A Good Weed

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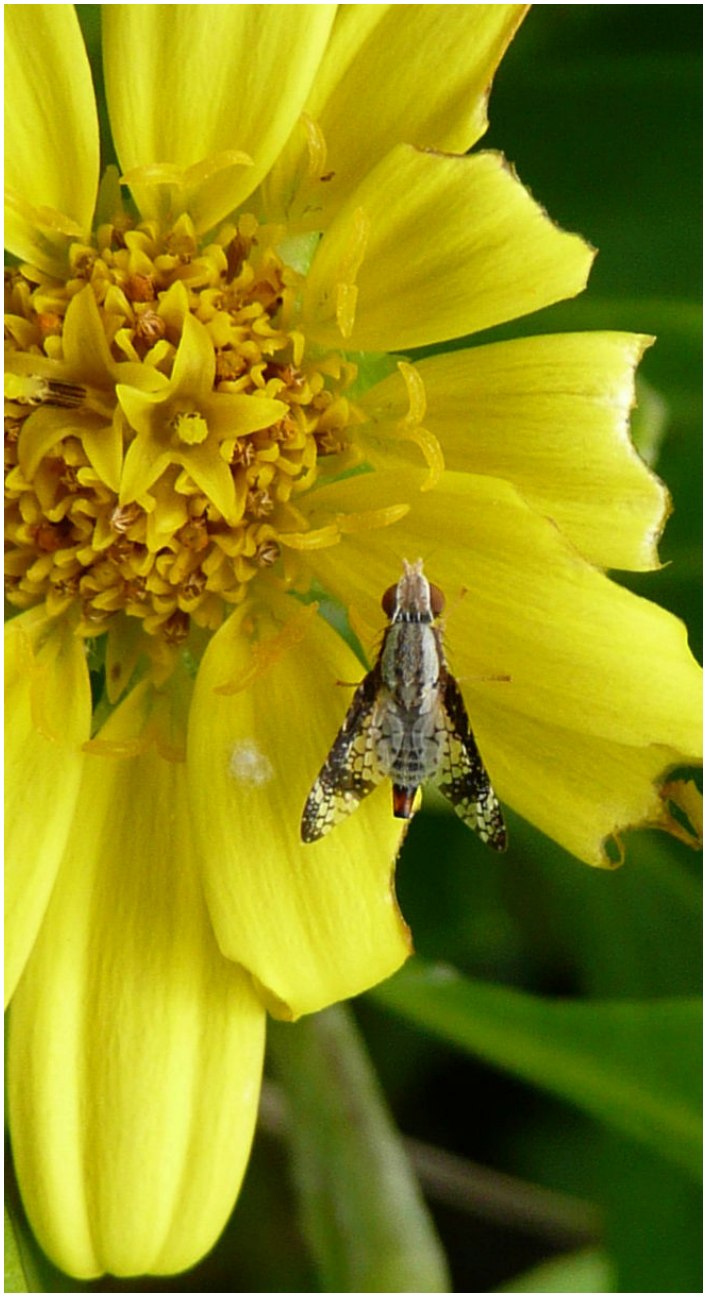


Bitou seed fly, *Mesoclanis polana*, a really good news story on biocontrol. The fly was released in northern NSW in 1996 and within 2 years had spread through the entire range of bitou bush, some 1200km. It is now having a significant impact on the seed production of bitou bush. Image: Royce Holtkamp

President's Report

The forthcoming Society seminar – **"*Using herbicides effectively in the future"*** – will provide an opportunity for anyone to learn more about how to use herbicides safely and effectively. There also will be updates on the legislative requirements for handling and applying herbicides. More details on this seminar, to be held 17 July, are available from the society website.

There will be a flurry of significant conferences held later this year. The 2013 NSW Biennial Weeds Conference, **"*Weeds have no boundaries*"**, will be held in Corowa, 9-12 September. The following week, the 22nd International Grasslands Congress **"*Revitalising grasslands to sustain our communities*"**, will be held in Sydney, 15-19 September. Lastly, the 24th Asia-Pacific Weed Science Society Conference, **"*The role of weed science in supporting food security by 2020*",** will be held 22-25 October 2013, Bandung Indonesia. As well as these events, there are other weeds related forums occurring soon, so please check the Society website for details.

I also remind all members that the 19th Australasian Weeds Conference will be held in Hobart in late 2014. It is timely to remind members that a Society membership benefit is access to both Society and CAWS travel awards. Applications for these awards close at the start of May each year, so please bear this in mind if you are thinking of attending the Australasian conference next year. It was disappointing that no nominations were received from New South Wales for either the Society or CAWS travel awards this year.

The Weed Management Society of South Australia recently held a seminar on silverleaf nightshade control in South Africa with Dr Helmuth Zimmermann, a prominent South African entomologist and weed researcher, delivering a presentation based on his extensive experience. The use of biological control for silverleaf nightshade in South Africa, the only example in the world, was keenly discussed. Raelene Kwong (Victoria DPI) and Hanwen Wu (DPI NSW) attended the seminar and both expressed great interest in bio-control options for silverleaf nightshade within Australia. Events such as this provide opportunity to share knowledge and hopefully provide novel and effective approaches for managing difficult weeds.

