditorium - Talking Weeds<br>Chair - Rod Ensby - NSW Department of Primary Industries |   | Theatrette - Search & Eradicate<br>Chair - Tara Pitman - Murray Local Land Services |   |
|-------|--|---|---|---|
| Time  | Presenter  | Presentation Title  | Presenter   | Presentation Title  |
| 10:30 | Chris Jackson  | Leading the way for a new regional approach to weed management on state agencies in central tablelands                              | Jane Kelly  | Weeds managers guide to remote detection: Understanding opportunities and limitations for remote detection of weeds |
| 10:55 | Kaitlyn Height   | Insights from stakeholder perspectives for more effective area-wide management of herbicide resistance in weeds of cropping systems | Wendy Menz  | Finding hawkweed in NSW utilising drones and GIS  |
| 11:20 | Sonia Graham   | Measuring the success of collaborative weed management: insights from practitioners   | Ed Coney  | Weed management after fire in the South-East  |
| 11:45 | Bianca Gold<br>Virtual Presentation  | Learning about weed management after fire through webinars  | Kathryn Sheffield<br>Virtual Presentation   | Automated detection of alligator weed ( <i>Alternanthera philoxeroides</i> ) from aerial imagery                    |

### 12:10 Lunch

#### Plenary Session

Chair – Claire Lock, NSW Department of Primary Industries

| Time  | Presenter     | Presentation Title   |
|-------|---------------|--|
| 13:10 | Julia Rayment | Development of a risk assessment tool to prioritise management of exotic perennial grasses |
| 13:35 | Nicola Dixon  | A risky business- Biosecurity and the cut-flower industry                                  |
| 14:00 | Greg Holland  | New Incursions - Community efforts to halt the spread of an early-invader weed - Karamu    |
| 14:25 | Lyn Coulston  | Victorian Blackberry Taskforce - Community Connections and Response/Recovery               |

### 14:50 Afternoon Tea Break

#### Plenary Session

Chair – Hanwen Wu, NSW Department of Primary Industries

| Time  | Presenter       | Presentation Title   |
|-------|-----------------|--|
| 15:30 | Mark Hamilton   | Proactive adaptive management is critical to weed eradication: Learnings from the NSW hawkweed eradication program |
| 15:55 | Aimee Freimanis | Plant Sure: Making it easier for everyone to Garden Responsibly  |
| 16:20 | Kerrie Guppy    | Efficacy of Weed management on Mother of Millions.....   |

### 16:45 DAY ONE CONCLUDES

#### 16:45 NSW Weed Officers Association meeting

Location: Theatrette

### 18:30 Casual Dinner - Kinross Hotel

**WEDNESDAY 23 MARCH 2022 - DAY TWO**

8:20 Chair – Nicola Dixon Housekeeping  
NSW Department of Primary Industries

**Plenary Session**

| Time | Presenter             | Presentation Title   |
|------|-----------------------|--|
| 8:30 | Jodie Bartlett-Taylor | Training pathways for weeds professionals                                    |
| 8:55 | Rod Ensbey            | Parthenium   |
| 9:15 | Rae Kwong             | Biological control of weeds in Victoria: an overview of current R&D programs |

**9:40 Morning Tea Break****Concurrent Sessions**

Auditorium - Biocontrol  
Chair: Umar Lubunga - Agriculture Victoria

Theatrette - Weed Control Methods  
Chair: Bec James - Department of Environment, Land, Water and Planning, Vic

| Time  | Presenter          | Presentation Title   | Presenter          | Presentation Title  |
|-------|--------------------|--|--------------------|---|
| 10:10 | Andrew McConnachie | Progress on the biocontrol of Ox-eye daisy ( <i>Leucanthemum vulgare</i> ) in Australia  | Matt Bell          | Save water, save time, maximise efficiency with Sprayrite   |
| 10:35 | Greg Lefoe         | The search for new agents - Assessing potential new biocontrol agents for silverleaf nightshade  | Tom Pickering      | Hume highway granula flupropanate aerial trial in collaboration with Transport NSW (previously NSW Roads and Maritime Services) |
| 11:00 | Ben Gooden         | Assessment and implementation - Release of the leaf-smut fungus ( <i>Kordyna brasiliensis</i> ) to help control wandering trad ( <i>Tradescantia fluminensis</i> ) - an update on progress in NSW and Victoria | Charles McClintock | Knowledge and assistance - Introducing Clipper Herbicide  |
| 11:25 | Jackie Steel       | Assessment and implementation - Validating the New Zealand Biocontrol Risk Assessment Model for Australia  | Victor Galea       | Stem implanted herbicides and bioherbicides – improved efficiency and sustainable outcomes for woody weed management            |

**11:50 Lunch**

**Plenary Session** Chair – Kate Blood, Department of Environment, Land, Water and Planning, Vic

| Time  | Presenter           | Presentation Title  |
|-------|---------------------|---|
| 13:15 | Claire Lock         | WeedScan - a website and smartphone app for identifying, reporting and managing priority weeds in Australia         |
| 13:40 | Jennifer Cunningham | Where weed management begins: a report on a joint agency educational pilot program.                                 |
| 14:05 | Lily Berry          | Voluntary compliance - Chain chain change part 3 - behaviour change strategy for Lantana on the far south coast NSW |
| 14:30 | Megan Wyllie        | Online sales and digital solutions - Crime Stoppers Campaign - the emerging online trade of weeds                   |

**14:55 Afternoon Tea Break**

**Plenary Forum - Bridging Borders** Chair – Pete Turner NSW Department of Primary Industries & Natasha Lappin, Murray Local Land Services

| Time  | Presenter                                      | Presentation Title   |
|-------|--|--|
| 15:30 | Nicola Dixon                                   | Working with weeds in NSW  |
| 15:40 | Alexei Rowles                                  | Working with Weeds in Victoria   |
| 15:50 | Rod Ensbey                                     | Queensland NSW Cross-border taskforce a long-term model for collaboration  |
| 16:00 | Matt Sheehan                                   | Consultation on a National Established Weeds Framework: Building and Improving on Weeds of National Significance |
| 16:10 |  | Forum discussion   |
| 16:45 | Rae Kwong - President Weed Society of Victoria | Conference Wrap up   |

**17:00 DAY TWO CONCLUDES**

**19:00 Conference Dinner - Albury Entertainment Centre**  
**Proudly Sponsored by Quikcorp**

## THURSDAY 24 MARCH 2022 - FIELD TRIPS

8:00

Assemble for coach departures – Albury Entertainment Centre

8:30 to 10:30

Coaches depart for field trips



### Field Trip 1 - Departs 9.45am

#### The Natural Beauty of Albury and the Mighty Murray River

This trip includes a walk and talk along Yindyamarra Sculpture Walk which features a series of stunning contemporary Aboriginal sculptures created by local Aboriginal Artists that line the Wagirra Trail along the Murray River from Wonga Wetlands. As a part of this field trip we will also be visiting some local properties including a demonstration from RSA on aerial spraying techniques and a short trip to the local Wolki Farm where they will showcase their regenerative farming practices.



