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COUNTRY



ACT NATURAL RESOURCE MANAGEMENT COUNCIL



# Report of the ACT Weeds Forum

9 March 2012



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# ACT Weeds Forum 9 March 2012

## Introduction

Invasive weeds are one of the most intractable and challenging biosecurity issues affecting the ACT. Our rural lands, conservation areas, roadsides, urban areas, and river corridors are increasingly affected by invasive weeds, and in some cases, choked by monocultures of particular weed species. Despite the recent efforts of the ACT Government, land managers and volunteer communities, we do not seem to be stemming this tide and climate change is only likely to exacerbate the problem.

On 9 March 2012, the ACT Natural Resources Management Council hosted the ACT Weeds Forum, with support from the Australian Government's Caring for our Country program and the ACT Government.

The forum aimed to:

- draw on and distil the expertise, experience and practical insights of scientists, land managers, weed policy specialists, rural landholders, ParkCarers and Landcarers; and
- explore fresh approaches to further help reduce the prevalence and spread of existing weeds and the incursion of new weed species in a changing climate.

This report summarises the presentations and recommendations to come out of the ACT Weeds Forum, and proposes a pathway forward to seek engagement of key stakeholders in the implementation of Forum proposals.

The ACT Weeds Forum Report is structured in the following way:

- Summary of Forum presentations: Distillation of experience, knowledge and practical insights into weeds in the ACT
- Summary of the outcomes of the Forum Workshopping session
- What next – what will happen to the outcomes of the ACT Weeds Forum?
- Key Proposals from the ACT Weeds Forum
- ACT Weed Forum presentations, discussions and brain-storming
- **Appendix A** - The forum program
- **Appendix B** - Workshop participants

## ***Summary of Forum presentations: Distillation of experience, knowledge and practical insights into weeds in the ACT***

Chair of the ACT Natural Resources Management Council, Dr Sarah Ryan opened the Forum by outlining the objectives of the forum, which were:

1. To develop some concrete actions for more effective weed control in the ACT
2. Co-production of knowledge – thinking and learning together

The Forum's three keynote speakers addressed climatic, environmental and social challenges and opportunities in weed management. Dr Paul Downey from the Institute for Applied Ecology, University of Canberra spoke on weeds, biodiversity and climate change – current and future challenges for the ACT, reminding the audience that climate is the primary determinant of a species distribution and species responses to climate change are already being observed. He recommended a risk assessment approach to prioritise where resources should be deployed for most effective and efficient weed control – with climate change included in the assessment.

Dr Ken Hodgkinson, CSIRO, member of North Belconnen Landcare Group, drew on a recent paper from the *Journal of Ecology*, to challenge current weed management paradigms. He posed a number of weed management paradigm shifts, including challenging the view that plant traits can assist in predicting species invasiveness. He described his work trialling different treatments on a weed-infested grassland in Evatt, Canberra and drew some initial conclusions on the value of fire in promoting native plant competition with weeds.

Dr Lyndal-Joy Thompson of the Australian Bureau of Agricultural and Resource Economics spoke on an ABARES social network analysis of weed governance in Australia. All stakeholders in weed management were surveyed to determine whether the formal governance system for weed control is working as expected and what opportunities exist for improvement.

Speakers in the second session of the forum focussed on weed control in the ACT and beyond – the current practicalities and future possibilities. John Feint, from the Environment and Sustainable Development Directorate spoke about the ACT Weeds Strategy and reconvening the ACT Weeds Working Group – a cross-border, cross-tenure group convened to achieve collaboration and cooperation in weed management.

Steve Taylor, Senior Weed Management Officer, ACT Parks and Conservation Service, Territory and Municipal Services Directorate (TAMSD), spoke about the ACT Government's approach to prioritising and addressing weed management in non-urban areas of the ACT, using risk matrices, and a triage approach. Government mowing and weed control priorities in the urban areas of the ACT was the subject of TAMSD Manager of Place Management, Jane Carder's presentation. She noted priorities include: fire fuel reduction, line-of-sight safety, access, amenity mowing, and recreation. She also spoke about the opportunities for improved weed control in the urban setting.

Dr Downey spoke about *Biodiversity priorities for wide spread weeds – a State Framework* developed by NSW agencies and the NSW Catchment Management Authorities (CMAs) which takes a site-based approach to weed control within each NSW CMA to achieve an optimum biodiversity benefit. Parkcarer with Friends of the Pinnacle, Vaughn Cox spoke on the group - formed to protect, enhance and promote the ecological values of this nature reserve south of Belconnen. ACT Rural landholder, Michael Shanahan spoke on the weed management challenges facing rural landholders in the ACT, with many rural landholders having shared borders with public and urban lands. National Serrated Tussock Coordinator Bronwen Wicks spoke on new candidates Weeds of National Significance.

### ***Summary: Workshopping session***

The Forum included a workshop session which asked participants to address the following questions:

- **What are the critical actions we can take to reduce the quantum of weeds in the ACT?**
- **What will make a difference?**

The proposals focussed particularly on ensuring reliable funding streams for weed control, improved staffing and resourcing of weed control staff and good linkages between weed management areas and other areas of government with responsibility for land management.

Responses to the workshop sessions addressed the following issues:

- Resourcing of Weed Management
- Policy, Planning and Regulation
- Research and Monitoring
- Capacity Building and Communications
- Improved Practices to Reduce the Weed Burden

### ***What next – what will happen to the outcomes of the workshop?***

The NRM Facilitator, on behalf of the ACT NRM Council, will take the Forum recommendations to key areas of the ACT Government and discuss the scope for implementation of recommendations with those agencies responsible for carriage of particular recommendations. The Forum report will be provided to the appropriate ACT Ministers. The recommendations will also assist in informing the implementation of the ACT Weeds Strategy and the work of the Weeds Working Group. The Weeds Working Group – an ACT / NSW forum for land managers, supported by the ACT Government, to build collaboration and coordination in implementation of weed control programs across land tenures will be reconvened and consider the Forum Report's key proposals.