The NSW Department of Primary Industries recently called for new projects to be funded under the Weeds Action Plan. Whilst applications were only open for a brief period, over 40 applications were received. Firstly, this highlights the fact that many weeds workers already have well developed ideas for weed management work that needs to be done. Secondly, as only a fraction of these projects can be funded, this reinforces the lack of funding available for weed management. The Society needs to consider what role it can play in helping raise the profile of weeds at all levels of government so that this imbalance might be addressed.

The restructuring of state government services is well under way, with the proposed Local Land Services expected to come into operation next year. This body will combine the resources and roles of several departments currently managing aspects of the environment. What changes this will bring to weed management resourcing and administration is not yet fully understood.

Happy Weeding.

Rex Stanton
President

Vale John Toth

Society members were saddened to hear of the death of John on Wednesday, 19 June, after a long illness. John was an ardent supporter of the Society serving on the committee for many years and a term as president. He was active in weed research, especially in developing control strategies for bitou bush in coastal New South Wales.

Members of the The Weed Society of New South Wales extend their sympathy and condolences to his wife, Etta, and daughter, Tanya.

A detailed account of John's contribution to weed management will be in the next issue of "A Good Weed".

Society Awards
Certificate of Appreciation to Fiona & Rob Richardson

THE WEED SOCIETY OF NEW SOUTH WALES INC.

RG and FJ Richardson
PO Box 42
Meredith, Victoria 3333

Dear Rob and Fiona,

Certificate of Appreciation

It is with great pleasure that I announce that the Weed Society of New South Wales has awarded a Certificate of Appreciation in recognition of your outstanding contribution to the promotion of weed management in New South Wales.

Your extraordinary contributions have been sustained over a significant period through the lengthy editorship and production of Plant Protection Quarterly, an internationally recognised journal, as well as publication of numerous texts relating to weed identification or management.

It is a great honour to acknowledge your extraordinary dedication and service to weed management. This level of service is inspirational, and provides an example and standard to emulate.

Regards.

Rex Stanton
President

Thanks to Ros Shepherd, former Secretary, Weed Society of Victoria, who made the presentation to the Richardson's on behalf of The Weed Society of New South Wales.

Fiona and Rob Richardson (and dogs) holding their Certificate of Appreciation award. Image: Ros Shepherd

Fiona & Rob's Response to their Award

"It was a great surprise for us to be awarded the NSW Weed Society Certificate of Appreciation and we both would like to thank the Society very much for making this award. It is especially appreciated as we have been doing what we love and what we hope is of value to the whole community, and indicates that we have been on the right track.

We also have been very lucky to have the support of the weed research community as well as the wider community in making our business viable, for without this support we would not have been able to follow this path.

We look forward to continuing this work into the foreseeable future."

Society's Annual Seminar

The seminar will appeal to anyone involved in weed control and management and is designed to present an up-date on the current position with herbicides.

Using Herbicides Effectively in the Future"

Wednesday 17 July 2103

Hornsby RSL Club
4 High Street Hornsby

0830 - 0915	REGISTRATION & REFRESHMENTS	
0930 - 1000	Controlling Weeds in Sensitive Urban Environments	Diane Campbell Hornsby Shire Council
1000 - 1030	The Role of EPA Inspectors. What we need to know as Weed Managers?	Dave Thompson NSW Environment Protection
1030 - 1100	Assessing Weed Control Programs for Environmental Management	Mark Scott Formerly NSW DPI
1100 - 1130	MORNING TEA	
1130 - 1200	Educating Managers & Operators to Ensure Good Results	Jonathan Pearson ChemCert
1200 - 1245	Techniques for Weed Management in Environmentally Sensitive Areas	Jim Phimister Dow AgroSciences
	Developing New Products and Environmental Data Demands	Tom Lamond Dow AgroSciences
1245 - 1345	LUNCH	
1345 - 1415	The A - Z about Pesticide Permits. Tips for New Players	Karl Adamson APVMA
1415 - 1445	Recent Advances in Drift Management. What can we do to Minimise Drift?	Andrew Hewitt University of Queensland
1445 - 1500	Seminar Summary	
	CLOSE	

FURTHER DETAILS

- **Contact:** Lawrie Greenup 02 9484 4337 email: editor@nswweedsoc.org.au
  Tony Cook 02 6763 1250
- **Registration & Payment details are on the Society's Website: www.nswweedsoc.org.au**

17th NSW Weeds Conference - Update

The 17th NSW Weeds Conference will be held in Corowa, 9-12 September 2013. The conference theme is ***'Weeds have no Boundaries'***. The conference venue is the Corowa RSL Club. The Club is centrally located in Corowa and only a few minutes away from the central business and retail precinct.

The conference website **http://www.nswweedsconference2013.com** is being regularly updated and now includes a comprehensive program. The program is packed with exciting themes and innovative topics and is being regularly updated as speakers are confirmed.