### Field Trip 2 - Departs 8.45am

#### Gold Country - Victoria

Relive the glory days of the gold rush as we tour through the historic towns of Chiltern, Eldorado and Beechworth. We will meander along Old Coach Road through Chiltern-Mt Pilot National Park where we will visit the spectacular Woolshed Falls. Within the park, we will meet with rangers from Parks Victoria and members of the Friends of Chiltern Mt Pilot NP to hear about local invasive species issues and see the success of the biocontrols against prickly pear and wheel cactus. The tour will conclude with an opportunity to wander around the beautiful town of Beechworth at your leisure, where you may wish to visit The Old Beechworth Gaol, Mayday Hills Asylum or partake in a refreshing ale at the Bridge Road Brewery.



### Field Trip 3 - Departs 9.15am

#### Fire recovery in the Upper Murray – Victoria

Following the 2020 bushfires, invasive plants and animals have presented a significant threat to the biodiversity values in the Upper Murray district of Victoria. The landscape is characterised by mountains, foothills and floodplains, with large tracts of park, reserve and state forest interspersed with agricultural land and timber production. Mitigating the impacts of invasive species requires partnerships between government agencies, landholders and community groups. In this field trip, we will travel through the country which links the Murray River to the Victorian Alps, visiting scenic locations to hear how collaborations are helping the landscape recover after a fire. We will learn about the integrated programs in parks and reserves tackling pest plant and animal issues, and visit the Pheasant Creek Flora and Fauna reserve to see first-hand how various activities occur in concert to protect critical habitat.



### Field Trip 4 - Departs 9.30am

#### Murray & Greater Hume NSW - Burrumbuttock/Tabletop/Holbrook

Rolling Hills and Rugged Bushland sitting at the gateway of the Upper Murray-Holbrook/Woomargama. From drought to fires to relentless downpours. The past 5 years has definitely tested this productive Agricultural and Environmental landscape. The trip includes a visit to the Wirramina Environmental Education Centre, inspection of the Macspread herbicide demonstration site, and a demonstration at Woomargama Common by Skylos Ecology detection dogs. Along the way, we will meet the local champions who work tirelessly on projects in this area to showcase the invaluable resource of information this region has to offer. The trip will conclude with refreshments in Holbrook.



### Field Trip 5 - Departs 9.30am

#### Training day – Weed Practitioner Essentials

If you're new to the weeds industry or need to improve and update your skills this is the option for you. You'll be out and about covering work related activities such as:

- identify and visit a high-risk site
- undertake a weeds inspection
- learning about community engagement tips and tricks
- weed identification – how to get help, what if I find something, prohibited matter weeds
- what training and is out there and can I get a qualification?
- stakeholder engagement and networking skills (over a beverage!).

16:00

Coaches begin arriving back at Albury Entertainment Centre and conference concludes



# SPEAKER ABSTRACTS

## TUESDAY 22 MARCH

**8:55 - DEIRDRE GRIEPSMA**  
Parks Victoria

### **Collaborating after fire - Working together to manage threats to biodiversity following the 2020 fires**

The 19/20 Black Summer fires were exceptional in size and impact with approximately 1,500,000 hectares burnt across Victoria. This has had devastating effects leaving a huge scar on the landscape. The bushfires impacted over 4,400 species; 244 species of plants and animals had at least 50 per cent of their likely state-wide habitat burnt, 215 of which are rare or threatened species.

The management of invasive species in a burnt landscape presented an enormous challenge and a great opportunity, but where do you start?

Theme 4 of the Bushfire Biodiversity Response and Recovery program is the Intensified and Sustained Management of Threats. Development of this theme was informed by the Biodiversity response and recovery preliminary report, which identified pest predator and herbivore control as priority actions under the immediate and short-term bushfire recovery efforts. In the months after the fire as conditions change weed control becomes important to prevent weed regrow and spread and help native plants and vegetation communities to recover.

To date, \$64.3 million has been provided through Victorian and Australian Governments to deliver actions under key themes and focus areas. (\$51.5m from Victorian Government and \$12.8m from Australian Government).

Program implementation has required all lead agencies and organisations involved (DELWP, Parks Victoria, Catchment Management Authorities, Trust for Nature, Traditional Owners) to work to a common objective; a coordinated, strategic and targeted integrated invasive species control program to reduce the impact of pest predators, introduced large herbivores and weeds on the survival and recovery of threatened native species.

To do this we have learnt that collaboration is key, good relationships are critical and a willingness to share and build trust is essential.

**9:35 - ELISSA VAN OOSTERHOUT**  
NSW Department of Primary Industries

### **Pathways to prohibited matter in NSW**

This presentation reviews the awareness and detection pathways behind 47 incursions of five prohibited matter weeds found in NSW in 2020 (parthenium weed, frogbit, rubber vine, Mexican feather grass and hawkweed). The chains of awareness that led to the detection of each incursion are analysed in terms of who found each one and whether it was found through:

- trace forward surveillance by authorised officers called to action through statewide prohibited matter responses or intelligence provided in situation reports
- passive and active community surveillance where members of the community were encouraged to call for assistance through motivational print and social media, taking care to avoid legal narratives
- weeds professionals conducting general or species-specific high-risk pathway surveillance
- farmers and landholders who found unusual or suspect plants and called for assistance, or provided information linked to known incursions
- people trained in weeds ID and recognition or enthusiasts with expert knowledge

The presentation profiles the spotters and formally recognises their contribution to protecting the biosecurity of NSW. DPI is supporting this outcome through a new training course that uses digital and handmade models to build familiarity with prohibited matter weeds; and through the WeedScan project to develop an app that can identify weeds and allow users to create and share records of what they find. In conclusion, current new and long-standing strategies to increase early detection of high-risk weeds in NSW have been put to the test and yielded results.

**10:30 - CHRIS JACKSON**  
Upper Macquarie County Council

**Leading the way for a new regional approach to weed management on state agencies in central tablelands**

With the introduction of the Biosecurity Act and the concept of a tenure neutral approach to weed management the Central Tablelands Regional Weed Committee has been working toward a new way of engaging state agencies in weed management. This presentation will describe the approach that is being developed in the central tablelands, what we aim to achieve and some of the feedback we are getting from the implementation of these guidelines to date.

Upper Macquarie County Council (UMCC) has been central to developing the new guidelines for the engagement of state agencies in weed management in the central tablelands. This has arisen from the fact that UMCC has over one third of its land area managed by the state agencies, with the majority of the weed infested public land being managed by forestry. Building on their strong cooperative approach with landholders to achieve better compliance, UMCC has developed guidelines

for engaging with forestry in weed management and compliance taking into account:

- What mapping and weed reporting systems the state agencies are using
- Who are the most appropriate contact staff in the state agencies
- How weed management may align with state agency funding cycles and resources

Reports from UMCC indicate that these guidelines are already supporting stronger engagement by the state agencies in weed management.

As a region, UMCC is developing methods to roll out these guidelines over the entire region and to a range of state agencies. This will result in a stronger weed management program by the state agencies across the whole region. It will also support the other local control authorities in the region in tackling weed management issues with state agencies like forestry. It has already resulted in agencies adding inspection targets into Weed Action Program (WAP) applications that have not been there previously.