The Forum Report will be provided to all attendees and released on the NRM Council website.

## Key proposals to come out of the ACT Weed Forum

What are the critical actions we can take to reduce the quantum of weeds in the ACT? What will make a difference?

### *Resourcing of Weed Management:*

- Increased funding, continuity and flexibility of funding for weed management, research and development.
- Exploration of alternative funding sources to support improved weed management including offset funds, levies, or conservation fund tax to support weed control.
- Employment of three extra rangers specialising in invasive weed management (two for Canberra Nature Parks and one for Murrumbidgee River Corridor and northern Namadji National Park); employment of second-in-charge to the senior weed manager to support improved responses to new weed incursions, staffing continuity; increased retention and improved succession management for weed management staff.
- Increased resourcing of urban weed management to allow for contract management, and increased compliance and monitoring of mowing services to ensure adoption of practices which reduce weed spread.
- Exploration of different weed funding model so that weed budgets are allocated to landscape units and then spent by various providers (including ParkCare groups) based on strategic operational plans.
- Ensure that new and existing resources are better targeted, based on sound priorities and achievable outcomes (as in the model developed in NSW for biodiversity conservation in each of the 13 Catchment Management Authorities).
- Resource a weed monitoring program (especially with respect to the effectiveness of weed control).
- Explore options for paying farmers to maintain public road verges adjacent to their property.

### *Policy, Planning and Regulation*

- Develop a prioritised system for ensuring that weed control delivers on management outcomes, based on the model developed in NSW for biodiversity conservation in each of the 13 Catchment Management Authorities.
- Develop a monitoring framework to assess the performance of weed management to achieve the desired outcomes.
- Ensure greater compliance with weed management legislation by all land managers.
- Explore the use of land management 'pink slips' on the sale and transfer of land (urban, rural, government, private) which puts a value on weed management and compliance with weed management legislation.
- Ensure all future urban developments account for and reduce weed impact, through reduced urban/bush interface boundaries to prevent urban weeds escaping into the bush; explore the use of hard edging between urban and bush areas; development of no-plant lists of plants not permitted in these developments.
- Explore the use of body-corporate-like systems for management of public land.
- Explore the opportunities for greater community responsibility/involvement in weed management planning including:
  - in cross-tenure/tenure-blind/sub-catchment weed management planning;
  - joint community/government governance of public land.
- Tighten up quarantine review and compliance for species imports into Australia/ACT region.

- Greater role-definition, alignment and integration of the work of different units of government to reduce weed burden in the ACT (i.e. conservation management versus road management versus fire management; better connect weed management with waterway management).

### ***Research and Monitoring***

- Greater investment in weed management research, including :
  - Impacts of weeds on biodiversity;
  - Winter use of Flupropanate for African Lovegrass;
  - Different treatments for weed management/biodiversity management – i.e. burning (including smoke and temperature impacts on germination), mowing, scalping, replanting, heavy grazing, steam treatment, off-label use of chemicals;
  - Use of new technology (GIS systems) to map and track weed spread;
  - Impacts of heavy use of herbicides on soils, fauna and flora;
  - Managing weeds for resilient landscapes – thresholds and tipping points for weeds and desirable species.
- Stronger links between Parks and Conservation and Conservation Planning and Research in weed management research and monitoring and employment of a weed ecologist.
- Increased monitoring that is long-term, consistent, well-reported, and informs future weed management in assessing both weed control actions and their effectiveness in achieving the desired outcome, including:
  - Monitoring at 3-5 year intervals;
  - Long-term Advanced/Research monitoring (as per. NSW model) at high priority sites (i.e. Lower Cotter Catchment – blackberry control; Googong Foreshore – St Johns Wort; Mt Taylor – African Lovegrass; Crace Grassland – Chilean Needlegrass; Naas Valley/Namadgi National Park – Serrated Tussock).

### ***Capacity Building and Communications***

- Funding of an ACT Bush Management Team (a skilled specialist environmental restoration team) which works with community, government and other groups to reduce weed burden and improve biodiversity in natural areas.
- Purchase and leasing of Quick Spray Units for weed control to rural landholders, community.
- Development of weed identification apps (applications) for mobile phones and other communication tools (Facebook, Twitter and signage) to raise community awareness of weeds.
- Development of an ACT Weeds Website to hold all information about weeds (identification, management, mapping of weed locations, community and government impact on weeds).
- Development of communications programs targeted at community/high school students/people living close boundaries of the Canberra Nature Park (CNP) to increase their skills and knowledge in weed identification and how to control weeds; at the broader community aimed at changing public perception of weeds, mowing and public open spaces.
- Identification and amelioration of barriers to more efficient volunteer weed management efforts– for example expansion of allowable herbicides that ParkCarers can use.

### ***Improved Practices to Reduce the Weed Burden***

- Practices which will prevent future incursions:
  - Development of protocols around importation of contaminated stock-feed – ensure only weed-free stock feed imported;
  - Greater vigilance and discipline in early detections/reporting of new incursions;
  - Controls over movement of contaminated soils/sand/gravel;
  - Maintaining groundcover and minimising soil and ground disturbance.