The committee is excited to confirm Dr John Keniry AM, NSW Natural Resources Commissioner and Dr Tony Grice, CSIRO, Townsville as Keynote Speakers plus international speakers. The conference dinner guest speaker is Mr Don McLardy, Melbourne Football Club President and Reach Foundation Chair.

The conference will provide an excellent opportunity for organisations and businesses to promote their products and services. This is, in fact, an unrivalled opportunity for sponsors to connect with a wide spectrum of their target market across NSW and Victoria. The conference sponsorship prospectus is now available on the conference website.

Everyone is reminded that a photography competition will be run in conjunction with the conference. Entries will be accepted in two categories; weed identification and weed management. Further details are available from the conference website.

A number of exciting field tours are planned for the Wednesday afternoon, and these are included in the full registration. The tours will be filled on a first in, first served basis, so register early to increase your chances of getting onto your preferred tour.

Registration is now open and registration costs have been kept at the same level as the last conference (full registration $700, NSW Weed Society member $600). Over 130 people have already registered for the conference.

Further information can be obtained online at **www.nswweedsconference2013.com** or by contacting Rachel Robinson-Minogue, P: 02 6033 8974, M: 0418 572 849, E: **rachel.minogue@corowa.nsw.gov.au**.

Corowa
Many things to do!

Play a round of golf!

Hire a bike from the Corowa Visitor Information Centre!

Explore Corowa's Federation history!

Lifeguards resuscitate coastal dunes for Lake Macquarie City Council

Creative problem-solving between three departments dramatically increased Lake Macquarie City Council's ability to care for its coast, while retaining good staff and saving money.

In the winter of 2012 lifeguards, Darren Hooey, Sam Earp, Troy Ham and Danny Napper helped with tackling the noxious weed, bitou bush, and improving beach access from Redhead to Catherine Hill Bay.

Lifeguards Troy Ham, Darren Hooey and Sam Earp.

The lifeguards have:

- improved beach access and trails around the helipad and Grannys Pool at Blacksmiths;
- created better pedestrian access at Redhead;
- sprayed the bitou bush infested area near the carpark south to Third Creek, and
- widened access tracks between Frenchmans and Caves Beaches; and maintained beach access at Catherine Hill Bay, including widening paths and pruning shrubs growing into picnic areas.

How did this come about?

It all started with three departments within the Lake Macquarie City Council each grappling with their own issues.

Kim Hignell (Waste Environment and Rangers) was faced with the massive task of eliminating noxious weeds with limited funding. Kym Bilham (Sustainability) wanted to get the most value from grant funding for the Citywide Dune Ecosystem Enhancement Program and Paul Stone (Library and Leisure) wanted to find a way to keep his trained and committed summer staff engaged over winter.

A casual chat led to a formal meeting between these teams and, from that point forward, all parties started turning their problems into a win-win situation.

From Kym Bilham's point of view lifeguards were the perfect fit for off-season coastal care as they have an intimate knowledge of the coastal environment as well as the weather conditions that work for and against our beaches. It also allowed the skills and knowledge to stay in-house. The advantage of working across departments and combining resources saved the Council more than $30,000. The lifeguard team provided access to a surf club vehicle, saving $20,000.

Swansea Belmont SLSC 4x4 Truck with spraying unit used in the coastal work.

Kim Hignell's Vegetation and Pest Management Team provided training and helped access a spraying unit at reasonable price, saving another $10,000. As bitou bush is a weed of national significance Kim's team was very pleased to provide training and extend its high priority work on the dunes.

Lifeguards resuscitate coastal dunes for Lake Macquarie City Council (Contd.)

Great results all around.

Paul Stone was impressed with his staff and the outcomes achieved as the on-ground results far exceeded expectations. The lifeguards adapted well, quickly developed a sense of ownership and the work fitted in with their environmental and pro-beach attitude.

The project is an excellent example of Council departments putting their heads and resources together to deliver great outcomes for staff, beaches and the community.

The project will be continued in this current 2013 winter session.

Further Information:

Kim Hignell
Vegetation and Pest management Coordinator
Lake Macquarie City Council
Email: **khignell@lakemac.nsw.gov.au**

All images courtesy Lake Macquarie City Council.

Darren and Danny on the job in summer.

Darren on the job in winter.

22nd International Grasslands Congress

Sydney | 15 - 19 September 2013

"Revitalising grasslands to sustain our communities"

Conference Information

MCI Australia
82 Harris Street
Pyrmont NSW 2009

Email: info@igc2013.com

Website: www.igc2013.com

Madeira vine found in dumped garden waste in the Tumut Shire

In May 2013, the local Land Care Nursery in Tumut reported that some persons unknown had dumped a significant amount of garden waste near the wetlands nursery area. Included in the waste was a moderate amount of Madeira Vine (*Anredera cordifolia)*. Although, the first identified infestation in Tumut Shire, it obviously exists here as it was dumped as garden waste at the wetlands nursery and has already begun to expand into the wetlands area.

Madeira vine, also known as lamb'stongue or jalap, is one of Australia's worst environmental weeds and, in 2012, was listed as a Weed of National Significance. Its distribution, normally around the highly biodiverse coastal and hinterland regions between central QLD and central NSW has the potential to spread significantly. Populations have been identified in all States and Territories, other than the NT.

