



TASWEEEDS



SPRING 2008 NUMBER 40

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Conference

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RESEARCH The alarming impact
Hungry weeds **17** of pint-sized intruders

WEED PROFILE A popular but toxic
Rhododendron **18** garden plant

PUBLICATIONS Managing Australia's
Wild radish **20** worst broadleaf weed

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Hard work

Phew! The 2nd Tasmanian Weed Conference has been and gone (for most of you at least). Thanks to all the hard work put in by the Tasmanian Weed Society Executive Committee in preparation, and on the day it was a success.

I'd like to thank the executive committee for their hard work, perseverance and enthusiasm in preparing for the conference. Matt Baker and Peter McGlone (who were pretty much responsible for the excellent array of speakers on day one), David Lane (who organised the fantastic field trip), Roy Skabo, Greg Taylor, Greg Stewart, Sandy Leighton and Sue Hinton all put in many hours of work to get such a great two days up and running.

I'd like to thank Timm Newlands, for designing the conference flyer and program, as well as our fantastic *Tasweeds* magazine.

I'd also like to thank our sponsors. In this world, money is essential and, as a small society, we do not have very much of it. Our gold sponsors: DPIW – Weed Section, Hydro Tasmania, and the Nursery and Garden Industry Australia (NGIA); our silver sponsors: NRM North, NRM South/Southern Tasmanian Councils Authority, Cradle Coast NRM and Forestry Tasmania; and our bronze sponsors: Aurora Energy, Roberts Rural Supplies, Hobart City Council and DIER helped to make the conference possible.

I'd like to thank our chairpersons Paul Adams, Di Harris and Kiowa Fenner for piecing the day together on the day, and I would especially like to thank all the speakers who committed time to share their knowledge and experience at the conference: Tim Low, Robert Chin, Anthea Fergusson, Michael Moerkerk, Duncan Macdonald, Karen Stewart, Karen Ziegler, Mel Fazackerly, Anni McGinniss, Sandy Leighton, Greg Stewart, Greg Taylor, Matt Sheehan (in Kelly Snell's absence), Hilary Cherry, Sue Hinton and Jon Marsden-Smedley.

Finally, I'd like to thank the delegates who managed to find time to come along and be the last pieces of the puzzle in making a great conference.

(See page 4 for more on the conference.)

Moving forward

Now we as an executive have the unenviable job of finishing up, making sure everything is sorted and accounted for, and getting those notorious proceedings together and out to delegates - we do hope they will be out soon.

We hope to use the momentum and enthusiasm from the conference to be more active in the following years and to make sure weed issues stay in the spotlight. We hope to hold a seminar between now and our annual general meeting in March 2009, and look forward to reinstating the yearly 'Weed-

Joining TWS

The benefits of joining the Tasmanian Weed Society include:

- an information-packed quarterly newsletter – *Tasweeds*
- a forum to discuss weeds with people who actually understand
- regional field days and workshops on topics of interest
- an opportunity to meet and make valuable contacts

Membership is timed to coincide with the AGM and is therefore valid for a year from 1 March. Members who join in the three-month period prior to March are deemed to have joined on 1 March.

To join or renew membership, submit your details either online or using the form available at www.tasweeds.org.

Cost of Membership

Student	\$10.00
Ordinary	\$25.00
Corporate	\$55.00

Please forward form and remittance to:

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About Tasweeds

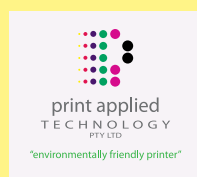
Tasweeds is a quarterly publication of the Tasmanian Weed Society Inc.

Editors: Matthew Baker, Natalie Holman, Greg Stewart, Greg Taylor and Timm Newlands

Design and layout: Timm Newlands

Readers are free to circulate and reproduce material published in *Tasweeds*. We ask that authors/sources of information are acknowledged.

Members of the weed community are encouraged to submit articles to *Tasweeds*.



Cover images

(by Matthew Baker):

- *Amsinckia calycina* (hairy fiddleneck)
- *Erica andromedae-flora* (andromeda heath)

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Why weeds won't win! – The 2nd Tasmanian Weed Conference

There are several measures of the success of an event such as the 2nd Tasmanian Weed Conference. One important objective of the conference was to increase awareness of the weed issues we face: our keynote speaker, Tim Low, managed to attract the attention of ABC radio's country hour, as well as ABC TV's news on which he was interviewed about the possible effect of climate change on weed impacts and risks, along with with Robert Chin of the Nursery and Garden Industry Victoria (NGIA). In the news story they included images of weeds, and of delegates at the conference. I know that at least my auntie is now aware

The third measure I'd use, is my own impression. I thoroughly enjoyed both days. I met many new people and I learnt a lot: about different projects, about how best to move forwards in the war against weeds, but most of all that many hard working, resilient and experienced people are working along-side me to combat weeds. I can only hope that all others who attended enjoyed it as much.

One thing that everyone finds difficult to give is criticism, but if anyone has any constructive suggestions for our next conference, please let us know. I know I'm already forming a (small) list...

The conference also provided an opportunity for some organisations to launch, announce, or celebrate their weed management initiatives.