- Improved cross-border liaison/cooperation in weed management to increase efficiency and effectiveness of weed management effort.
- Improved nursery industry practices aimed at reducing weed burden:
  - Ongoing dialogue with the nursery industry about weed risk – including more rigorous national and local listing of species that should not be sold at nurseries;
  - Identification of species at risk of becoming weeds for sale in nurseries – i.e. an orange dot on a plants ID tag signifying “plant with caution” – at point of sale customers are given information on this potential;
  - Greater information on weed risk at Floriade.
- Mowing practices aimed at reducing weed burden:
  - Review the effectiveness of urban and rural mowing contracts;
  - Greater monitoring of mowing contractors to ensure they comply with contracts;
  - Rural roadside vegetation management to include mowing, rubbish and weed control in contract ensuring that rural road mowing focuses on ensuring clear lines of site.
- Urban gardens
  - Development of a community garden care/urban replacement scheme to replace garden weeds with non weedy species
- Rural lands
  - Explore options for paying farmers to maintain road verges adjacent to their property.

## ACT Weed Forum presentations, discussions and brain-storming

*Introduction: Dr Sarah Ryan, Chair of the ACT Natural Resources Management Council*

Dr Ryan opened the ACT Weeds Forum by outlining the objectives for the day:

3. To develop some concrete actions for more effective weed control in the ACT
4. Co-production of knowledge – thinking and learning together

She challenged the audience to rethink paradigms around weed control in the ACT. Using the example of paradigm shifts that have occurred in management of the Murray Darling Basin, she said that ‘paradigm’ in the philosophy of science refers to the patterns of thinking - *what is to be observed and scrutinized; the kinds of questions to be asked; how the questions should be structured and how the results should be interpreted.*

Examples of paradigm shifts could include looking at weeds as part our cultural landscapes; focusing on weeds that are new entrants or in low abundance – thus preventing future problems at low costs now; defining thresholds for abundance that might lead to a change of state, and manage to those thresholds (a resilience approach); looking at the governance around weed management differently.

She said key questions that the forum will address:

- **What are the critical actions we can take to reduce the impact of weeds in the ACT?**
- **What will make the difference?**

Finally she said speakers at the forum will cover the scientific underpinnings of weeds, provide a challenge to existing paradigms, look at the social science of weeds, look at the challenges facing weed managers, and the actions needed to make a difference.

### **Session 1: Key-note speakers – setting the scene and challenging the norm**

#### ***Weeds, biodiversity and climate change – current and future challenges for the ACT***

**Dr Paul Downey, Institute for Applied Ecology, University of Canberra**

Dr Downey noted that:

- more than 27,000 plant species have been introduced to Australia since European Settlement;
- more than 3000 have established wild populations;
- more than 1,650 plants are naturalized in NSW and nearly 550 are naturalized in the ACT;
- there are currently 342 major environmental weed species in NSW that pose a threat to biodiversity;
- the number of weeds in Australia is growing by 12 to 18 new species per year with most naturalising through the gardening industry;
- 94% of new plant introductions and 66% of weed species are escaped garden plants;

- weeds are the second greatest threat to biodiversity behind land clearing/habitat loss, with 45% of listed species at threat from weeds in NSW.

Dr Downey noted that climate is the primary determinant of a species distribution; and under climate change, each 1°C increase in average temperature is the equivalent of shifting species 100m down in altitude or 125 km north in latitude – thus in order to adapt to climate change, many Southern Hemisphere species will need to move south and/or upwards in altitude. Species responses to climate change include changes in physiology, phenology (such as earlier onset of flowering), adaptation and range (altitudinal or latitudinal shifts). Species responses to climate change are already being observed, including earlier insect emergence, earlier flowering, earlier bird migrations, range changes (i.e. snow gums shifting upwards in altitude).

Tools for understanding species response to climate change include field experiments and re-sampling of historical sites; glasshouse studies investigating climatic tolerances of species; and species distribution models. Macquarie University in partnership with other institutions, has undertaken modelling of climate suitability of exotic plants in Australia under future climate. They have found that Hawkweed will retreat to the highlands of central and southern NSW (including the ACT) and Victoria and Tasmania; and African Lovegrass will retreat to southern and eastern Australia (including the ACT) and Tasmania. Glass house trials looking at the impact of elevated CO<sub>2</sub> on herbicide effectiveness of weeds indicates that some weed species may be more tolerant of herbicide under future CO<sub>2</sub> conditions.

Dr Downey drew on the Weed Invasion Curve which identifies different focuses of weed management depending on the size and extent of the incursion. He recommended the use of a risk assessment approach to prioritise (triage) where resources should be deployed for most effective and efficient weed control – with climate change included in the assessment. Finally, Dr Downey recommended that the prioritisation approach should inform policy and management, and that monitoring is critically important in assessing the effectiveness of all work.

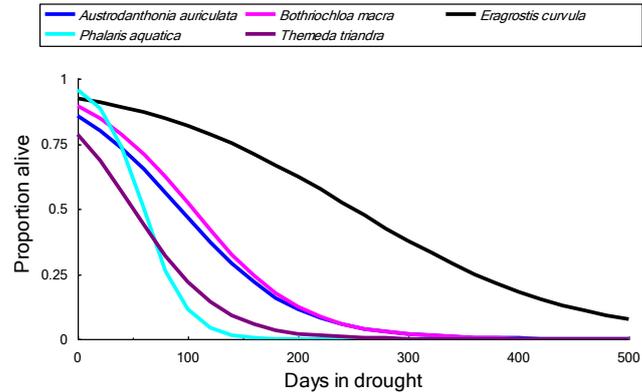
### ***Challenging the paradigms for weed management***

**Dr Ken Hodgkinson, CSIRO Ecosystem Sciences, North Belconnen Landcare Group**

Dr Hodgkinson noted the recent suggestion by ecologist, Dr David Bowman, that elephants should be introduced into the Northern Australian to control Gamba grass. While not endorsing this view he said it was an example of ‘thinking outside the square’ to address intractable weed problems. Much of Dr Hodgkinson’s presentation drew on a paradigm-shifting paper in *Journal of Ecology* (“Invasions: the trail behind, the path ahead and test of a disturbing idea” 2012, **100**, 116-127).