Madeira vine reproduces prolifically through sexual tubers that remain viable for up to 15 years and have germination rates of up to 70%. It blankets, smothers and collapses native vegetation and smaller trees leading to their deaths and poses a significant threat to a number of endangered ecosystems

Identification
Madeira vine is a climber with wide, fleshy, ovate leaves that are 2 to 15 cm long, with flower spikes up to 30 cm long. These spikes resemble a lamb's tail, hence the common name. It produces thousands of tubers both underground and aerially along the stems. Small light-brown or green aerial potato-like tubers fall to the ground as vines age and sprout.

Image (bottom left) showing flower inflorescence and leaves.
Image (above) illustrating the aerial tubers.

Control - Registered herbicides for Madeira vine
Fluroxypyr and picloram gel are registered Australia-wide for use on Madeira vine (under the definition of 'rhizomatous plant'). A number of minor use permits are current also for New South Wales for herbicides including glyphosate, metsulfuron-methyl and triclopyr + picloram. These permits are either issued specifically for Madeira vine or under the definition of environmental weeds.

Glyphosate is the most commonly used herbicide for Madeira vine control as it works reasonably well and can be used by community groups. For scrape and paint or cut stump techniques, glyphosate (360g/L) is generally applied at a ratio of 1:1.5 mixed with water. Some managers also suggest the inclusion of 1.5g / L of metsulfuron-methyl to increase the impact on aerial tubers.

Madeira Vine Clean up
The cost associated with the clean-up removal and destruction is estimated around $20,00.00. Had this weed gone undetected and spread through the wetlands and native bush area, the costs could have been in the tens or even hundreds of thousands of dollars.

Since the dumping, the vine had spread, likely in the last few months to an area of about 30 metres by 20 metres and partially into the wetlands area. The clean-up and removal took place on 7 May 2013.

There still remains a large pile of remnant vegetative material from the clean-up which will be burned off once it dries out sufficiently to burn effectively

The site will be closely monitored over the next few years to ensure no resurgence.

Cleaning up the Madeira vine infestation near the Wetlands Nursery area, Tumut Shire

Further Information:

Mel Wilkerson
Ranger/Noxious Weeds Inspector
Tumut Shire Council
Email: **ranger@tumut.nsw.gov.au**

Assessing the impacts of invasion of coastal forest by the residential lawn grass *Stenotaphrum secundatum* (buffalo grass)

Ben Gooden, PhD candidate
Institute for Conservation Biology and Environmental Management
University of Wollongong

Stenotaphrum secundatum (Picture 1), commonly known in Australia as buffalo grass, is widely planted as turf in residential lawns, particularly in coastal settlements of eastern Australia.

Picture 1. Infestation of *Stenotaphrum secundatum* (buffalo grass), Puckeys Estate, Wollongong.

Originally from the tropical and subtropical Atlantic coastlines of Africa and the Americas, buffalo grass is truly a wonder of an amenity species in urban areas: it tolerates salt spray, acidic soils, drought and flood, extreme heat and low light availability! The buffalo grass varieties available commercially in Australia are infertile triploids, which reproduce and spread vigorously from spreading stolons, and are able to maintain dense, luscious turfs to the exclusion of many broadleaved lawn weeds, such as thistles, dandelions and clovers. It is these attributes which make buffalo grass one of the most popular species for use in residential lawns in Australia (in addition to kikuyu grass and sand couch). However, it is also these attributes (particularly its vigorous growth and ability to establish and spread vegetatively from stolons) that have made it an aggressive weed of coastal plant communities!

I am currently researching the effects of this species on native plant communities in an endangered coastal forest along the south coast of NSW. In brief, I have found that sites dominated by buffalo grass have substantially fewer native species and woody tree recruits (seedlings) than non-invaded sites (Pictures 1 & 2).

(a)

(b)

Picture 2. Comparison of coastal forest (a) dominated by buffalo grass and (b) with a species-rich groundcover of native ferns, scramblers, herbs and grasses.

I also examined the interacting effects of invasion and urbanisation of land adjacent to the patches of endangered forest and found, unexpectedly, that (1) urbanisation has no effect on the diversity of native species in the forest and (2) that urbanisation seems to positively affect native species diversity in areas

invaded by buffalo grass. I had originally expected that urbanisation of land adjacent to the endangered forest would exacerbate the loss of species associated with buffalo invasion, simply because of the increase in stress placed on the community; this seems not to be the case, however.

So, what mechanisms might be driving this trend? I've come up with the following hypothesis, which I'm exploring further in my PhD: that is, urbanisation decreases the competitive ability of buffalo grass against native species, thereby allowing them to coexist and causing a rise in the number of native species which occur in invaded sites adjacent to extensively urbanised landscapes. Specifically, I am testing the hypothesis that native species compete better against buffalo grass under high nutrient availabilities, which is expected to be the case in coastal forest where the extent of urban development is high. I am testing this using a mesocosm experiment (Picture 3), whereby a fabricated assemblage of plants are 'invaded' by buffalo grass under low and high levels of nutrients. If my hypothesis is correct, then invaded communities should do better against the invader (i.e. suffer fewer losses of species) under the high nutrient treatment.