Cradle Coast NRM, presented their Weed Hygiene Action Plan and used the opportunity to have it officially launched by Andrew Bishop, Biosecurity Policy Manager at DPIW. This plan is possibly an Australian first, and a great step towards reducing weed threats into the future as well as managing weeds already present.

Phil Reader from the Tasmanian Farmers and Graziers



Above: Greg Taylor (CC NRM), Andrew Bishop (DPIW) and Duncan Macdonald (Agricultural Resource Management) with the freshly launched Weed Hygiene Action Plan



Right: Jon Marsden-Smedley (SPRATS) relaxes after his presentation

that she has a Weed of National Significance (boneseed) in her garden, and is going to get rid of it. I think that that is a great success, and thanks to Tim's expertise and eloquence we have brought the importance of weed issues in an unstable and changing climate into the living rooms of many more Tasmanians than we would normally reach.

Another measure of its success is the response of those attending. On both days of the conference I had many people tell me they were very appreciative of the range and depth of the topics, and pleased that so many important aspects of weed management were covered. I've received emails from people who attended stating that what they learnt was very relevant to their work, and that they appreciated the opportunity to share information and to network.



Robert Chin (NGIA) and Elizabeth Schrammeyer (TWS President) presenting Sally Staubmann with the Tasmania's Most Weed Wise Nursery Award

Association (TFGA) Weeds Committee took a few moments of afternoon tea to tell us about their new weed control calendar, developed in conjunction with DPIW. Phil had a copy on display at the conference.

Robert Chin of the NGIA announced during his presentation the 'Grow me Instead' booklet that they will be launching very soon. This booklet will provide suggestions for less- or non-weedy alternatives for popular-but-weedy nursery plants. Sadly they did not yet have it ready for the conference, but we can look forward to seeing it spread through nurseries and homes soon!

At the end of the day of presentations, we took the opportunity to announce Tasmania's most Weed Wise Nursery for 2008. Robert Chin of the NGIA presented the award to the winner, Habitat Plants nursery's Sally Staubmann.

Elizabeth Schrammeyer

Third glyphosate-resistant weed present in Australia

Weed scientists are urgently appealing to Australia's farmers to switch to an integrated weed management (IWM) system as the country records its third glyphosate-resistant weed.

Researchers have confirmed that a population of liverseed grass (*Urochloa panicoides*) from summer fallows in New South Wales has become resistant to glyphosate (eg Roundup), the most valuable herbicide in Australian agricultural systems.

The announcement comes only a year after glyphosate resistance was confirmed in northern New South Wales in two populations of awnless barnyard grass (*Echinochloa colona*), and 12 years after the first case of glyphosate resistance was recorded in a population of annual ryegrass (*Lolium rigidum*) near Echuca, Victoria.

And with cases of resistance to other key agricultural herbicides also on the rise in Australia, this latest discovery –

a world first for liverseed grass – has prompted weed scientists from across Australia to issue an appeal to farmers to decrease their reliance on herbicides and adopt an IWM system.

'Integrated weed management combines herbicides with other cultural tactics for weed control, maximising the opportunity to prevent seed-set and to reduce the weed seedbank,' said Technical Specialist – Weeds, Mr Andrew Storrie (New South Wales Department of Primary Industries).

According to Mr Storrie, adopting an IWM strategy that includes non-chemical tactics for stopping replenishment of the seedbank will result in fewer problems in the future.

'Weeds can be managed without relying solely on herbicides, and used sustainably, herbicides can be protected for future generations.'

Many farmers don't adopt IWM because of the added short-term

costs; however, research and farmer experience have shown that failure to adopt IWM leads to herbicide resistance.

'Integrated weed management is like an insurance policy,' said Mr Storrie. 'Pay a small premium now in adopting IWM, or risk paying a bigger premium later when herbicide resistance occurs.'

Farmers are encouraged to check herbicide performance and use other methods to stop weed seed set where herbicides fail. Resistance tests can help determine whether failures are due to resistance.

More information on liverseed grass and integrated weed management is available at www.weedsrc.org.au.

CRC for Australian Weed Management/Glyphosate Sustainability Working Group

Stay up-to-date with DPIW's new biosecurity stakeholder register

Tasmania has long had a focus on State biosecurity and maintaining the value of our island advantage. In recent years, Tasmania's biosecurity and quarantine systems have been undergoing extensive development to ensure the State's systems and approaches to biosecurity match changing national and international conditions.

These developments invariably involve changes to structures, processes, procedures, and regulations. There is a very wide and diverse range of Tasmanian biosecurity stakeholders both within and outside the State. Communicating and informing this large diverse group has always been challenging for DPIW. However, this notification process should now be dramatically improved with the recent introduction of a Tasmanian biosecurity stakeholder register.

By subscribing as a stakeholder, identifying what areas of biosecurity/quarantine you have an interest in, and registering your contact details (including an email address), you will be the first to know about changes or developments. In addition, you will receive a regular e-newsletter on biosecurity and quarantine happenings in Tasmania. Registration is free and it is easy. Just visit www.dpiw.tas.gov.au/biosecurity and select the green registration button. You will never be the last to know again!

For more information please contact Barry Calderbank, Communications Officer (Biosecurity), DPIW, on 62336519 or barry.calderbank@dpiw.tas.gov.au.