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## 10:55 - KAITLYN HEIGHT

University of Wollongong

### **Insights from stakeholder perspectives for more effective area-wide management of herbicide resistance in weeds of cropping systems**

Development of resistance to herbicides by weeds is a significant concern of land managers in cropping systems that jeopardises progress in weed management and crop production. Herbicide and pesticide resistance management practices are predominantly viewed as landholders' own responsibility in Australia, but these individual decisions can have far-reaching and long-term implications for weed and pest management. Area-wide management of chemical use can reduce these impacts by providing support for landholders to work together towards a shared goal of limiting resistance. Past programs for management of chemical use have tended to be localised in area, short-term and problem-specific, but provide a rich source of information about the components of effective area-wide management. The aim of this research is to outline key factors in successful area-wide management of chemical use in Australian cropping systems, as well as to identify landholder and other stakeholder perspectives on area-wide management. Data for this research was collected from 84 semi-structured interviews with farmers, public land managers and weed management advisors in three cropping regions of eastern Australia. This research provides insights into the elements of effective area-wide approaches to management of resistance problems, including: the circumstances in which area-wide management is most pertinent; prerequisites for area-wide management; how the area can be defined; stakeholders whose participation is essential; and activities involved. Learning from the perspective of stakeholders involved in weed and resistance management is critical for the development of programs that are more relevant to weed managers and can improve the effectiveness of these programs.

## 11:20 - SONIA GRAHAM

University of Wollongong

### **Measuring the success of collaborative weed management: insights from practitioners**

The recent shift in biosecurity policies towards an ethic of shared responsibility is based on the assumption that greater collaboration will result in more successful weed management programs. Yet we lack the extensive social science data needed to demonstrate that more collaborative weed management results in better outcomes. To begin collecting such data requires a definition of what constitutes collaborative weed management and a set of metrics that can be used to measure the success of collaborative programs. In this study, two focus groups were held with 12 weed management practitioners in south-east New South Wales to identify what they consider successful collaborative weed management to be, and the extent to which existing metrics enable them to evaluate and inform the success of their programs.

The workshops revealed that collaborative weed management is organised and implemented in diverse ways, from being community-led, led by local councils or state government authorities, to multi-organisation collaborations. Some programs focus on single weed species, while others involve joint priority setting of multiple weeds. The most consistently agreed upon measures of success include self-perpetuating community participation, landscape-scale coordination of weed control efforts, and decade-long project duration. Many existing metrics are inadequate for capturing coordinated effort and the effect it has on intertwined ecological, economic and social systems. New and consistent metrics are needed that capture the richness and diversity of successful weed management collaborations and how they contribute to more sustainable communities and ecosystems.

## 11:45 - BIANCA GOLD

Department of Environment, Land,  
Water and Planning, Victoria

### Learning about weed management after fire through webinars

Through a successful collaboration between 12 agencies and groups, a series of four webinars about weed management after fire was run in November and December 2020 and the recordings are available online in perpetuity for access for all at <https://tinyurl.com/WeedsAfterFire>

The webinar series provided a valuable platform for agencies and groups to share their experiences and skills. There were 17 presenters representing seven agencies and groups delivering 14 presentations across a total of seven hours scheduled webinar programming.

Across the webinar series, there were 1,430 registrations received from around Australia and 12 overseas countries. Over the webinar series 96% of evaluation survey respondents agree that the session they participated in met their expectations.

93% agree that they heard about/ learned something that they are likely to use/apply.

Webinars are an effective way to share information about weed management after fire and with appropriate preparation and support, agencies can produce professional and effective webinar programs.

A report was published detailing how the webinars were planned, run and evaluated. The information and evaluation will help people contemplating and running webinars and similar activities in the future.

These webinars were funded by the Victorian Government's \$22.5 million Bushfire Biodiversity Response and Recovery program. For more information on the BBRR program, visit [www.wildlife.vic.gov.au/home/biodiversity-bushfire-response-and-recovery](http://www.wildlife.vic.gov.au/home/biodiversity-bushfire-response-and-recovery).

## Promoting awareness, understanding and control of weeds



### About us

The Weed Society of NSW was established in 1966. We provide opportunities for people interested in weeds and weed management to enhance and share their knowledge and skills. The Society supports weed research and students. We publish newsletters, organise seminars and workshops and support the New South Wales and Australasian Weeds Conferences.

### Join us

New members are always welcome. Visit our display at the conference to find out more about the Society. Membership is \$50 per year. Student membership is discounted to \$25 per year.

### For more information:

Website: <https://wsnsw.net.au/>

Email: [secretary@wsnsw.net.au](mailto:secretary@wsnsw.net.au)



## 10:30 - JANE KELLY

Charles Sturt University

### **Weeds managers guide to remote detection: Understanding opportunities and limitations for remote detection of weeds**

Remote detection is a 'game changer' for weed management, however current high-tech systems are expensive, technically-challenging and inaccessible for most land managers.

Charles Sturt University (lead); NSW National Parks and Wildlife Service; QLD University of Technology; South East, Murray & North Coast Local Land Services; and Bega Valley, Mid-Coast, Eurobadalla and Illawarra District Local Control Authorities recently received an Australian Government grant: "Weed managers guide to Remote Detection: Understanding opportunities and limitations of multi-resolution and multi-modal technologies for remote detection of weeds in heterogeneous landscapes". This collaborative project is using nationally-significant 'model' weed systems (hawkweed, African lovegrass and bitou bush) to test the limitations of high-resolution colour, multispectral and hyperspectral technologies across various airborne platforms (drone, satellite) using multi-modal machine learning to detect weeds in heterogeneous landscapes, with the goal of determining feasible approaches for managers.

We will develop guidelines to summarise opportunities and limitations of remote weed detection, with decision support to enable land managers to target investment and optimise use of available technologies. We will also deliver a Community of Practice to link researchers to end-users, facilitating collaboration in this rapidly changing field. Cutting-edge research will improve options for remote weed detection, facilitating broader adoption. This presentation will explain the technologies and methods being tested in this project. We also hope to engage a wide range of weed managers to be part of the project by providing advice, data and/or knowledge of weed systems to inform trials, as well as participate in the Community of Practice.

## 10:55 - WENDY MENZ

NSW National Parks and Wildlife Service

### **Finding hawkweed in NSW utilising drones and GIS**

Hawkweed is a very attractive daisy and an insidious herbaceous weed that has the potential to sterilise huge areas of agricultural land and destroy many threatened ecological communities. Hawkweed is a major weed in the USA, Canada, Japan and New Zealand and these countries provide a clear picture of what could happen in Australia if we do not take action to eradicate. Hawkweed now occurs in Australia along the south-east of the continent in NSW, Victoria and Tasmania.

The majority of hawkweed in NSW is currently in the Kosciusko National Park, and adjoining lands (east). Our difficulty is how do you find a small herbaceous weed with petite flowers, amongst an array of other plants, in areas as remote and rugged as the Alpine and Sub-Alpine regions of NSW. This presentation is about how the NSW hawkweed eradication program is using drones and GIS to find hawkweed.

(This presentation complements the 'Proactive adaptive management is critical to weed eradication success: Learnings from the NSW hawkweed eradication program' presentation, providing an introduction hawkweed in Australia, the NSW Hawkweed Eradication Program, current method of remote detection using drones and GIS, and progress on delimitation).

## 11:20 - ED CONEY

Coney Productions

### **Weed management after fire in the South-East**

After the drought, devastating fires and then the rain in the South East of NSW, the community are experiencing an influx of weeds not seen in a long while. Coney Productions has filmed a series of short videos from each fire affected LCA that are designed to educate their local communities about weeds in their region and a call to action – 'working together' to manage weeds on their properties. These videos will sit on LCA websites and in a library on the South East Local Land Services website. We would like to present these videos in a montage and discuss their impact on the community.