**Paradigm 1 – Traits can be used to predict plant invasions** (such as population growth rates, lower herbivore damage, higher root/shoot ratios, lower survival, higher plasticity, higher specific leaf area), but there is much inconsistency in these traits. Thus it is not currently possible to predict which species will become weeds, on traits alone. He drew on the example of his own glass house CSIRO study ([http://www.austrangesoc.com.au/userfiles/file/2010\\_ARC\\_conf/Kenneth%20Hodgkinson\(2\)%20new.pdf](http://www.austrangesoc.com.au/userfiles/file/2010_ARC_conf/Kenneth%20Hodgkinson(2)%20new.pdf)) comparing the tolerance to drought (pots unwatered for 500 days) of five local grass species. The results of the study are shown in the graph below – with *Eragrostis curvula* (African Lovegrass), a common and serious local weed, proving most tolerant compared to 3 native grass species and *Phalaris aquatica*. This very high drought tolerance could not be predicted from common traits but may explain in part why this species has become a problem weed in the ACT.

### Drought tolerance of five local grass species



**Paradigm 2: High diversity makes communities more resistant to invasion.** Dr Hodgkinson noted that there is good evidence to support this paradigm, but no unifying theory has emerged or predictive capacity for taking into account climate change. He spoke on the field study the North Belconnen Landcare Group are conducting at Evatt comparing five treatments at a weedy-grassland site. 58 plant species were present of which 57% were introduced (17 forbs and 16 grasses). The five treatments are, low mowing (<4cm) once in late Spring; high mowing (15cm) once in late Spring; burning whenever possible in Spring (November 2009, 2011); burning whenever in Autumn (April 2008, May 2011); and no mowing or burning (control). Following the burn in Autumn 2011, 6 native species (3 forbs, 2 grasses and 1 lily) were found on this treatment; they were not found in the other four treatments. Dr Hodgkinson suggested that burning (at 2-3 year intervals) appeared to be an optimal management technique to manage for plant diversity. He noted that native plant species cannot reproduce and survive with close & frequent mowing so mowing is not an option for conserving biodiversity. Most large herbivores are selective grazers and palatable species are 'eaten out' so grazing to manage ACT grasslands for retention of biodiversity is not an option either. However native plants are adapted to survive periodic fire and most species require periodic fire to survive thus fire as a non-selective agent appears to be the best option for conserving plant diversity.

**Paradigm 3: Weed species displace other species.** Dr Hodgkinson noted that there is strong evidence to support this paradigm; there is no predictive understanding of this observation.

**Paradigm 4: Disturbance facilitates invasion.** The evidence is that weed invasion is more related to changes in disturbance than disturbance *per se*. For the ACT grasslands there have been three major changes in disturbance. The original natural temperate grasslands were disturbed by Aboriginal burning and fires started by lightning, and the activities of many reptiles and marsupials. The arrival of pastoralists changed the disturbances by reducing fire frequency, grazing domestic stock, adding fertiliser and exotic pasture plants. The building of Canberra changed the disturbances yet again on remnant grassland by introducing close mowing and facilitating the access of people to all grassland areas. The theory is that these changes in disturbances have predisposed the urban grasslands to greater weed invasion. If the theory is correct, a return to traditional land management, that is periodic burning, may significantly reduce weeds and lower weed control costs. This idea needs to be tested. The preliminary results from the North Belconnen Landcare Group study suggest that an added benefit of regular autumn fires and no-mowing, would be the maintenance of plant diversity in the ACT grasslands.

## ***Who's involved with weeds? A social network analysis of Australian weeds governance networks***

**Dr Lyndal-Joy Thompson, Australian Bureau of Agricultural and Resource Economics**

Dr Thompson spoke about the research project, commissioned by the Caring for our Country (CfOC) program and the Rural Industries and Development Corporation (RIRDC) to determine:

- where different organisations (government, non-government, Landcare) get weed-related information, funding, in-kind resources;
- whether the formal governance system for weed control is working as expected;
- what opportunities exist for improvement.

ABARES conducted a web-based survey of community groups (Landcare, 'Friends of' etc.) of which they received 163 responses; and institutions (local, state, federal governments; peak farming organisations; Regional NRM bodies, universities) of which 270 responded.

Conclusions drawn from the social network analysis and questionnaire were that:

- Local and state governments are playing a key role in weed management - their role could be better recognised in CfoC's arrangements (funding and information).
- Community groups play an important role in weed management and these groups need to be more involved when designing programs and policies around weed management.
- Short-term funding cycles, the politics around prioritising weeds for funding and a lack of coordination between agencies contribute barriers to effective, long-term weed management.

### ***Panel discussion – Session 1***

Key issues to come out of the panel discussion included:

- The need for effective regional planning and processes to ensure discussion, coordination and cooperation between different managers on weed management issues.
- The need to measure and monitor changes to show the outcome of weed management activities – to secure future funding; to demonstrate the value of the work to policy-makers and government.
- Ensuring greater recognition of the role of community groups in weed control, at the same time ensuring that funds are not simply directed to the group which can put the best bid together, but are allocated more strategically to where the priority lies.
- Engaging the broader community in weed control and in understanding the complexity of some weed management issues.
- Greater education around the use of fire in managing native species - that mowing is not a substitute for fire when it comes to biodiversity management and weed control, as many species require fire heat and smoke to germinate.
- The need for an ACT-list of biological assets, similar to a list of physical assets to ensure environmental assets are on the radar when doing prescribed burns and weed control.