Picture 3. Mesocosm to assess how nutrient addition influences the interactions between buffalo grass and native coastal plant communities.

In light of my research, a very important yet rarely considered question has been raised during my discussions with weed managers and other environmental science practitioners: how do we reconcile this species' impacts on natural landscape with its value as an amenity species in residential areas? As we have done with other horticulturally important species in the past, such as *Lantana camara*, should the use and sale of buffalo grass be regulated in order to reduce its potential impacts on natural systems? To answer this question we must consider four factors: (1) the species' commercial value, (2) its value as an amenity species to private landholders, particularly in urban areas along the coast, (3) its impacts on native communities and (4) its use and dissemination across multiple landscapes. With regards to the second factor, this species is arguable one of the most important in terms of its amenity to local landholders: it requires very little care as a turf grass since it's able to form luscious, impenetrable swathes, which can grow in very difficult positions, such as on acidic, waterlogged and salty soils. It requires very little maintenance (other than regular mowing) and is thus useful as a recreational species on sporting ovals and nature strips along roadsides. Thus, regulation of the sale and use of this species would be ill advised indeed!

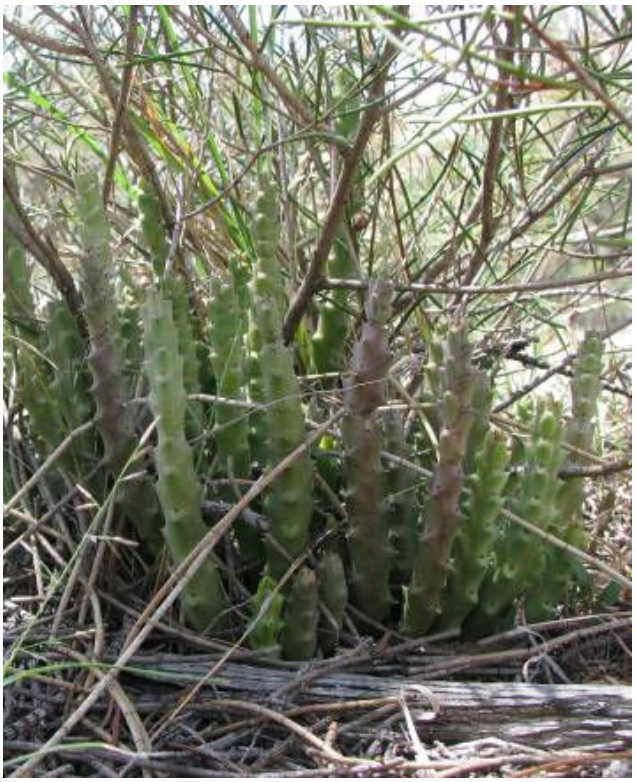
A more appropriate way to reconcile natural impact with civic amenity would be to consider the fourth factor posed above: that is, the use and dissemination of buffalo grass across multiple landscape and habitat contexts. We must ask: how is this species able to disperse to and establish in natural areas? What are the effects of human movement across and occupation of different land use types on the likelihood of successful invasion and impact of buffalo grass on natural systems? In my surveys of invaded forest, many patches of which are remote to residential areas, I found much evidence that buffalo grass establishes asexually from stolons that are 'dumped' illegally as garden waste. Thus, it's not so much a problem that people are using an 'alien' species in their gardens, as much as their *mis*use of this same species outside the urban landscape context! I have been criticised in my research by some horticulturalists who see me as out to demonise a valuable cultivated species, but this is far from a fair assessment of my view! I believe that buffalo grass will and should remain an important component of our increasingly urbanised coastline, because in this context it performs a very valuable civic service. What I firmly believe is that it's the ways in which people *mis*use this species outside of the urban context that drives its eventual impacts on natural systems.

Carrion flower (*Orbea variegated*) - the path to eradication.

Mark Hamilton, Project Officer (Weeds), Pest and Ecological Management Unit
National Parks & Wildlife Service, Office of Environment & Heritage
Department of Premier & Cabinet
Hurstville

Carrion flower (*Orbea variegata*) is a succulent perennial herb that is native to South Africa. The species is widely cultivated as a hardy low-care ornamental plant and has become invasive in parts of South Australia, Western Australia and Queensland.

Carrion flower. The stinking mottled flowers are attractive to flies - hence its name. Image: Mark Hamilton



Carrion flower infestation showing general appearance and growth habit. Image: Mark Hamilton

NSW National Parks (NPWS) staff in Northern Plains Region detected the presence of this weed in a highly sensitive area of Pilliga National Park, 45 km south west of Narrabri and deep in the Pilliga Scrub. It is the only known infestation in NSW. The weed forms dense mats in the understorey that exclude other plants, and has invaded *Melaleuca* shrubland that borders unique ephemeral wetlands of the 'Pilliga Outwash'.