### 11:45 - KATHRYN SHEFFIELD

Agriculture Victoria Research, Victorian Department of Jobs, Precincts and Regions

#### **Automated detection of alligator weed (*Alternanthera philoxeroides*) from aerial imagery**

Integration of remote sensing technologies within weed biosecurity programs presents an opportunity to improve detection rates and the cost effectiveness of surveillance and eradication efforts. An automated method to detect patches of alligator weed (*Alternanthera philoxeroides*) in urban waterways from aerial photography was developed to test the utility of remotely sensed imagery as part of a surveillance and management program. Field data and aerial imagery captured across Greater Melbourne in 2009 were used to develop a Random Forests algorithm to identify alligator weed. Random Forests is an ensemble learning classification approach based on a cohort of decision trees.

Two methods were used to assess the accuracy of the classification algorithm. The statistical accuracy was calculated

using 5000 points randomly sampled from the validation data. The Random Forests algorithm had an overall accuracy kappa value of 0.70. The user accuracy (errors of commission) and producer accuracy (errors of omission) were 0.70 and 0.75 respectively. Maximising producer accuracy reduces missed detection of the target species, while a higher user accuracy indicates a lower false position identification. Six localities were also examined to determine individual alligator weed patch detection rates. Overall the image analysis identified 96% of known patches, with 100% of patches detected at four localities. These results indicate a low rate of false negative identifications.

The resulting algorithms were then applied to aerial imagery acquired between 2009 and 2018. Field data available in the corresponding years were used to assess the transferability of the algorithms between years and images, and produce a historical timeseries for selected sites.



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## 13:10 - JULIA RAYMENT

University of Wollongong/NSW Department of Planning,  
Industry & Environment

### **Managing the invasion Exotic Perennial Grasses in native communities: development and case study of a new Risk Assessment tool**

Exotic Perennial Grasses (EPGs), such as serrated tussock and African lovegrass, are a major threat to native plant communities and agricultural land across NSW and nationally. With sites often invaded by multiple species, it can be difficult to know which species are high risk and should be prioritised for control. We developed a risk assessment tool to compare invasive characteristics of functionally similar grasses, while also assessing the availability and confidence of information. Characteristics covered four broad themes of 'Arrival, Establishment, Persistence and Impact' as well as Biogeography. In total, 21 EPG species were assessed from sites across NSW. Grasses with economic benefit (trade-off species) were among the highest risk. Several invasive grass species had high levels of uncertainty regarding available information. Characteristics such as competitive ability and impact to ecosystems had a lack of data, indicating areas where future research should focus. Field surveys to determine if the high-risk species are the most invasive found a positive relationship between EPG occurrence and risk score. A suite of previously unassessed EPG species with high presence in grassland sites were also ranked, confirming that field surveys and the risk assessment work together cohesively. While some EPG species were widespread, EPG invasion varied at regional and community levels, indicating local variability in invasive potential and therefore management. The findings highlight a fundamental knowledge gap between invasive grasses and native communities and showcase the potential applications for the risk assessment tool for managing invasive grasses across NSW.

## 13:35 - NICOLA DIXON

NSW Department of Primary Industries

### **A risky business – Biosecurity and the cut-flower industry**

The *Biosecurity Act 2015* regulates all plants in NSW based on the risk they pose to the economy, environment and communities, including invasive plants that are traded for their desirable ornamental properties. Two recent examples provide insight for authorised officers seeking compliance from plant sellers under this risk-based regulatory framework:

- i) a biosecurity permit system implemented by the NSW Department of Primary Industries and three local control authorities in the Greater Sydney region. The system applies controls to the production and sale of two asparagus species (*Asparagus plumosus* and *Asparagus aethiopicus*), and two willows (*Salix matsudana* and *Salix nigra*). The sale of these species is ordinarily prohibited; however, the system authorises five growers and sellers that eliminate biosecurity risk by devitalising plants to continue to supply and sell those species within the Sydney Flower Market.
- ii) risk mitigation measures performed by an importer of pampas grass (*Selloana cortaderia*). The weed risk posed by the decorative seed heads is eliminated through a treatment process that makes plant material non-viable. Each stem is numbered, traceable, and labelled with consumer awareness information. These measures are sufficient for the seller to discharge their general biosecurity duty in order to supply and sell a regional priority weed in Greater Sydney. The seller consulted with NSW Department of Primary Industries, Greater Sydney Local Land Services, Strathfield Council and the Australian Government to obtain an import permit that meets national, state and regional requirements.

Authorised officers along the supply chain request evidence of treatment, seek records of movement and traceability, take samples for viability testing and provide an appropriate response when sales of cut flowers and foliage contravene the Act. The presentation highlights the essential components of the regulation and compliance process for priority weeds that are traded by the cut flower and foliage industry.

## 14:00 - GREG HOLLAND

Main Creek Catchment Landcare Group

### Community efforts to halt the spread of an early-invader weed - Karamu

The presentation will describe the ongoing saga of community attempts to halt the spread of Karamu (*Coprosma robusta* Raoul) on the Mornington Peninsula.

Karamu is a fast-growing, highly-invasive, New Zealand-native vascular-plant to 6 m that has gained footholds on the Mornington Peninsula, Dandenong Ranges, and Glenelg regions. It forms dense thickets that have destroyed existing understory vegetation in 2-3 years and ultimately overwhelmed all native vegetation. In Tasmania, Karamu has spread over substantial areas along the Derwent River, including wetlands, and has been declared a noxious weed. Genetic analysis has confirmed that local Karamu is hybridising with the native Prickly Currant Bush (*C. quadrifida*). These hybrids have been demonstrated to be fertile, both under cultivation and in the wild. Furthermore, there is growing evidence that locally Karamu presents a direct and emerging threat to communities of state

and federally listed species such as Venus-hair Fern (*Adiantum capillus-veneris*), Moonah (*Melaleuca lanceolata*), Leafy Greenhood Orchid (*Pterostylis cucullata*) and Coastal Helmet Orchid (*Corybas despectans*).

A major campaign by local Landcare groups and supported by shire, catchment and water authorities to eradicate Karamu at its early invasive stage has had mixed success. Several extensive mature infestations have been eradicated and efforts continue to treat emerging seedlings. But other infestations are being discovered and Karamu is spreading into our National and State Parks. A summary of this campaign and the known extent of infestation will be presented.

To support the local campaign and to raise Victoria-wide awareness of the threat, we applied for Karamu to be registered as a Potentially Threatening Process under the *FFG Act 1980*. This was a daunting marathon over two years with substantial volunteer effort and cost. But it was ultimately unsuccessful. Some comments will be made on the saga and its implications.

## NSW Department of Primary Industries supports weeds management throughout NSW



### Responses

DPI leads the responses to new incursions of state priority weeds including Parthenium weed, frogbit, miconia, Mexican feather grass, rubber vine, alligator weed and tropical soda apple.



### Research

We conduct weeds research and collaborate with researchers interstate and internationally. This research includes integrated weed management and weed biological control.



### Training

We provide extension, education and training services, including the *Getting to know Prohibited matter* course and Weeds Officer Induction training.



### Information

NSW Weeds Information Database - provides information for over 325 weeds on the WeedWise website and app.

NSW Weeds Risk Management System - supports vital planning and compliance programs for priority weeds.