## **Session 2: Weed Control in the ACT and beyond – current practicalities – future possibilities**

### ***Operationalising the ACT Weeds Strategy 2009-2019 – gaps and opportunities***

#### **John Feint, Environment and Sustainable Development Directorate**

Mr Feint said that the ACT Government is aiming to revive the Land Managers Weeds Working Group, which has significant potential to progress implementation of many elements of the ACT Weeds Strategy. The highest priorities of a reconvened Weeds Working Group are to improve responses to weed incursions by land managers overall (based on best available information); and develop a more strategic and coordinated approach to the weed threat across the ACT landscape which includes ongoing monitoring and evaluation of responses to weed incursions.

### ***Finding Solutions to the High Costs of Weed Control in ACT Grassy Ecosystems – community expectations versus resourcing***

#### **Steve Taylor, Senior Weed Management Officer, ACT Parks and Conservation Service, Territory and Municipal Services Directorate**

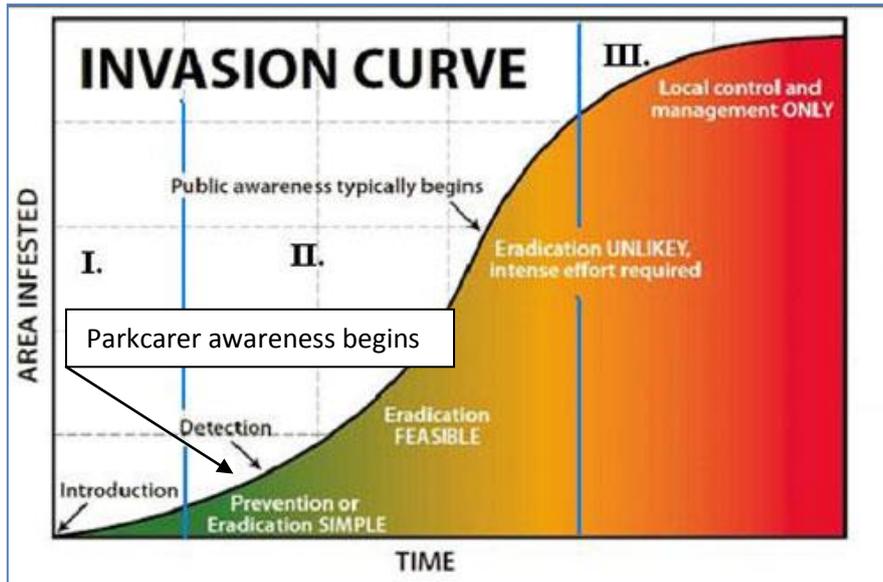
Mr Taylor spoke about the ACT Government's approach to prioritising and addressing weed management in non-urban areas of the ACT, noting the following:

- The ACT Parks & Conservation Service (ACTPCS) manages 177,121 ha or 73% of the ACT (32,000 ha is affected by invasive weed infestations).
- Lowland woodland & grassland reserves (which are mainly held within the Canberra Nature Park) receive a larger share of weed management resources compared to the larger forested conservation reserves. In 2010-11 \$47/ha was spent on weed management in lowland grassy ecosystems compared to \$1/ha in the Namadgi National Park (which is mainly forested).
- Serrated Tussock, Chilean Needle Grass, African Love Grass and St John's Wort - collectively account for 58% of the weed control effort in Canberra Nature Park 2011-12 financial year.

He noted that lowland native grasslands and woodlands are more susceptible to weed invasion compared to forested landscapes due to the:

- inter-tussock spaces in the grassy understorey (normally filled by wildflowers or other annuals);
- very high edge effects in the ACT because most reserves are narrow &/or relatively small and are surrounded by residential areas (the ACT had a much greater proportion of reserve boundaries to reserve area, compared to the NSW National Parks Service, thus is much more exposed to weed incursions from urban and rural lands, compared to NSW reserves);
- large weed seed banks in some areas due to the long history of grazing & clearing;

ACT Government initiatives which have reduced costs and improved effectiveness include late winter control of all invasive grasses (target weeds are more obvious and there is less off-target damage to native warm season grasses); allowing Parkcare volunteers to spray invasive grasses & St John's Wort; providing all Parks staff detailed mapping of weed infestations that are a priority for management; introducing the concept of 'Feasibility of Co-ordinated control' and 'Triage' to all land managers in weed management. The tables which assist in prioritisation: *Weed Risk versus Feasibility of Coordinated Control* and the *Biodiversity Triage Matrix* – are provided below.