Andrew Bishop
Biosecurity Policy Branch, DPIW

Tiger pear claims new ground in New South Wales

An infestation of tiger pear (*Opuntia aurantiaca*) has been discovered on the banks of the Barwon River in New South Wales. The weed was previously not known to occur in the Brewarrina Shire.

Originally introduced to Australia as a pot plant, tiger pear now infests some 200,000 hectares of land in New South Wales, where it is a major pest in several areas. The majority of these infestations have been started by plants grown in home gardens.

Tiger pear consists of a cluster of small segments covered with barbed spines which can readily attach to animals and car tyres. A single plant has the potential to produce hundreds of individual plants, as each detached segment is capable of germination.

Cochineal insects (*Dactylopius* sp.) were being released to treat the latest infestation. While biological control is a slower treatment process than chemical treatment, the cost and time taken to distribute these insects is minimal.

Tiger pear is extremely difficult to eradicate, therefore ongoing long-term monitoring and follow-up control will be required to control it.

NSW Department of Primary Industries

Weeds CRC publishes a new series of weed management guides

The CRC for Australian Weed Management (Weeds CRC) has launched a new series of 'plainly written yet detailed' weed management guides for use by Australian landholders and bushland managers.

The eight 'high impact environmental weeds' covered in the series were chosen after a survey of Australia's Natural Resource Management regions.

- *Lycium ferocissimum* (African boxthorn)
- *Hyparrhenia hirta* (Coolatai grass)
- *Cenchrus ciliaris* (buffel grass)
- *Vinca major* (periwinkle)
- *Erica lusitanica* and other *Erica* species (Spanish heath etc.)
- *Cytisus scoparius*, *Genista monspessulana* and related species (brooms)
- *Macfadyena unguis-cati* (cat's claw creeper)
- *Pennisetum* species (some foxtails and fountain grasses)



The management guides are available online at www.weedsrc.org.au/publications/weed_man_guides.html#biodiversity

Weed management company releases aquatic herbicide carrier

Bettersafe Pest and Weed Management of New South Wales is promoting a new product called 'Hydrogel', a polysaccharide starch that delivers the herbicide Diquat on to submerged weeds.

According to the company, 'Hydrogel directly targets nuisance weeds by binding the Diquat and then attaching the mix to submerged aquatic plants... [thereby] effectively reducing herbicide costs and only treating the unwanted nuisance plants in any desired location without the need for expensive mechanical harvesters or draw-down of water bodies'.

Because there is apparently 'virtually no drift of the herbicide from the target plant', managers use less herbicide, resulting in 'reduced costs and potential environmental impact'.

The company's website states that 'Diquat has been used successfully for over 40 years in waterways with no detrimental environmental effects... [It] controls over 15 major aquatic weeds including Eurasian watermilfoil (*Myriophyllum spicatum*), parrot feather (*Myriophyllum aquaticum*), *Hydrilla verticillata*, water hyacinth (*Eichhornia crassipes*), water lettuce (*Pistia stratiotes*), *Salvinia molesta*, *Egeria densa*, hornwort (*Ceratophyllum demersum*) and submerged pond weeds'.

Hydrogel is available for order at www.hydrogel.com.au.

Noxious weed sold at Bunnings and Big W

According to a report in *The Age* newspaper (25 August 2008), Bunnings and Big W stores in Victoria stocked and sold the potentially serious new weed, Mexican feather grass (*Nassella tenuissima*).

Early this year, Bunnings sold 4,800 pots of the plant, and Big W about 100 pots, while another 2,200 plants were confiscated from their stores (and from a 'limited number' of plant wholesalers) during a series of inspections conducted by the Victorian Department of Primary Industries.

According to the report, the Bunnings 'risks a fine because of the sales, which raise serious questions about the ability of sections of the nursery industry to know, trace and properly label what it sells'.

Bunnings issued a recall of the plants, and undertook to destroy all existing stock.

GMO ban extension recommended

As reported by the ABC (28 August 2008), a Parliamentary committee has recommended that Tasmania's ban on genetically modified food crops be extended and reviewed in five years.

The chairman of the committee, Primary Industries Minister, David Llewellyn, said that 'many of those opposed to the use of GM material warned of the damage that lifting the moratorium would cause to the State's reputation as a producer of clean, high quality foods'.

According to the report, the committee also recommended that the State 'adopt a zero-tolerance approach for GMO contamination in imported canola and grain seeds, as well as a ban on the importation of animal feed containing GMOs'.

Prickly poppy rediscovered on King Island

In late November 2007 I accompanied DPIW botanists Richard Schahinger and Matthew Larcombe to King Island on a week-long botanical survey. Our main aim was to find new populations of threatened plants, and to see how Nook Swamp was recovering after the fires of 2006. But before I left I asked Matthew Baker of the Tasmanian Herbarium for a list of weedy botanical desirables worthy of collection during our visit. Top of the list, by chance I think, was the prickly poppy, *Papaver aculeatum*.

After arriving at Currie on King Island, and while going through our itinerary for the week, I mentioned to my botanical companions the list of exotics to watch for, making special note of *P. aculeatum*, and suggesting that our chance of discovering it was slight as it had not been seen in Tasmania since the late 1890s. In the Census of Tasmanian plants, *P. aculeatum* is listed as introduced but extinct in Tasmania – one of only a few exotic species to have this distinction.