A weed risk assessment confirmed that carrion flower is a 'very high risk' weed, and it should be eradicated from NSW. In South Australia, the weed proved difficult and costly to control, which is consistent with initial NPWS control efforts that proved mostly ineffective. However, other control options are currently being trialled.

Carrion flower (*Orbea variegated*) the path to eradication. (Contd.)

Interim monitoring results indicate that two of the four herbicide formulations trialled resulted in 98 and 100% mortality of the plant respectively, with no off-target damage to the dominant *Melaleuca* species that forms the canopy. NPWS staff will further monitor carrion flower and native species to verify these responses. These initial results are very encouraging and upon further monitoring we will be one step closer to eradicating this serious environmental weed from NSW.

Carrion flower infestation before control.
Image: Mark Hamilton

Carrion flower infestation 3 months after treatment.
100% reduction in carrion flower cover.
Image: Mark Hamilton

NSWWEEDS CONFERENCE

17th NSW Weeds Conference

9 - 12 SEPTEMBER 2013
COROWA RSL Club
COROWA, NSW, AUSTRALIA

A **partner program** is available as part of this conference.

The tours below can be booked as part of the registration process.

Tuesday 10th September
Explore Beechworth & Chiltern.

Wednesday 11th September
Wine & Food Extravaganza.

Thursday 12th September
Arts & Culture.

Corowa Shire ...the choice

THE WEED SOCIETY OF NEW SOUTH WALES INC.

NSW GOVERNMENT Department of Primary Industries

Have you renewed your Society membership?

Membership dues for the year 2013 were sent out in February to all members. If you haven't renewed take the opportunity to become fully financial again and support to Society.

For information contact the treasurer.
Email: **treasurer@nswweedsoc.org.au**

Weed Alert!

Sicklethorn *Asparagus falcatus*

A newly emerging asparagus weed, *Asparagus falcatus*, has recently caused a stir amongst weed managers on the east coast of Australia.

The weed, commonly called sicklethorn, is also known as large forest weed, imblekazana or doringtou. It is a native to western, eastern and southern Africa, Sri Lanka, the Canary Islands and the Mediterranean. In southern Africa it is often grown as a security fence.

Introduced as a garden plant to Australia it has been found in the mid-north coastal region of NSW, including areas around Wollongong, Gosford and Port Macquarie. Though the infestations are small they are spreading and are often started by the dumping of potted plants and garden material.

In Sydney sicklethorn has been recently found at:

- Strathfield local government area - infestation was spreading in the M4 roadside corridor and is being eradicated by Roads & Maritime Services contractors.
- Pittwater local government area - a single plant controlled on a property in the Warriewood light industrial area, also near a residential area.

Infestations have been found also in south-east Queensland, frequently in the riparian areas of suburban Brisbane.

Sicklethorn is a robust climber that prefers moist, semi-shaded growing conditions. One of the problems with sicklethorn is it looks unlike other asparagus weeds that have naturalised in Australia. Because of this it may not be obvious to observers as being a member of the Asparagaceae family.

Leaves are shiny, dark green, often sickle shaped (hence the name!). Woody stems have hard, hooked thorns and are light grey in colour. Small white flowers are followed by bright red berries, each containing a shiny black seed. The fruits attract a wide variety of birds. Whilst literature describes the plant as growing 2.5 – 3 m tall in its native range, anecdotally it grows to 6 metres in Australian conditions.

Although originally from sub-tropical regions a quick ‘google’ reveals it will survive overnight temperatures of 2 degrees and ‘will grow for anybody’!

Sicklethorn, *Asparagus falcatus*, plant habit. **Image: Sheldon Navie.**

Weed Alert!

Sicklethorn
Asparagus falctatus

Flowering inflorescences. **Image: Sheldon Navie**

Thorns on stem. **Image: Sheldon Navie**

Leaves & buds. **Image: Sheldon Navie**

Weed Alert!

Kidneyleaf mudplantain
Heteranthera reniformis

Kidneyleaf mudplantain, *Heteranthera reniformis*, is a popular ornamental pond plant, native to shallow, freshwater wetlands over a broad area of North, Central and South America.

It is a submerged or floating, annual or perennial plant which floats in rafts. It can easily break free of the bank and take root elsewhere. Its seeds last for many years.

A quick-growing opportunistic coloniser of open wetlands it is a **Class 1 Noxious Weed**.

How to Identify Kidneyleaf mudplantain

Plant: Forms dense mats and grows 20 - 50 cm tall.
Flowers: Flowers are white to pale blue and open about three hours after sunrise and wilt by early afternoon
Leaves: Small, rounded kidney shaped leaves, alternate on thick sheaths stems that produce roots at nodes
Fruit: Capsule with 8 - 14 winged seeds
Habitat: Prefers open, sunny sites with nutrient-rich soil and shallow water less than 15 cm deep
Distribution: Found in roadside ditches, edges of freshwater streams/rivers and ponds, freshwater tidal mudflats and garden ponds.

Further Information: Contact the Weeds Officer at your Local Council.

Increasing Glyphosate Resistance in Barnyard Grass.