### Weed Risk versus Feasibility of Coordinated Control

source: S. Johnson NSW DPI

		Feasibility of Coordinated Control (control costs, persistence, current distribution)				
		Negligible	Low	Medium	High	Very High
Weed Risk (invasiveness, impact, potential distribution)	Negligible	Limited Action	Limited Action	Limited Action	Limited Action	Monitor
	Low	Limited Action	Limited Action	Limited Action	Monitor	Monitor & Protect priority sites
	Medium	Manage sites	Manage sites	Manage sites	Protect priority sites	Contain spread
	High	Manage weed	Manage weed	Protect priority sites	Contain spread	Destroy infestations
	Very High	Manage weed	Manage weed & Protect priority sites	Contain spread	Destroy infestations	Eradication

### The Biodiversity Triage Matrix

source: Modified from P. Downey UCAN

		Probability of protecting biodiversity at specific sites		
		High	Medium	Low
Level of threat to biodiversity	High	Alien (Invasive) plant management is critical, immediate, targeted and long term	Targeted management action needs to occur promptly and long term	Broad management (ie. of multiple threats simultaneously)
	Medium	Targeted management action needs to occur promptly and long term	General management to reduce the impact of the alien plant populations	General low level management to reduce the threat
	Low	Actions to minimise the threat and prevent further elevation of the problem	Low level of management only	No immediate action, management action required only after completion of higher priorities

Finally Mr Taylor spoke about conflicting expectations and priorities noting that:

- Conspicuous weeds get attention (i.e. Blackberry, St John's wort, Paterson's curse, Capeweed, Fleabane) and sometimes this corresponds with biodiversity protection priorities, e.g. Blackberry and St John's wort control; whereas Capeweed and Fleabane are low on the priority list for control to protect biodiversity.
- The educated public (e.g. ParkCarers) expect a high level of environmental weed control
- Actual resources means strict priorities have to be set based on 'feasibility of co-ordinated control' and 'Biodiversity Triage' (as used in NSW)
- Weed density has a bigger impact on biodiversity than weed distribution.
- Widespread weed distribution means numerous sites to manage to an acceptable density level.

He drew attention to the American App for smart phones, <http://whatsinvasive.com/> which could enable greater community involvement in identifying and mapping problem plants and draw the Ipod generation into weed control.

### ***Weed control, mowing in the ACT's urban parks***

#### **Jane Carder, Manager, Place Management, Parks and City Services Division, Territory and Municipal Services (TAMSD)**

Ms Carder spoke about mowing and weed control priorities in the ACT. Priorities for mowing are: fire fuel reduction, line-of-sight safety, access, amenity mowing, and recreation.

Priorities for weed control programs are based on four programs:

- The Environmental Weeds Operational Plan (eWOP) – which focuses on protecting sites with high conservation values from invasive weeds (such as public lands next to nature reserves, designated urban native grass sites, other public open spaces).
- Getting on top of new weed incursions.
- Annual routine works programs/nuisance weeds, aquatic weed control, general amenity weed control
- Capital funded projects – willow-control and restoration, foreshores of Lake Burley Griffin,

#### **Challenges:**

TAMSD is responsible for 5000ha of irrigated and non-irrigated grass – equivalent to 5000 football fields. Last year TAMSD mowed 56,000 hectares over peak mowing season using a fleet of 125 mowers. This year TAMSD have mowed a similar area using 100 mowers. Mower hygiene policy requires mowers to be cleaned daily; mowing must commence in specified clean sites and move towards weedy areas; mowers must be cleaned prior to mowing defined weed free areas such as native grass sites; specifications are defined in mowing contracts and are monitored by on-the-spot checks for contract mowers and daily checks for 60 government mowers via a daily check sheet. Monitoring can be challenging as involves balancing community expectations that public urban areas are well mowed, versus weed management.

#### **Opportunities:**

Ms Carder noted some of the opportunities for addressing weeds, including the work done by community organisations such as the Ginninderra Catchment Group removing weeds; the use of Flupropanate in winter to control African Lovegrass; the use of competition grasses such as couch to outcompete weedy grasses; the work done under WONS programs such as research, working groups and funding; GPS tracking of mowers to ensure they are moving from clean areas to contaminated areas; signposting of areas of natural grassland to alert mowers and the broader community,

## ***Establishing weed management priorities for biodiversity conservation at the NRM level - insights from NSW CMAs: how do we ensure that threat abatement measures result in positive biodiversity outcomes?***

### **Dr Paul Downey, University of Canberra (UC)**

Dr Downey spoke about *Biodiversity priorities for wide spread weeds – a State Framework* developed by NSW agencies and the NSW Catchment Management Authorities (CMAs) which targets areas for weed control within each NSW CMA based on achieving the greatest biodiversity conservation outcome.

NSW has developed a system, based on 10 years of experiences to ensure weed management delivers biodiversity conservation. This system has been successfully applied to all 13 CMAs (or NRM regions) in NSW.

Dr Downey emphasised avoiding the untested assumption that any weed control will deliver biodiversity benefits, noting the approach adopted in NSW is strategic and proving to be effective and that it has been successfully applied to all 13 CMAs (or NRM regions) in NSW.

The approach uses the following steps, which were applied in each CMA:

- Identification of the major widespread weed threats;
- Identification of the biological assets (native species and ecological communities) at risk from the weeds identified in step 1;
- Identification and prioritisation of sites for weed control, using a decision matrix, based on the likelihood of achieving a positive biodiversity response;
- Use of a range of tools to ensure that management actions can deliver the outcome; and
- Monitoring and reporting on the effectiveness of weed management programs at high priority sites, to show the response of biological assets to control (which includes a three-tiered approach to monitoring: standard, advanced, research) based on a standard published monitoring manual.

This approach was first developed with Bitou Bush and Boneseed and the extended to Lantana and then applied to the range of weeds impacting on biological assets within each of the 13 CMAs. The system is now NSW Government policy and is being adopted by all agencies and the community. Parts of this system have recently been adopted by the ACT Parks and Conservation Service. Thus consideration should be given to adopting this system for the ACT. More information about the *State Framework* and the Biodiversity priorities for widespread weeds <http://www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/publications/cmas>

### ***Weed control in the ACT – ParkCarer perspective***

#### **Vaughn Cox, Friends of the Pinnacle Nature Reserve**

Mr Cox of Friends of the Pinnacle ([FOTPIN](#)) spoke on the ParkCare group, formed to protect, enhance and promote the ecological values of [The Pinnacle Nature Reserve](#) south of Belconnen. The group has more than 50 members, and an active weed control program on the 130 ha Pinnacle as well as on 120ha of adjacent unleased land.