Our first day saw us in Nook Swamp at various sites. We had already made some very interesting finds in both of native and exotic departments: the first record of *Senecio psilocarpus*, a native fireweed, for King Island; a new record of the threatened *Epilobium pallidiflorum*, a semi-aquatic native willowherb; and the first record of *Crassula natans* var. *minus*, a mud-loving exotic herb rarely recorded for Tasmania.

As we were leaving the fire-ravaged dunes of the Nook Swamp track, I noticed a distinctive orange-flowered herb. Alighting from the car, it became obvious that we had stumbled upon a population of the long-lost prickly poppy. Very much like the garden-variety poppy with its delicate bright petals and distinctive fruiting heads, prickly poppy differs in that its leaves, stems and flower-heads are covered in spiny bristles. This being the case, I

bagged several specimens.

The prickly poppy is recorded in the *Student's Flora of Tasmania* as 'Tas., local in the north-east and islands of Bass Strait; temperate Australia. Native in South Africa and possibly introduced from that country into Australia', while the *Flora of Victoria* describes it as '... also naturalized SA, Qld, NSW, Tas. (King Is. and Flinders Is.)'.

Prior to our 2007 collection, the Herbarium held just one specimen of *P. aculeatum* from Tasmania. It was collected from King Island in 1899, but lacks exact location or population details. No specimens are held by Launceston's Queen Victoria Museum and Art Gallery. The only other Tasmanian collections of *P. aculeatum* – both from King Island – are held at the Royal Botanic Gardens and the National Herbarium of New South Wales. Finally, its presence on King Island is noted in one of the first accounts of the natural history of the island – A.J. Campbell's 'Official Report' of an expedition made in 1887.

Unfortunately, my specimens went mouldy in a bag, but King Island NRM staff Lauren Barrow, Mark Branson and Ken Baker kindly collected and curated additional material, which they submitted to the Tasmanian Herbarium. They also indicated that the population seemed to be highly localised, occupying 335 square metres on the dune rise dissected by the sandy 4WD track we originally traversed.

Following this discovery, we should all be on the lookout for additional sites

in northeast Tasmania and on Flinders Island to try and locate the source of this unusual plant.

Mark Wapstra
Environmental Consulting
Options Tasmania



A dried specimen of prickly poppy (Papaver aculeatum) held in the collection of the Tasmanian Herbarium

ON THE GROUND

Nicole Gill
CLEVER FISH

Weed hygiene

A force to be reckoned with

More important than the global credit crisis, and sexier than a hot tub full of Hollywood starlets, weed hygiene know-how is the new must-have accessory for the cutting-edge Tasmanian weedo. And with its stylish lines and fresh, innovative design, the South East Coast Management Strategy (SECMS) Management Group's new weed hygiene project ticks all the boxes as a contemporary, practical weed management tool – one that will keep your local area looking nice for a reasonable price.

Weed hygiene education is, admittedly, a repugnant term. It puts one in mind of teaching blackberries to wash their hands before eating, gorse bushes to wipe their feet prior to entering a paddock, or things similarly unsavoury. But for now, it's the best shorthand we have to describe the practices and procedures for preventing the establishment and spread of problem plant species into new areas. This may mean cleaning equipment or machinery prior to moving it; planning works to avoid weed-infested areas through time and/or space; and learning to recognize weed risks when undertaking on-ground works.

Funded by NRM South, the SECMS group worked with environmental consultants Nicole Gill and Duncan Brain of Clever Fish to design and implement a program that drew together representatives from government, NGOs and community groups to work towards managing for weed hygiene on a regional level across multiple tenures.

The SECMS project was made up of a number of complementary units, aimed at everyone from upper level managers to on-ground works crews. The participants came from Sorell, Tasman, Glamorgan/Spring Bay and Clarence Councils; from the Parks and Wildlife Service and Department of Primary Industries and Water; from the Department of Infrastructure, Energy and Resources and Transfield Services (DIER's new State-wide

roadside managers); from Aurora Energy, Hydro Tasmania and Transend Networks; and from Forestry Tasmania and the Tasmanian Conservation Trust. Local vegetation management contractors also attended many of the events, with a view to getting an edge over their less weed hygiene-conscious competitors.

The project kicked off with an action-packed field trip, where participants strapped on their sock protectors and hopped on a bus to tour sites of weed hygiene significance around the south-east. A trip to a recently installed pipeline easement in Cambridge provided a chilling insight into just how much trouble slack weed hygiene can cause. Contractor Alan Jackson from LMRS Pty Ltd gave a quick overview of their attempts to control an outbreak of Paterson's curse at this site, it having been brought into the area by another contractor using dirty machinery all the way from South Australia.

The field trip was broken up by a stop at the Dunalley pub for lunch, which was followed by a presentation on current relevant weed legislation by Karen Stewart of DPIW. Other highlights of the day included the on-bus weed quiz, won by Craig Reid



Dave Tucker puts the mobile washdown station through its paces at a recent training session in Sorell

from Sorell Council, who snuck over the line by knowing more common names for Paterson's curse than the rest of us combined.

The next phase of the project involved running a series of training sessions with on-ground council crews, Parks employees and interested contractors on practical weed hygiene techniques. These were run by Dave Tucker, one of the co-authors of the Tasmanian Washdown Guidelines, and an old hand at communicating practical weed hygiene procedures to on-ground workers.