Weeds Extranet - facilitates information and resource sharing for weeds professionals in NSW and interstate.

Biosecurity Information System - captures state-wide weeds data.



## 14:25 - LYN COULSTON

Victorian Blackberry Taskforce

### Community Connections and Response/Recovery

Learning from natural disasters and planning for the future was the basis for the land management recovery network put in place in the Upper Murray area of North East Victoria post the 2019-2020 bushfires. Local knowledge, experience and strong community connections enabled the Upper Murray Landcare Network (UMLN) and North East Blackberry Action Group (NEBAG) joint Steering Committee to meet 3 weeks after the fires and plan a response to support land managers in their efforts to rehabilitate their land. The extensive data base of people who had been engaged by both groups over 15 years was used to invite everyone to contact the Committee via an Expression of Interest to receive a property visit. To the end of June 2021 UMLN project officers and volunteers had undertaken 149 property visits, mapped and measured all required on ground works and applied for and received over \$230,000 for land restoration works and \$30,000 for Parks Victoria managed Pheasant Creek Flora Reserve vegetation assessments and weed control.

The impacts of the fires were exacerbated by extreme rainfall events less than a month later and calls for assistance with controlling the resulting runoff and erosion were answered by the Landcare team with the provision of coir logs and other materials to protect a home water supply or a farm dam.

Blackberry was the first weed to emerge after the January rains. Using the NEBAG contact list and supported by a grant from the North East CMA, 30 landholders were given contractor assistance with chemical treatment once the plants were large enough. The timely, integrated and inclusive support program for land rehabilitation was possible because structures were in place to respond quickly. Strong partnerships with private and public land managers enables the seamless delivery of the community led response which is meeting the land management needs of participants.

## 15:30 - MARK HAMILTON

NSW National Parks and Wildlife Service

### Proactive adaptive management is critical to weed eradication: Learnings from the NSW hawkweed eradication program

Weed eradication poses extreme challenges, not the least of which is to find all target plants. A suite of other requirements, such as maintaining resources and commitment from all stakeholders; understanding the target weed's biology; ability to prevent re-invasion; maintaining effective controls and the ability to control all plants, must continue for the duration of the eradication program. Given eradication requires long-term commitment, programs must continually re-assess and proactively adapt on-ground activities and resource allocation as new information or challenges come to light. The NSW Hawkweed Eradication program began in 2009, and just over 10 years later, has seen multiple adaptations. Most recently, a large, discreet infestation was discovered ~40km distant to the nearest known sites. This has increased the size of the potential search area from ~30,000 ha to over ~150,000 ha, necessitating a major shift in surveillance strategies and, hence, resource allocation. A greater focus on broad scale surveillance using remote detection (e.g. drones, helicopters) is now required, but given resource limitations, this must be balanced with reducing 'traditional' local-scale human surveillance, while still preventing reproduction and spread in known locations. This presentation details the range of activities and tools necessary to manage a large-scale eradication program, and how these must adapt and change over time. This includes time-to-eradication modelling to inform decision making; vector and dispersal analysis; and resourcing, researching and implementing cutting-edge remote detection techniques for broad scale surveillance and detection.

## 15:55 - AIMEE FREIMANIS

Ecohort Pty Ltd

### Plant Sure: Making it easier for everyone to Garden Responsibly

The greenlife industry reported over 2.5 billion plants sold across Australia in 2020. The supply chain supplies 30,000 different plant varieties (75% of which are garden ornamentals), traded by over 1600 nurseries nationally, to individuals, businesses and governments.

Considering 72% of introduced plants naturalised in Australia are considered garden escapes and that research suggests at least 12 new plant naturalisations will occur each year, preventing or reducing use of invasive ornamental garden plants is critical to reduce the impact of invasive weeds on biodiversity.

The Plant Sure Scheme and Gardening Responsibly Initiative are designed to make it easier for everyone to garden responsibly, using positive engagement to encourage pro-environmental behaviour to reduce the risk of future landscape scale weed invasions.

The Initiative allows industry to value-add to traditional ornamental plant sales; government to access new predictive tools and knowledge about plant risk; and the community to garden proudly and safely for the benefit of the environment.

The 'Certified Gardening Responsibly' eco-label provides an easy way to identify, provide access to and increase demand for, low invasive risk ornamental garden plants. A transparent and accessible website platform explains how plants qualify for the eco-label certification. There are four key components to the platform:

- 1. Eco-Label** – Logo and branding to identify “Certified Gardening Responsibly” plants.
- 2. Research Portal** – User-friendly functionality to provide transparent information and increase accessibility to robust plant risk assessments including for cultivars and subspecies, so that it can be trusted by industry, government and consumers.
- 3. Plant Sure Scheme** - Promoting the supply and development of “Certified Gardening Responsibly” plants.
- 4. Gardening Responsibly Movement** - Choosing and recommending “Certified Gardening Responsibly” plants and maintaining healthy, beautiful gardens and Australian landscapes.

This presentation demonstrates platform functionality and accessibility, and outlines opportunities for government, industry and the community to participate.

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## 16:20 - KERRIE GUPPY

Aus Eco Solutions

### **Efficacy of Steam Weed Management on Mother of Millions (*Bryophyllum species*), Singapore Daisy (*Sphagneticola Trilobata*) and Butterfly Heaven (*Dyschoriste Depressa*)**

Mother of Millions (*Bryophyllum species*) and Singapore Daisy (*Sphagneticola trilobata*) are both significant weeds in NSW and Queensland, with the potential to be a significant weed in Victoria due to their ability to rapidly spread. Dyschoriste or Butterfly Heaven (*Dyschoriste depressa*) is an emerging environmental weed in Queensland that has spread at an alarming rate in the last 20 years across Brisbane. Mother of Millions is also toxic to livestock, and potentially in large enough doses to humans and pets. All these weeds are challenging to control as the smallest cutting can regrow and/or herbicides have been found to have limited effect.

This paper explores the efficacy of saturated steam weed management on Mother of Millions, Singapore Daisy and

Dyschoriste across a variety of environments. Saturated steam weed management has been found to have varying degrees of success depending on the soil structure i.e. mulched or sandy sites. In some cases, the weeds are effectively eradicated with one treatment and in other cases require multiple treatments with saturated steam. In the case of Dyschoriste, saturated steam has been demonstrated in the field to be the most effective treatment method. Some of the coastal sites in NSW were severely impacted by the 2019-2020 Black Summer Fires and these impacts on weeds, spread and saturated steam weed management will be covered. This paper also explores factors to improve success rates.

Cited case studies include urban bush regeneration sites in Brisbane, coastal sites at Morton Bay in Queensland, and coastal sites at Wallabi Point in NSW.





# SPEAKER ABSTRACTS

## WEDNESDAY 23 MARCH

### 8:30 - JODIE BARTLETT-TAYLOR

NSW Department of Primary Industries

#### Training pathways for weeds professionals

Beyond having the basic training required to do the job, a weeds biosecurity officer also requires a stock of current skills to manage emerging trends in the weeds industry. Acquiring these takes time and are best integrated with on-the-job experience. The Weeds Action Program Training project has commenced with varied levels of training to better equip a weeds biosecurity officer, acknowledging that some are very new to the industry, and others have decades of experience. From an induction package through to Diploma level qualifications the training pathway will provide opportunity for upskilling on a range of technical and soft skill areas. Of note is the Getting to Know Prohibited Matter training, developed in 2021 in direct response to feedback from the industry. We present to you a framework for providing a pathway for progression as a weeds professional which will be invaluable for the delivery of Biosecurity measures across NSW. It will also provide personal growth for your career within the industry.