In May 2010 FOTPIN released a [draft Weed Management Plan](#), based on a survey in spring 2009 which prioritised weeds for treatment according to invasiveness and potential for effective treatment (using the risk framework in the ACT's Weed Management Strategy). The group aims to reduce the presence of target weed species to isolated individuals, by preventing seed set and dispersal and prioritises high conservation "paddocks" for treatment.

The group [records control treatments](#) such as spraying, slashing, scything, cut and daub or grubbing; herbicide usage; the [timing and location of the treatment](#), by species and by paddock – these are our management zones; and geo-reference all treatments, mostly using GPSs. By recording this data, the group hopes to track improvements in efficiency and effectiveness of their effort. Most weeds, which are not targeted through the Weed Plan, are addressed through the [Native Grass Restoration Project](#) which is testing the potential for a range of treatments to reduce soil nutrient loads, and treat exotic species; to shift the balance from an exotic to native species dominated ground layer. Treatments include slashing, burning, cropping and adding soluble carbon (sugar).

Challenges faced by FOTPIN are common to all volunteer groups – including volunteer capacity (time, skills and physical capacity). The group’s website is an important tool in communication between volunteers and includes [online facility](#) for recording weeding activities and [effort](#). Keeping volunteers enthused with work that is repetitive and stretches over years is also a challenge and requires keeping to priorities, staying with it (keeping the effort going) and succession planning and spreading the load. Other challenges include weed control on adjacent land and weather. Future opportunities lie with greater collaboration, identifying and addressing policy barriers.

### ***Weed control in the ACT – Rural Landholder perspective***

#### **Michael Shanahan, ACT Rural Landholders Association**

Mr Shanahan spoke on the major weeds he is dealing with on his property: African Lovegrass - which he feels he is losing the battle with; Serrated Tussock – which he says he can’t afford to lose the battle with; woody weeds such as blackberry – which he feels he can beat. Broadleaf weeds are not an issue and saffron thistle causes little trouble. He challenged the perception that farmers should be controlling every weed – noting this is not realistic or practical, that farmers also have to contend with flood, drought, fire and all these can set back management significantly. He noted that in order to prevent weed spread within the property that he works to maintain groundcover – but that this is very hard to do in the face of the recent extended 10 year drought. He noted that weeds enter the property through poorly maintained public road verges, powerline easements that aren’t well maintained and from adjoining public lands. He believes that Government land managers should recognise those landholders who are keeping weeds in check and correspondingly prioritise weed control on public lands adjacent to those properties. He recalled the work he and others did under Landcare in the 1990s in restoring eroding creeks with extensive tree planting, and how recent rains and flooding in the creek line had wiped out this work, changed the whole creek line, and also taken out 200 year old *E. Viminalis* trees, in the process opening the creek up to weed infestation. His final comment was to never give up on weeds.

### ***Update on Candidate Weeds of National Significance (WoNS) Species***

#### **Bronwen Wicks, National Serrated Tussock Coordinator, Department of Primary Industries**

Ms Wicks spoke about the status of the current WoNS program, phasing out of current WoNS, the new candidate WONS species and a public consultation process underway to assist in developing strategic management plans for each new species, drawing on local knowledge, research, knowledge of distribution and information gaps. There are 12 new candidates WONS species African Boxthorn, Asparagus Weed, Bellyache Bush, Cat’s Claw Creeper, Fireweed, Gamba Grass, Madeira vine, two broom species, Opuntoid cacti, Sagittaria, Silverleaf Nightshade and Water Hyacinth. The audience suggested that the following weeds would be a problem in this region: African Boxthorn, Asparagus spp, Broom Spp.(Scotch broom, Montpellier (or cape) broom) , Fireweed and Madeira Vine.



<b>10:35 – 10:45am</b> <b>Morning Tea</b>		
10:45 – 11:00am	Q&A with Key-note speakers	Dr Paul Downey Dr Ken Hodgkinson Dr Lyndal-Joy Thompson
<b>Weed control in the ACT and beyond – current practicalities – future possibilities</b>		
11:00 – 11:05am	Operationalising the ACT Weeds Strategy 2009-2019 – gaps and opportunities	Kathryn Tracy, Senior Manager, Natural Environment, ACT Environment and Sustainable Development (ESDD)
11:05 – 11:25am	Finding Solutions to the High Costs of Weed Control in ACT Grassy Ecosystems – community expectations versus resourcing	Steve Taylor, Senior Weed Management Officer, ACT Parks and Conservation, Territory and Municipal Services Directorate (TAMSD)
11:25 – 11:40am	Weed control, mowing in the ACT’s urban areas – priorities, challenges, opportunities and community expectations	Jane Carder, Manager, Place Management, Parks and City Services Division, Territory and Municipal Services (TAMSD)
11:40 – 11:55am	Establishing weed management priorities for biodiversity conservation at the NRM level: insights from NSW CMAs	Dr Paul Downey, University of Canberra (UC)
11:55 – 12:10pm	Weed control in the ACT – Parkcarer perspective	Vaughn Cox, Friends of the Pinnacle Nature Reserve (FOTPIN)
12:10 – 12:25pm	Weed control in the ACT – Rural Landholder perspective	Michael Shanahan, ACT Rural Landholders Association (RLA)
12:25 – 12:35pm	Update on Candidate Weeds of National Significance Species	Bronwen Wicks, National Serrated Tussock Coordinator, Department of Primary Industries
12:35 – 12:45pm	Q & A with speakers from this session	Kathryn Tracy, ESDD Steve Taylor, TAMSD Jane Carder, TAMSD Dr Paul Downey, UC Vaughn Cox, FOTPIN Michael Shanahan, RLA Bronwen Wicks, NSW DPI
<b>1:00 pm - 1:45pm</b> <b>Lunch</b>		
<b>Preparing for the future, now</b>		
1:45 – 2:15pm	Review of the morning/Brainstorming - Facilitated discussion	
2:15 – 3:00pm	Workshopping Session – Participants will break up into workshop groups and address the following: <ul style="list-style-type: none"> <li>• What are the critical actions we can take to reduce the quantum of weeds in the ACT? What will make a difference?</li> </ul>	
3:00 - 3:30pm	Report Back and Prioritisation of key actions Workshop Close	