The first aspect of these sessions involved taking participants through the importance of weed hygiene in saving on time, money and general environmental havoc, and talking about practical ways of working these procedures into day-to-day activities. After this, it was out into the works yards to try out the brand-spanking new mobile washdown station.

Kindly lent by Hydro Tasmania, this mobile washdown station is designed to be used at works sites on large machinery, to avoid dragging weed propagules back along the roads between the works sites and the depots. While we all stood well back out of the spray zone, Dave used a specialised scraper he'd knocked up over the weekend to liberate large sections of supposedly clean machinery of enough soil to stock a market garden, plenty of weed seeds and the occasional live chunk of noxious weed.

These sessions were filmed by the crew from Solid

Orange, who spliced and diced them into a weed hygiene educational DVD, for use by organizations with field staff. The DVDs were distributed among stakeholders at the close of the project at the glitzy 'world premiere' in Sorell,

and will soon be available on the NRM South and DPIW websites.

Crews from councils, Parks and contractors were also provided with sets of WEEDeck cards, a handy glove box-sized weed ID tool that on-ground crews took a shine to for weed ID in the field. Other handy tools developed by the project included the development of a contact list linking all relevant people within the stakeholder organizations, a selection of documents detailing the status of declared weeds for each municipality, a clause for insertion into future council contracts to ensure contractor compliance with weed hygiene requirements, and last but not least, a scraper for every council, to get to those hard-to-reach places on dirty great bits of large machinery.

Feedback on the project has shown works crews to be more aware and active in preventing weed spread in their daily operations. People are also working more closely with one another across the region, sharing hot tips on weed hygiene and management. And finding weed hygiene way more enticing than you might otherwise imagine.

For more information on this project, or to obtain copies of the weed hygiene DVD, contact Nicole Gill or Duncan Brain at clever.fish.tasmania@gmail.com.



Craig Reid, proud winner of the on-bus weed quiz



ON THE GROUND

Sandy Leighton
PROJECT MANAGER
SOUTHERN TASMANIAN
WEED STRATEGY

Sea spurge program for Southern Tasmania

As many of you will know, sea spurge is a potential disaster for the Tasmanian coast. It can affect the natural movement and shape of the foredune, outcompete native coastal plants, and reduce habitat for shore-nesting birds, including the little tern (listed as endangered in Tasmania) and fairy tern sterna (listed as rare in Tasmania). Not to mention the sap, which is highly toxic!

In the southern NRM region, sea spurge is currently limited in its distribution. Under the Southern Tasmanian Weed Strategy, it has been identified as a high priority weed. With this in mind, we recently met with a wide range of stakeholders to develop an annual mapping, control and monitoring program for sea spurge in the southern region. At this meeting we resolved to:

- hold a training day for community groups
- contact all relevant community groups in areas where sea spurge has been recorded seeking their support for and involvement in the program
- establish a Wildcare group to survey, map and control sites outside of community group areas
- maintain a detailed local level spreadsheet including infestation size and management
- investigate partnerships to develop statewide sea spurge awareness materials.

Infestations

Sea spurge is found at the following sites in southern Tasmania: Boltons Beach (near Little Swanport), Spring Beach (near Orford), Riedle Bay (Maria Island), Marion Bay to Hellfire Bluff ('Marchwiell'), Two Mile Beach ('Bangor'), Pirates Bay (Eaglehawk Neck), Carlton/Park Beach (Dodges Ferry) and Seven Mile Beach. There is an additional record from White Beach (near Nubeena). Luckily, most of these areas have active community groups, so with this in mind we held a training day to encourage involvement in the program, and to improve community group skill, knowledge and engagement.

Community group skill development

The sea spurge training day was held on Sunday, 19 October at Eaglehawk Neck. People attended from Marion Bay Coastcare, Eaglehawk Neck Coastcare, Southern Beaches Landcare/Coastcare, Seven Mile Beach Coastcare, Orford Community Group and Boltons Beach Coastcare. Jon Marsden-Smedley (SPRATS), Eric Woehler (Birds Tasmania, SCAT) and Karen Stewart (DPIW) instructed people in identification, control, survey and mapping, as well as in reducing impacts on breeding shorebirds. This was followed by a visit to Pirates Bay to put the new control, mapping and surveying skills into action.

New Wildcare group

We are looking to form a Wildcare group (along similar lines to SPRATS) for surveying, mapping and controlling sites outside of community group areas. The group will be our early warning system and give us a methodical approach to surveying coastal areas in southern Tasmania. Anyone interested in joining the group please contact me on 6270 2242 or sleighton@stca.tas.gov.au.



Training day participants searching for sea spurge at Pirates Bay



Dave Moser, Eaglehawk Neck Coastcare

Council of Australasian Weed Societies update

Australia is at an important crossroads in weed management – the end of an era for the Weeds CRC and the soon-to-be beginning of a new national weeds research centre.