### 8:55 - ROD ENSBEY

NSW Department of Primary Industries

#### Parthenium

Parthenium weed (*Parthenium hysterophorus*) is identified as a significant biosecurity risk in NSW and is listed as prohibited matter in Schedule 2 of the *NSW Biosecurity Act 2015*. It invades pastures and crops, is unpalatable to stock, contaminates grain and fodder, causes severe human health issues including, respiratory problems and dermatitis.

NSW has a longstanding successful program of detecting and eradicating incursions of parthenium weed since 1982. Since April 2020, parthenium weed has been detected on 30 infested premises (IPs) as new incursions across NSW. Three of these IPs have multiple sites of infestation bringing the total sites to 41. This is the highest number of outbreaks since 1999 and 9 IPs are the first recorded presence east of the Great Dividing Range.

Of the 30 IPs, 12 are still in delimitation phases with further on-ground surveillance activities planned. The remaining 18 IPs have moved to monitoring for eradication phases with follow up inspections of control efficacy to be conducted by the relevant local control authorities. Six multiagency delimitation exercises were coordinated, at Missabotti, Palmvale, Croppa Creek, Broughton Village and Parkes, where Department of Primary Industries coordinated with staff from local control authorities and Local Land Services to survey areas surrounding the incursions.

Croppa Creek remains the most challenging incursion to delimit and treat. Following the 2 surveillance exercises thousands of plants have been detected and treated over an 8 km stretch of creek line.

Severe drought conditions during 2017 to 2019 have exacerbated the spread of parthenium in NSW, particularly through drought relief fodder and grain and its transportation from QLD. A new vector of spread, contaminated organic chicken feed from QLD, is now providing additional challenges. This paper will look at how parthenium weed has entered NSW, the response surveillance exercises, and the cooperation between agencies to combat this dramatically increased rate of incursion.

## 9:15 - RAELENE KWONG

Agriculture Victoria

### Biological control of weeds in Victoria: an overview of current R&D programs

Victoria has had a long history of utilizing natural enemies such as insect herbivores and pathogenic fungi to help control widespread weeds. While funding cut-backs at state federal levels during the early 2000s seriously jeopardized Victoria's biocontrol R&D capacity, the tide has finally turned. Through national initiatives, such as the Rural Research and Development for Profit Program, a swathe of new biocontrol programs have been initiated across Australia involving multi-agency collaboration Australian and overseas scientists.

This presentation will provide an overview of current research being conducted, primarily by Agriculture Victoria, on the classical biological control of weeds across south-eastern Australia. In particular, it will focus on the development of new biocontrol agents against sagittaria (delta arrowhead), silverleaf nightshade, wandering tradescantia, blackberry and serrated tussock. The following topics will be covered: (1) How are potential biological control agents discovered in the

weed's native range?; (2) What goes on behind the closed doors of a biocontrol quarantine facility? (3) How can I get my hands on some biocontrol agents?

## 10:35 - GREG LEFOE

Agriculture Victoria

### Assessing potential new biocontrol agents for silverleaf nightshade

Biological control has been proposed to reduce the extent and impacts of silverleaf nightshade *Solanum elaeagnifolium*; a Weed of National Significance in Australia. The leaf beetle *Leptinotarsa texana* was introduced to South Africa from the USA and is now an effective biological control of silverleaf nightshade in that country. However, quarantine studies conducted at Agriculture Victoria's AgriBio facility concluded *L. texana* is not suitable for introduction to Australia. Recent overseas surveys and experiments in the weed's native range have highlighted two new agents with potential for Australia: the lacebug *Gargaphia arizonica* from Texas, USA, and a mite *Aceria* sp. from Argentina. Research is now focussed on assessing the risk of these prospective agents to Australian *Solanum* and to closely related crops such as potato and tomato.

## 10:10 - ANDREW MCCONNACHIE

NSW Department of Primary Industries

### Progress on the biocontrol of Ox-eye daisy (*Leucanthemum vulgare*) in Australia

Andrew J. McConnachie<sup>1</sup>, Sonja Stutz<sup>2</sup>, Ashara Patterson<sup>1</sup>

<sup>1</sup>Weed Research Unit, Biosecurity NSW, Department of Primary Industries, Orange, NSW

<sup>2</sup>CABI, Delémont, Switzerland

Ox-eye daisy, *Leucanthemum vulgare* Lam. (Asteraceae) is a rhizomatous perennial that is native to Europe and which has become an invader in over 40 countries (including Australia and New Zealand). Mature plants can produce up to 26,000 seeds, which are dispersed by animals, vehicles, and water. Seed longevity is high and up to 80% of propagules are viable for six years (with some reportedly up to 39 years). The weed is not palatable to cattle and affects pastoral lands by reducing carrying capacity. Dense infestations exclude other plant species, leading to soil erosion and depletion of soil organic matter. A declared weed in Victoria, in NSW ox-eye daisy is found in the Northern Tablelands, Barrington Tops, the Central Tablelands and the Southern Alps. The species appears to thrive in disturbed areas such as roadsides and cleared land, however, of greatest concern is its ability to aggressively invade undisturbed sub-alpine grasslands, snow gum woodlands, and wetlands in Kosciuszko National Park. While mechanical and chemical control can be successfully implemented to manage localised infestations of ox-eye daisy, there is an urgent need for the sustainable management of this invasive plant at the landscape scale, especially in conservation areas. In this regard, a programme to investigate prospects for the classical biological control (biocontrol) of ox-eye daisy was initiated for NSW in 2015. Based on significant research by CABI Switzerland since 2008 in advancing knowledge around ox-eye daisy biocontrol for affected North American countries, NSW gained permission to tap into this programme. Two candidate biocontrol agents looked immediately promising for further testing in Australia; a rhizome-feeding moth, *Dichrorampha aeratana* (Lepidoptera: Tortricidae) and a root-feeding weevil *Cyphocleonus trisulcatus* (Coleoptera: Curculionidae). The former was imported into Australian quarantine in 2017, while the later was imported in 2020. Extensive host-range testing of these agents has occurred both in their native range in Switzerland and under quarantine conditions in Australia. The results of these trials and the prospects of both insect species as potential biocontrol solutions in Australia will be discussed.



11:00 - BEN GOODEN

CSIRO

**Release of the leaf-smut fungus (*Kordyna brasiliensis*) to help control wandering trad (*Tradescantia fluminensis*) - an update on progress in NSW and Victoria**

Wandering trad (*Tradescantia fluminensis*) is a significant invasive groundcover herb of temperate and subtropical forest ecosystems of south-eastern Australia. Its invasion is strongly associated with declines in native vegetation diversity and degraded ecosystem function. In 2019, a biocontrol agent (leaf-smut fungus, *Kordyana brasiliensis*) was released in Victoria, in partnership with volunteer community members, to help control wandering trad. Releases were focussed on sensitive riparian ecosystems where the application of herbicides is undesirable due to non-target damage to native vegetation. The fungus was subsequently released across NSW in 2020 (which will be ongoing until 2022, with generous support from the NSW

Environmental Trust). In our presentation, we will first present the results of native vegetation and weed abundance surveys across Victoria and NSW prior to release of the fungus. These data provide a baseline against which efficacy of the fungus on the target weed and impacts on associated vegetation will be evaluated over the next few years. Second, we will outline the development of methods used to release the fungus in collaboration with community volunteers and explore the role of community networks in biocontrol stewardship. Last, we will present the first year of data on fungal establishment, including estimates of its spread and impacts on the target weed.