Tony Cook
Technical Specialist Weeds
Biosecurity NSW
NSW Department of Primary Industries Tamworth

As most of us are aware, glyphosate resistant awnless barnyard grass (GR BYG) has made its presence felt in the northern grain region. Its impact on the grain industry comes in two forms; geographical spread and the level of resistance.

We need to reference ourselves back to the first confirmed cases of glyphosate resistance discovered in 2007. At that time two populations were found near Bellata in northern NSW and were reported to have 5 and 7-fold resistance. This level of resistance is similar to 50% survival following glyphosate 450 applied at 4 to 6L/ha.

Achieving consistent and effective results every year with glyphosate is uncommon. Efficacy on susceptible populations can differ in response to moisture stress, herbicide rate and plant size. To further complicate the matter, there are also variable levels of glyphosate resistance present in the northern region.

Symptoms on resistant plants can vary from almost dead plants which re-shoot from the base, to those almost unaffected (showing some leaf tip death and mild colour change).

Recent rate response experiments have discovered that some of the barnyard grass populations tested are more resistant than the 'resistant standard' collected from the original confirmed resistance site at Bellata (Table1).

In the experiments, glyphosate rates between 0.8 to 12.8 L/ha (450g/L formulation) were applied. The resistant standard had a 5 to 7 fold level of resistance with 78% control of biomass after 12.8 L/ha of glyphosate (Table 1). Note that the biotypes PLG3, TAP4 and JRD1 had per cent control values generally less than the resistant standard when comparing control at the 6.4 and 12.8 L/ha rates (highlighted in green – Table 1).

Table 1. Percent control of awnless barnyard grass presented as % green biomass reduction 28 DAT (days after treatment) for various rates of glyphosate (450g/L). Negative values indicate an increase in biomass.

% control of green biomass (relative to nil rate specific to each biotype)							
		Glyphosate (450g/L) rate per hectare					
Biotype	**Location**	**0.0**	**0.8**	**1.6**	**3.2**	**6.4**	**12.8**
Susceptible	Tamworth	0.0	56.5	96.2	100	100	100
Resistant (standard)	Bellata	0.0	-1.6	23.4	18.5	49.2	78.0
PMD1	Moree	0.0	-8.0	20.9	42.8	88.7	100
LWN4	Croppa Ck	0.0	37.4	37.7	81.8	95.8	100
TAP3	Bellata	0.0	27.8	50.4	37.7	72.3	89.2
PLG3	Boggabilla	0.0	-104	-151	-162	-17.2	42.6
TAP4	Gurley	0.0	-103	-6.9	20.8	30.6	44.4
GJM2	Bellata	0.0	-54	-7.1	21.2	57.6	75.0
JRD1	Westmar	0.0	-144	-4.2	-15.3	22.9	11.0

Increasing Glyphosate Resistance in Barnyard Grass. (Contd.)

These 'higher level' forms of resistance are very concerning. Plants within 'harder to control' biotypes had little or no symptoms at the lower glyphosate rates and moderate leaf tip death at 12.8L/ha of glyphosate 450 (Photos 1 & 2).

(1) Biotypes (left to Right)
HR,SUS,PMD 1,PLG 3,LWN 4,TAP3

(2) Biotypes (left to Right)
TAP4, GJM2, JRD1

Photos 1 & 2. Variation of symptoms from barnyard grass (BYG) populations treated with 12.8L/ha glyphosate 450. The biotype names are written on the pots. Images: Tony Cook

The mechanisms of resistance for these populations have not yet been formally identified. It is hypothesised that higher level resistance is a combination of various non-target site mechanisms, possibly in combination with a target site mutation. Efforts are underway to determine if this theory is correct via collaboration with both the University of Adelaide and the University of Queensland.

How does this affect me?

In cases where the level of glyphosate resistance is very high, the use of double knocking with glyphosate followed by paraquat is essentially the same as a single application of paraquat. This scenario will apply selection pressure for paraquat resistance or will fail to provide effective control if the weeds are beyond the early tillering stage, as paraquat's control drops sharply beyond this growth stage. A move away from glyphosate to an alternative herbicide or cultivation is required. There is some evidence that a Group A/glyphosate tank mix is being used to control GR BYG. Yet again, if the level of glyphosate resistance is high, the Group A herbicide will be doing all the work and the population will be at great risk of getting Group A resistance. This is a very risky practice.

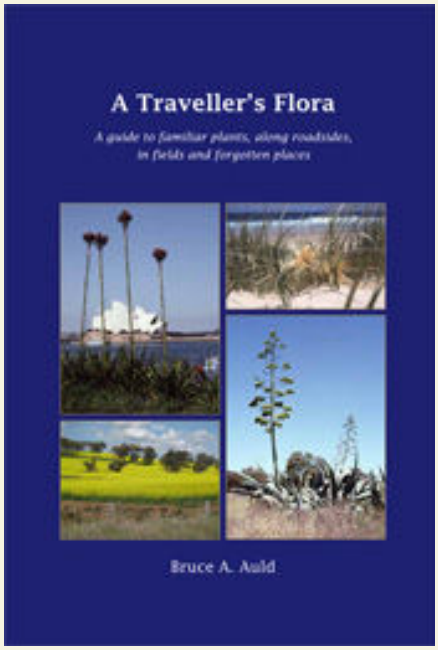
If low level resistance is confirmed, glyphosate can be used to gain some reasonable control of BYG, particularly if treating weeds smaller than early tillering. A double knock application of paraquat can then be used to control survivors. In this case, there is less pressure placed on paraquat and therefore a reduced risk of paraquat resistance.