On behalf of CAWS, I'd like to wish the Weeds CRC a fond farewell and a large thank-you for its comprehensive contribution to weed management at all levels. Launched as the Co-operative Research Centre for Weed Management Systems in 1995, and rebadged as the CRC Australian Weed Management in 2001, it made a massive contribution to weed research, education and awareness. Its coverage was wide – contributing staff were located in every Australian state and territory, and New Zealand, and they represented government agencies, universities and industries. Its view was broad – the issues addressed include herbicide resistance, biological control and weeds of natural ecosystems (to name just a few). Its output was impressive – a great many factsheets, guides, manuals, books, journal papers and conference presentations. Its influence was real – it was very effective in raising national awareness, and contributed frequent articles to the print and electronic media; also, its independence enabled it to lobby governments for policy change, one of the most notable being the scrapping of the permitted genera entry into Australia (which it achieved in collaboration with the WWF).

One of the greatest benefits of the Weeds CRC is the networks and wider sense of community it has fostered amongst staff and students

across Australia and overseas. It has broken down traditional rivalries between various research institutions around the country, and will leave a legacy of ongoing collaboration across jurisdictional boundaries. The Weeds CRC was also a training ground for our weed scientists of the future. Students and young weed scientists alike benefited not only from the mentoring it provided, but also the opportunity to feel welcome and a part of a national, cooperative network.

There are far too many people to thank individually, but our particular gratitude goes to the Directors/CEOs; Steve Powles, Rick Roush and Rachel McFadyen, and to Program Leaders over the years: Richard Groves, Deidre Lemerle, David Kemp, John Fisher, Bruce Auld, Jim Pratley, Chris Preston, Dane Panetta, Paul Pheloung, Tony Grice, Steve Walker and Peter Martin. (Apologies if I have missed any of you!) To these people and all other individuals who contributed, CAWS and its members offer many thanks.

Incidentally, the Weeds CRC's website (www.weedscrc.org.au) will remain active for several years as an ongoing source of information.

CAWS takes a keen interest in the development of the new national weed research centre, for which the Australian Government has allocated \$15 million over four years. An interim board has been established, led by John Kerin, to develop a collaborative structure inclusive of state/territory governments, and research and development corporations like the Grains Research and Development Corporation. Research priorities and a physical base for the centre are yet to be determined. CAWS would want the new centre to have a wide geographic coverage, including links across the Tasman, and to address both environmental and primary industries weed issues equitably.

Finally, congratulations to two students who have both been awarded

ON THE GROUND

Dr John Virtue

PRESIDENT, COUNCIL OF AUSTRALASIAN WEED SOCIETIES

CAWS travel awards for 2008. Sam Trengove (University of Adelaide) is undertaking a Masters degree on the potential for site-specific weed management in Australian agriculture, and is comparing various sensor devices that are used in the detection of weeds. Sam will present a paper at the Weed Science Society of America conference in February 2009, and will visit weed/engineering scientists in North America and Europe. Eleanor Dormontt (University of Adelaide) is undertaking a PhD on the evolution of the invasiveness of *Senecio madagascariensis*. She will attend the international symposium 'Fifty years of invasion ecology – the legacy of Charles Elton' in Stellenbosch, South Africa, in November 2008. Her poster will be titled 'A powerful emerging approach to assess the genetic consequences of invasions: the use of molecular markers to compare native and invasive populations'.

The next round of applications for the CAWS Student Travel Award (\$3,000) and Early Career Weed Scientist Travel Award (\$2,000) will close at the end of May 2009. No applications were received for the latter award in 2008.



ON THE GROUND

Sandy Leighton
PROJECT MANAGER
SOUTHERN TASMANIAN
WEED STRATEGY

Wattle identification day

Throughout Tasmania, several mainland wattles are silently on the move – especially in our coastal areas. The trouble is that not many of us know how to recognise weedy mainland acacias. With this in mind, we held a Wattle ID Day on Friday, 26 September, which was attended by twenty people from community groups, the Royal Tasmanian Botanical Gardens and city councils. The event was sponsored by the Southern Tasmanian Weed Strategy and the Tasmanian Weed Society.

Alan Gray, local *Acacia* expert from the Tasmanian Herbarium, was our teacher, and he was ably assisted by Weed Taxonomist, Matt Baker. The morning was spent in the lab listening to a wide variety of information, looking at numerous live and herbarium specimens, and working our way through Alan's *Acacia* key, whilst the afternoon was spent out in the field putting our newly learnt skills into action.

Alan told us the origin of the name 'wattle', which comes from the English 'wattle and daub' technique of making internal walls in houses by lining them with saplings that were originally willows. When the English settled in Tasmania there were no willows (unlike today), so they used local acacias instead. From then on these plants were known as 'wattles'.

We also learnt that Tasmania has three types of wattle – the 'leatheries', 'featheries' and 'pricklies'. The State has over 21 native wattles, including five that are endemic here (*A. riceana*, *A. derwentiana*, *A. axillaris*, *A. pataczekii* and *A. mucronata* subsp. *dependens*), whilst five are listed as threatened species (*A. axillaris*, *A. pataczekii*, *A. sicutiformis*, *A. ulicifolia* and *A. uncifolia*). Those species which are probably or definitely weedy in Tasmania include *A.*



Alan Gray explains the wattles at Kingston to participants in the recent Wattle ID Day

pravissima, *A. paradoxa*, *A. decurrens*, *A. pycnantha*, *A. floribunda*, *A. longifolia*, *A. howittii* and *A. baileyana*.