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## 11:25 - JACKIE STEEL

Agriculture Victoria

### **Validating the New Zealand Biocontrol Risk Model for Australia**

Laboratory-based host specificity testing is an effective tool for predicting the likelihood a proposed biocontrol agent could damage crops and plant species other than the target. However, sometimes “false positives” occur when insect agents accept non-target plants for oviposition and/or larval development whereas under natural conditions these plants would not be attacked. False positive results may lead to an agent being rejected for release when it was most likely host specific.

New Zealand regulatory authorities have adopted a quantitative risk analysis approach to interpreting potential false positive results. This technique uses host specificity data to determine a threshold score that indicates which agents are most likely to cause off-target damage post-release. We propose to validate this method for Australian weed biocontrol targets as part of the AgriFutures Biocontrol of Weeds project, supported by funding from the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit program. We collated host specificity data on adult oviposition and larval development to calculate a “performance risk score” for the likelihood of damage to non-target plants. We then used field surveys to assess whether established weed biocontrol agents are causing damage to non-target plants that showed some level of agent acceptance under host-specificity testing. Whilst there have been few ad-hoc reports of established agents causing off-target damage in Australia, there has not been a systematic survey of agent host-use to determine how often this is occurring in the field. Our surveys focussed on south-eastern Australia, with alligator weed, gorse, ragwort, St John’s wort and English broom being amongst some of the weeds that were targeted. Our regulatory authorities have indicated that they would consider incorporating an Australian-tailored Biocontrol Risk Model into the Import Risk Assessment process. If adopted it may reduce the likelihood of safe agents being rejected because the assessors will have more confidence interpreting host specificity testing data.

## 10:10 - MATT BELL

Agriculture Victoria

### **Port Macquarie-Hastings Council Save water, save time, maximise efficiency with Sprayrite**

In 2018/19, over 7.2 million mega litres of water and chemicals were applied to crops and pastures across Australia. Whilst we all strive to minimise herbicide use and save water, once in a while we need a break-through to take the next step toward greater efficiency.

Tired of performing the same series of calculations when calibrating the roadside spraying truck, and seeing other chemical applicators on Council suffer failures due to inaccurate speeds and mixture ratios, Ben White sought to automate and simplify the boom spray calibration process.

After much trial and error, a chance meeting with software developer Dave Balkin from eBoss led to the development of the Sprayrite app.

Sprayrite combines linked mathematical formulas to instantly calculate the correct ratio of chemicals, fertilisers and other ameliorants to water, for a wide range of applications across various agricultural industries. The app takes users’ input to calculate the amount of product needed for the total land area and total spraying time, providing the most efficient volume of time and water required for the task. It also calculates the amount of product needed in each tank, total number of tanks and time it will take for each tank to empty.

This is extremely useful for managers and supervisors in Council operations, turf producers, golf courses, graziers, wine producers and more. Managers can perform the calculations with staff to gain confidence in exactly how much product, water and time a spraying task will take.

Sprayrite is a free app for use by anyone undertaking boom spray programs, saving time and water while maximising efficiency.



# NEWP

NATIONAL  
ESTABLISHED  
WEED  
PRIORITIES

The National Established Weed Priorities (NEWP) Framework is a long-term initiative to determine and address shared weed priorities through strategic, nationally coordinated actions.

Building on the proven model of Weeds of National Significance (WoNS), the Framework seeks to reduce the economic, environmental and social impacts of weeds through the following delivery streams:

|   |  |   |
|---|--|---|
|  <p><b>WoNS</b><br/>WEEDS OF<br/>NATIONAL<br/>SIGNIFICANCE</p> <p>Facilitating action on<br/>priority established weeds<br/>through new WoNS</p> |  <p><b>WINS</b><br/>WEED ISSUES<br/>OF NATIONAL<br/>SIGNIFICANCE</p> <p>Developing collective<br/>solutions to priority<br/>established weed issues</p> |  <p><b>NEWAL</b><br/>NATIONAL<br/>ESTABLISHED<br/>WEED ACTION LIST</p> <p>Coordinating discrete<br/>priority actions with national<br/>benefit</p> |
|---|--|---|

The draft NEWP framework will be available for download in late March.  
You will also be able to provide comment of the draft.

Go to <https://haveyoursay.awe.gov.au/>

For information about the NEWP framework and its development, visit  
[www.wildmatters.com.au/national-established-weed-priorities/](http://www.wildmatters.com.au/national-established-weed-priorities/)



## 10:35 - TOM PICKERING

Hilltops Council

### Hume highway granula flupropanate aerial trial in collaboration with Transport NSW (previously NSW Roads and Maritime Services)

The Hilltops council region is in the Southwest Slopes NSW. Within the region is the Hume Highway which has a significant infestation of African Lovegrass. It was estimated that to control this infestation using grounds crew would take 4 weeks and cost \$200k. In contrast, the use of granulated Flupropanate would take 7.5 hours and cost \$65K. Further, the using a granular product over liquid meant the product could enter through the tree canopy and land at the base of the trees, which meant inaccessible terrain could be targeted aerially, that was otherwise unsuitable for vehicle or foot control. Additionally, the granular product provides 2 years residual effectiveness on the ground for continuous weed management.

On the 8th December 2020 Hilltops Council, in collaboration with Transport NSW, conducted a trial on the Hume Highway to control African Lovegrass with granular Flupropanate via aerial application. This trial was a 'first' in NSW for a council to work with Transport NSW on a major weed control program on the Hume Highway in the South East region and took around 8 weeks of planning and meetings before the event. Planning included employing an agronomist to work out the amount of product required to target the weed with minimal impact to native species and organising 35 traffic control staff and vehicles for the day. The result of the trial has been development of a strong relationship with Transport NSW who have agreed to assist again 2 years with a similar event. Working with Transport NSW, the weeds officers achieved control of 300ha<sup>2</sup> on the outside road shoulders and centre islands of the highway in one day with minimal disturbance to traffic. There have been many lessons learned from the experience and it is hoped to effectively control the spread on this high-risk pathway.

## 11:00 - CHARLES MCCLINTOCK

Sumitomo Chemical Australia

### Introducing Clipper Herbicide

Clipper Herbicide is a fast-acting contact herbicide that controls selected floating, emergent and submerged aquatic weeds and algae.

Clipper Herbicide is formulated as a large diameter effervescent tablet contained in a water-soluble wrapping which can be applied by either direct application to the water body or dissolved and applied through conventional spraying equipment.

Each tablet contains 15 grams of FLUMIOXAZIN, a PPO-inhibitor herbicide with unique physical, chemical and environmental properties which makes it suitable for the control of a diverse range of invasive aquatic weeds with no adverse effects against non-target plants, bird life and aquatic fauna.

## 11:25 - VICTOR GALEA

University of Queensland & BioHerbicides Australia

### Stem implanted herbicides and bioherbicides – improved efficiency and sustainable outcomes for woody weed management.