Controlling susceptible or GR BYG with glyphosate alone, without follow-up control of survivors, is a recipe for disaster. In situations where GR BYG has developed there is a history of frequent glyphosate applications without control of survivors. Don't let history repeat itself.

What can I do to stop GR BYG dominance?

- Monitor paddocks regularly for post-spraying performance
- Get suspect plants tested for resistance
- Use alternatives to glyphosate (cultivation, pre-emergence herbicides, desiccant herbicides)
- Stopping seed set on survivors is a high priority
- Seek agronomic advice

Further Information: Tony Cook **tony.cook@dpi.nsw.gov.au**



A Traveller's Flora

A Guide to Familiar Plants, Along Roadsides, in Fields and Forgotten Places

Author: Bruce A Auld

Colour photographs
180 pages, 230 x 156 mm
Publisher: Samara

Paperback - June 2013
ISBN: 9780646901169
AU $ 29.95

A Traveller's Flora **describes and illustrates the common and conspicuous plants you see while driving around south eastern Australia. It includes crop plants, trees, common roadside plants and weeds. Every plant has a name and a history and this book helps you to get to know them and their relatives with the help of beautiful colour photographs and a 'quick plant finder'. The book also includes a brief introduction to botany: how plants are named and classified, how they grow.**

The book arose through holiday trips throughout south eastern Australia from Queensland to Tasmania with Bruce's family and friends and their questions about plants.

The idea for the book was supported with a small grant from the Australian Academy of Science to foster a wider interest in the plant sciences.

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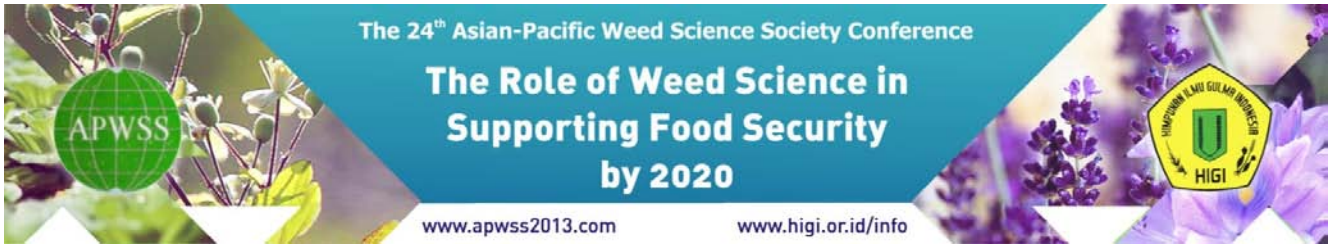

The e-newsletter is intended to keep you up to date on weed related activities in between the publications of our printed newsletter, A Good Weed.

The e-newsletter will be a maximum of two pages and we would love to have one or two brief paragraph contributions from members, or even non-members, on something to do with weeds and of interest to Society members.

Send material to editor@nswweedsoc.org.au and please include contact details so readers know where to obtain more information.

Do you wish to be on our email distribution list?

If you have not listed your email address and wish to be included in the distribution list contact the secretary secretary@nswweedsoc.org.au

Your email will be used only for Society matters and you can unsubscribe at any time.

THE WEED SOCIETY OF NEW SOUTH WALES INC.

Society Information

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Committee Meeting Details

14 June 2013 Executive Committee Meeting
9 August 2013 Executive Committee Meeting
11 October 2013 Executive Committee Meeting
13 December 2013 Executive Committee Meeting
21 November 2013 AGM and Annual Dinner

All dates need to be confirmed

The newsletter is the major source of information to our members and we are sure they want to read about all the exciting, interesting and unusual things you are doing in weed management.

Let us know about local and regional news, people and events, new emerging weed species, weed management issues, bushland regeneration, bushcare programs, weed research summaries, noxious weeds, legislative issues and book reviews.

We prefer short & interesting articles of about 200 to 500 words with good quality images which will reproduce well in colour.

If you want to submit material or discuss possible articles email - editor@nswweedsoc.org.au

Submission dates for material for 2013 and early 2014 are:

#64 Spring 2013 31 August 2013
#65 Summer 2013/14 30 November 2013
#66 Autumn 2014 28 February 2014
#67 Winter 2014 31 May 2014

Letters to the Editor

The editors welcome members comments on articles that have appeared in 'A Good Weed' or have weed-related issues they would like to bring to the attention of the Society members.

If you would like to contribute a 'Letter to the Editor' it must be under 150 words, submitted by the due date for the issue you would like it to appear and contain your contact details.

The editors reserve the right not to publish a letter. Contact: editor@nswweedsoc.org.au

If unable to deliver return to:

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