Our first stop was the Waverley Flora Park on the eastern shore. Here we saw *Acacia paradoxa* (thorn wattle) invading native vegetation after fire. Next we went to a vacant block of inland heath at Kingston to look at both native and introduced wattles, as well as an interesting mix of naturalised *Grevillea*! From here we went and looked at some roadside *Acacia* plantings, and finally did a drive-by with Alan naming as many wattles as he could from the comfort of the bus.

Everyone thoroughly enjoyed the day, and learnt a great deal about all things 'wattle'. We would like to thank both Alan and Matt for their expansive knowledge and enthusiasm.



Acacia paradoxa invading native vegetation at the Waverley Flora Park in Mornington

Erica efforts on Maria island

Work has begun on a threatening infestation of *Erica lusitanica* (Spanish heath) at Haunted Bay on southern Maria Island. During September, I accompanied seven Friends of Maria Island volunteers on a six-day camp in the remote area to treat the infestation, which covers an area of about one-and-a-half hectares. First identified in the 1990s, the weed probably established itself during times of grazing, or through

dispersal by birds.

With *Genista monspessulana* (Montpelier broom), *Erica* is described in the Parks and Wildlife Service's South East District Weed Management Plan (2000–2003) as

'arguably one of the most serious forest weed problems of all reserves in the State'. If left unattended, these weeds directly threaten very large areas, including some critical habitats.

The remoteness of the *Erica* infestation has made treatment logistically challenging. We were lucky to get the right weather to deploy the team and supplies by boat, and this made our work a lot easier.

The team camped at Haunted Bay and walked the half-hour to and from the infestation everyday. Plants were growing throughout the native vegetation, and were individually cut-and-pasted.



Friends of Maria Island volunteer, David Reynolds, cuts Erica short

'Some of the plants were massive, with woody trunks as thick as your arm,' said Convenor of the Friends of Maria, Anne Booth. 'Other plants were growing over two metres high in dense infestations.'

Over half of the infestation was treated, and work is set to continue on the remaining area. Subsequent monitoring and treatment will also be scheduled to control the species, and ultimately to eradicate it from the island.

For more information, and to get involved in *Erica* and broom working bees on Maria Island, please contact Margie.Jenkin@parks.tas.gov.au.

The Friends of Maria Island (Wildcare Inc.) and the Parks and Wildlife Service thank NRM for funding this project. The Parks and Wildlife Service also thanks Anne and Peter Booth, David and Trauti Reynolds, Dave and Christine Harris, and Vick Campbell for their participation in the program.

Volunteers take a well-earned break



ON THE GROUND

Margie Jenkin

RANGER, MARIA ISLAND
PARKS & WILDLIFE SERVICE

REGIONAL WEED MANAGEMENT

Sandy Leighton
SOUTHERN TASMANIAN
WEED STRATEGY



Bridal creeper

Southern Tasmanian Weed Strategy – Weed update

The Southern Tasmanian Weed Strategy (STWS) continues to make progress in several key areas: priority weed control projects, building community skills, knowledge and engagement, and capturing baseline weed mapping data for priority weeds that will improve monitoring and evaluation of activities in the region.

Priority weed control projects – Boneseed

Our boneseed project (funded under the Australian Government's Defeating the Weed Menace program) has finished. Dysart, Primrose Sands and the Channel were treated in the last quarter, and some isolated plants were cleaned up at Dunalley, Eaglehawk Neck and Dodges Ferry. This project has been an outstanding success, and we have made significant progress on strategic boneseed control in the southern region. Containment lines are now established at Primrose Sands (to the east), Dysart (to the north), New Norfolk (to the west) and the Huon River at Huonville (to the south). Accordingly, we have applied for Caring for our Country Open Grant funding to consolidate and expand our current program. If successful, we will be able to target additional areas to protect the Pittwater/Orielton Lagoon Ramsar site, as well as the New Norfolk area and Bruny Island. The assistance and passion of various individuals and community groups working on boneseed in the southern region are contributing significantly to this outcome, and are greatly appreciated.

Bridal creeper

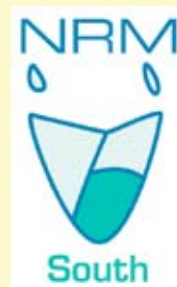
Our annual eradication program has begun. All known sites of bridal creeper have now been surveyed, mapped and treated, and photopoints have been established at each site. Surveys located a few new infestations around Swansea and Montague Bay, and these have also been treated. Our next step is to update the existing brochure, and work with councils to target the residents of Swansea, Dulcote, Richmond and Dowsing Point to encourage additional reporting. This program is a partnership between STWS and a number of councils and State government departments.

Sea spurge

Currently sea spurge is in limited distribution in southern Tasmania. A recent well-attended meeting of key stakeholders established an annual mapping, control and monitoring program for 2008/2009. A community group training day was held at Eaglehawk Neck to build the capacity of groups in the southern region to recognise and control infestations. The southern sea spurge program is a partnership between STWS and a number of local councils, State government agencies and community groups.