## **Appendix B: Attendance at the ACT Weed Forum**

<b>No</b>	<b>Name</b>	<b>Organisation</b>
1.	Angela Calliess	Greening Australia
2.	Anna van Dugteren	NRM Regional Facilitator, ACT NRM Council/NRM Programs, ESDD
3.	Anne Duncan	Natural Resource Management Advisory Committee
4.	Anne Milligan	Ginninderra Catchment Group
5.	Anneka Staring	Department of Defence
6.	Bill McCormick	ACT Natural Resources Management Council
7.	Brian Summers	Parks and Conservation, TAMSD
8.	Bronwen Wicks	National Serrated Tussock Coordinator, NSW DPI
9.	Caroline Hughes	ACT Natural Resources Management Council
10.	Damian Minehan	Southern Slopes Noxious Plants Authority
11.	Damon Cusack	Ginninderra Catchment Group
12.	Daniel Thomas	Weeds and Pest Animals, Department of Agriculture, Fisheries and Forestry
13.	Darren Masterman-Smith	Southern Tablelands Region Weeds Group
14.	Dave Boorman	ACT Rural Landholders Association
15.	David Shorthouse	ACT Natural Resources Management Council
16.	Dr Ken Hodgkinson	CSIRO
17.	Dr Paul Downey	University of Canberra
18.	Drew English	Conservation Volunteers Australia
19.	Emma Cook	Conservation, Planning and Research, ESDD
20.	Geoff Butler	ACT Weeds Advisory Group
21.	Geoff King	ACT Parks and Conservation, TAMSD
22.	Glenn Stroud	NSW National Parks and Wildlife Service
23.	Glenys Patulny	Southern ACT Catchment Group
24.	Jane Carder	Place Management, TAMSD
25.	Jeanette Ruxton	Mt Ainslie Weeders
26.	Jenny Conolly	ACT Parks and Conservation, TAMSD
27.	John Feint	ACT NRM Council/NRM Programs, ESDD
28.	John FitzGerald	Friends of Grasslands
29.	John Starr	ACT Rural Landholders Association
30.	John Thorp	National Weeds Coordinator
31.	Lara O'Dell	Source Water Protection Program, ActewAGL
32.	Leanna Moerkerken	Murrumbidgee Catchment Management Authority
33.	Lexie Williams	ACT Parks and Conservation, TAMSD
34.	Luke Hulbert	Weeds and Pest Animals, Department of Agriculture, Fisheries and Forestry
35.	Dr Lyndal-Joy Thompson	Australian Bureau of Agricultural and Resource Economics and Sciences
36.	Lynton Bond	Molonglo Catchment Group
37.	Margaret Clough	Mt Ainslie Weeders
38.	Michael Chertok	Natural Environment, ESDD
39.	Michael Michelmore	NSW Department of Primary Industries
40.	Michael Mulvaney	Conservation, Planning and Research, ESDD
41.	Michael Shanahan	ACT Natural Resources Management Council/Rural Landholders Association
42.	Michael Sim	Isaacs Ridge Mount Mugga Mugga ParkCare Group
43.	Neville Plumb	Palerang Council
44.	Paul Davies	Natural Resource Management Advisory Committee
45.	Pauline Carder	Upper Murrumbidgee Catchment Coordinating Committee
46.	Peter Beutel	National Capital Authority
47.	Peter Duffy	Upper Murrumbidgee Catchment Coordinating Committee
48.	Peter Langdon	Weeds and Pest Animals, Department of Agriculture, Fisheries and Forestry
49.	Richard Lawson	Watson Woodlands Parkcare Goup
50.	Rosemary Blemings	Ginninderra Catchment Group

51	Ruth Kerruish	Hughes-Garran Parkcare
52	Sally McIntosh	ACT Regional Landcare Facilitator, ACT NRM Council/NRM Programs, ESDD
53	Sarah Hnatiuk	Friends of Mt Painter Parkcare Group
54	Sarah Ryan	ACT Natural Resources Management Council
55	Sarah Sharp	Ecologist
56	Sean Kaden	Queanbeyan City Council
57	Shaun McDonald	Queanbeyan City Council
58	Shelly Swain	Place Management, TAMSD
59	Steve Taylor	ACT Parks and Conservation, TAMSD
60	Steve Welch	Southern ACT Catchment Group
61	Sue Howieson	ACT Rural Landholders Association
62	Tammie Spackman	ACT NRM Council/NRM Programs, ESDD
63	Tegan Liston	Natural Environment, ESDD
64	Tom Allen	ACT Rural Landholders Association
65	Tristan Adrian	Place Management, TAMSD
66	Vaughn Cox	Friends of The Pinnacle
67	Waltraud Pix	Friends of Mt Majura