A stem implanted capsule technology developed by BioHerbicides Australia and the University of Queensland has resulted in improved and more sustainable outcomes for woody weed management. The technology utilises either dry formulated chemical (synthetic) herbicides or biological material (fungal bioherbicides) packaged in size 0 hypromellose pharmaceutical capsules. The capsules are introduced to the target using a specifically engineered device, the Injecta®, that drills a hole into the stem allowing for rapid implantation of the capsule and its sealing in place with a wooden plug. The Injecta unit is powered by a cordless drill, is portable and easy to use with a removable magazine that holds 30 doses.

Treatment of the target is based on a standard dose of one capsule per 10 cm of stem circumference, irrespective of the herbicide in use. However, when using a bioherbicide, only a single dose is required for a tree of any size given the biological (inoculative) nature of the process. A bioherbicide (Di-Bak Parkinsonia) for the treatment of invasive parkinsonia (*Parkinsonia aculeata*) has been registered for use, and available for sale since December 2018 giving excellent control of this weed under rangeland situations across northern Australia.

Chemical herbicides such as those based on glyphosate (Di-Bak G, registered in November 2019), and those in development; Di-Bak I (Imazapyr), Di-Bak M (Metsulfuron methyl), Di-Bak AM (Aminopyralid + Metsulfuron methyl) have been proven effective across a wide range of woody weeds and have applications in forestry practice.

The process of implanting the dry formulated capsules leads to more efficient and controlled use of the active ingredient that eliminates environmental escape resulting in tree kills with at least a 30% reduction in herbicide use, and greater environmental safety. The (concentrated) formulation of the herbicide in capsules results in a lightweight and clean product that reduces operator exposure removing the need for excessive PPE. The elimination of the need for a liquid carrier further reduces the weight and bulkiness of equipment and resources, thus increasing portability and readiness of this system for use.

Extensive trials across Australia have shown this system to be a viable alternative to liquid based woody weed management systems for a wide range of environmental, agricultural and forestry weeds.

## 13:15 - CLAIRE LOCK

NSW Department of Primary Industries

### WeedScan - a website and smartphone app for identifying, reporting and managing priority weeds in Australia

C Lock<sup>1</sup>, A Mitchell<sup>2</sup>

<sup>1</sup>NSW Department of Primary Industries, Wollongbar NSW

<sup>2</sup>CSIRO, Black Mountain ACT

Mobile apps like PlantSnap and PictureThis have revolutionised plant identification through artificial intelligence, which can analyse a plant photo and instantly suggest what the plant may be. The potential of accessible, rapid diagnostic tools to aid the early detection of emerging weeds is clear; however, existing plant identification apps are often paywalled and typically do not tell users whether their plant is a weed, link them to locally-relevant weed management information or facilitate the reporting of priority weeds to government weeds staff. To bridge this gap, WeedScan is being developed by the Centre for Invasive Species Solutions, CSIRO and the NSW Department

of Primary Industries (DPI) with input from other states and stakeholders. The first release of the WeedScan website and smartphone app is scheduled for mid-2023.

WeedScan's artificial intelligence model is being trained by CSIRO to recognise approximately 300 priority weed species across Australia and will help users to identify weeds from photos, with this aspect of the smartphone app working offline. Identification suggestions will include links to existing weed profiles, which will be filtered according to the user's state or territory if known. Additionally, users will be prompted to make a record if the weed is a priority in their state or territory. If a user records their weed observation, alerts will be sent to government weeds staff who have set up notifications for the weed in that state or local government area. Public WeedScan records will be visible on a map which can be viewed and interrogated by users. NSW DPI is continuing to scope WeedScan's functionality through user workshops across Australia. Once fully developed, WeedScan will be a valuable tool for farmers, agronomists, landholders, weeds officers and NRM groups to improve weed identification and management.



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## 13:40 - JENNIFER CUNNINGHAM

Petaurus Education Group

### **Where weed management begins; a report on a joint agency educational pilot program**

The Weed and Biosecurity Officers engaging with communities to coordinate weed management practices are highly skilled individuals that understand the social, economic and environmental impacts of weeds on these communities.

As weed management has become more focussed on an individual's or group's responsibility, much more information and targeted communication strategies need to be provided. This communication supports the communities understanding of weed management and biosecurity obligations.

When Murray and Riverina Local Land Services developed a new Weed Identification Book for their communities and stakeholders, some strategic supporting actions were identified:

- Develop high quality, interactive educational resources for the community
- Work with the Weedwise app to maintain clear and consistent messaging
- Involve local Weed and Biosecurity Officers
- Start at the heart of each community, the school.

The resulting pilot program incorporated a range of communication and participation mechanisms to work with individuals, schools and community groups. This presentation explores the pilot project's results and considers how a diversity of local-based communication methods can achieve the most significant change.

## 14:05 - LILY BERRY

Eurobodalla Shire Council

### **Chain chain change part 3 - behaviour change strategy for Lantana on the far south coast NSW**

Lantana in the Tilba area of the far south coast NSW represents the most southerly distribution of the plant in Australia. As such, it is vitally important to ensure this southerly front is contained, and continually subject to control. Community-based social marketing (CBSM) was trialled in this area in 2016 and allowed us to identify behaviours with respect to landholders not controlling lantana, and to develop mechanisms that help them to overcome those barriers. CBSM is a five-step behaviour change framework applied globally to foster environmentally sustainable behaviour (McKenzie-Mohr 2011). The framework encourages use of proven social marketing techniques such as commitments, goal setting, norming, incentives, social diffusion, prompts, communication, framing and convenience to achieve behaviour. Council presented results of the pilot at the 17th NSW Weeds Conference in Armidale (Chain chain change Part 2) and this showed the behaviour change strategy that was to be applied broadly across the target area, which focused on reducing access barriers (topography, access to lantana infestations and access to splatterguns), training and social diffusion. Council rolled out the strategy in the target area in 2017, and have been busy building it into the lantana control program.

Fast forward 5 years and Council has evaluated the strategy as part of our continual improvement processes. The evaluation results offer some interesting insights into the strategy, its successes and learnings that will help us to refine the program and better inform our eco-social marketing programs into the future. This strategy will be of interest to those who wish to add something else to their weed management toolkit.

## 12:30 - MEGAN WYLLIE

Local Land Services, South East

### Crime Stoppers Campaign - the emerging online trade of weeds

The rapidly expanding online trade (e-commerce) is a relatively new worldwide biosecurity challenge and it is increasingly becoming a major prohibited weed pathway.

The online marketplace is an emerging pathway for the trade of prohibited matter species such as aquatic weeds and *Opuntia* species and has had significant detections online via Gumtree, Facebook and Ebay. These have been found being sold online in New South Wales which has ramifications under the *Biosecurity Act 2015*. The importance of public awareness and stakeholder engagement in managing this pathway has been highlighted by the high detections of sales online in NSW.

Local Land Services, Local Government Authorities, DPI and the Nursery & Garden Industry of NSW and ACT (NGINA) initiated a pilot project in 2020 with Crime Stoppers to address this emerging pathway for detection of State prohibited weeds, specifically water hyacinth, salvinia and frogbit and prohibited opuntia species such as Eve's needle, Aarons beard and prickly pear.

Crime Stoppers developed a social media campaign to target, educate and motivate the community with regards to the illegal trading the afore mentioned species of aquatic weeds.

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