Priority weed mapping project

Tasmanian Land and Water Professionals were contracted to compile weed-mapping data for priority weeds of the southern NRM region. Thirty-three species were targeted, and data collected from all 12 southern councils, as well as DPIW, the Tasmanian Herbarium, the Tasmanian Institute of Agricultural Research (TIAR), Hydro Tasmania and Transend. Maps have been produced, and the combined datasets returned to all contributing stakeholders. This baseline weed-mapping data will enable the development of additional strategic control programs, and will facilitate improved monitoring and evaluation of weed activities. It will be hosted and maintained by DPIW, potentially as a part of their Natural Values Atlas, and will inform DPIW's annual national weed reporting requirements. We would like to thank all organisations for their contribution to this project.



Improving community skills and knowledge

A Wattle ID Day and a sea spurge workshop were held recently. See 'On the Ground' for reports on these events. We are also investigating holding another weeds and herbicides course in February 2009, in partnership with the Parks and Wildlife Service (Seven Mile Beach). For more information please contact Sandy Leighton on 6270 2242 or sleighton@stca.tas.gov.au.

NRM North – Protecting the endangered South Esk pine

Less than 600 ha of the South Esk pine (*Callitris oblonga*) is left in existence. The species is only found along the St Pauls, South Esk, Apsley, Cygnet and Swan Rivers in Tasmania and is listed as endangered.

In April 2008 NRM North invested \$35,000 of Caring for our Country funding to eradicate crack willow (*Salix fragilis*), classified as a weed of national significance, from the St Pauls River in the South Esk Catchment.

To date this project has involved eradicating willow on a 20 km section of the river involving works on 15 individual properties over a three-week period.

NRM North has requested an additional \$35,000 through the Caring for our Country Open Grants in 2008 to continue this important work.

The aim of this project is to eradicate crack willow and gorse from the entire length, some 35 km of the river, significantly improving habitat for the South Esk pine community and removing a major threat to its existence.

By the end of 2008 NRM North will have invested Australian Government funding in a project to remove a major threat to 50% of the last remaining South Esk pine community.



Greg Stewart
Weeds Coordinator, NRM North



South Esk pine at St Pauls River

RWM

Cradle Coast NRM launches two new weed management plans

Cradle Coast NRM has completed two new weed management plans that it hopes will result in better coordination of weed management in two key areas.

The Weed Hygiene Action Plan (WHAP) has been written to help the Cradle Coast community prevent the introduction of new weeds, and minimise the spread of existing weeds. It has been well demonstrated that 'prevention is better than cure' for weed management, and the WHAP aims to

improve and coordinate preventative weed management practices in the Cradle Coast Region.

The WHAP was launched at the recent 2nd Tasmanian Weed Conference, and is available from Cradle Coast NRM in Burnie, or can be downloaded from www.nrmtas.org

Cradle Coast NRM will also launch its Coastal Weed Strategy for the Cradle Coast Region in December. This strategy aims to establish a strategic and coordinated approach to

the long-term management of weeds in coastal areas of the Cradle Coast region. It provides a framework within which available resources, both human and financial, can be deployed to the greatest effect.



Greg Taylor
Regional Weed
Officer, Cradle
Coast NRM

thank you from....



The Southern Tasmanian Weed Strategy - a Partnership approach to Weed Management



Significant progress in the strategic management of weeds in Southern Tasmania has been made through the implementation of the Southern Tasmanian Weed Strategy. NRM South and the Southern Tasmanian Councils Authority would like to congratulate all of our partners on their achievements and thank them for their continuing input and support.



Some of the highlights for 2008 include:

- coordination of the region-wide Bridal Creeper control program
- commissioning of four new mobile washdown units
- development of the Channel Weed Strategy

and many more completed and ongoing activities.

RESEARCH

Larry Reichenberger
(COURTESY OF 'THE
FURROW' MAGAZINE)

Hungry weeds

Small weeds use surprising amounts of nutrients and moisture

It's a caper on a grand scale, and it happens in plain sight in many corn and soybean fields every spring. Weeds and grass too small to draw farmers' ire are busy stealing expensive nutrients and precious soil moisture, and they do so at an alarming rate.

'Most farmers believe weeds cause no real damage until they're c. 10–12 cm tall, but research shows a significant impact occurs much earlier,' says Bob Kacvinsky, technical support representative with Syngenta Crop Protection. 'The popularity of crops with genetic resistance to non-selective herbicides has led many growers to rely totally on a post-emergent weed control program. As a result, there's less early weed control and that's putting a stress on crops that can last all season. Using a pre-emergent herbicide can reduce this early weed pressure.'

Nitrogen heist

Kacvinsky worked with researchers from the University of Nebraska to document nutrient and moisture use by weeds in various stages of growth.

'We measured the amount of nitrogen in corn that was c. 10–15 cm tall growing with weeds that were only c. 2.5–5 cm tall. Where no pre-emergent herbicide was used there were weeds and grass typical of what you often see in farm fields. Those weeds contained c. 2.5 kg per hectare of nitrogen while the corn contained only c. 0.4 kg per hectare. When weeds were controlled with a pre-emergent herbicide, they contained less than c. 0.4 kg of nitrogen per hectare while the corn contained c. 0.8 kg,' Kacvinsky points out.

The data is similar to results from a year earlier, when researchers found c. 2.5–5 cm weeds contained 1.7 kg per hectare of nitrogen while c. 10–15 cm corn contained less than 0.4 kg. When weeds were c. 7.6–10.2 cm tall they contained c. 5.1 kg of nitrogen while at the same time c. 20–25 cm corn contained only c. 1.3 kg per hectare.

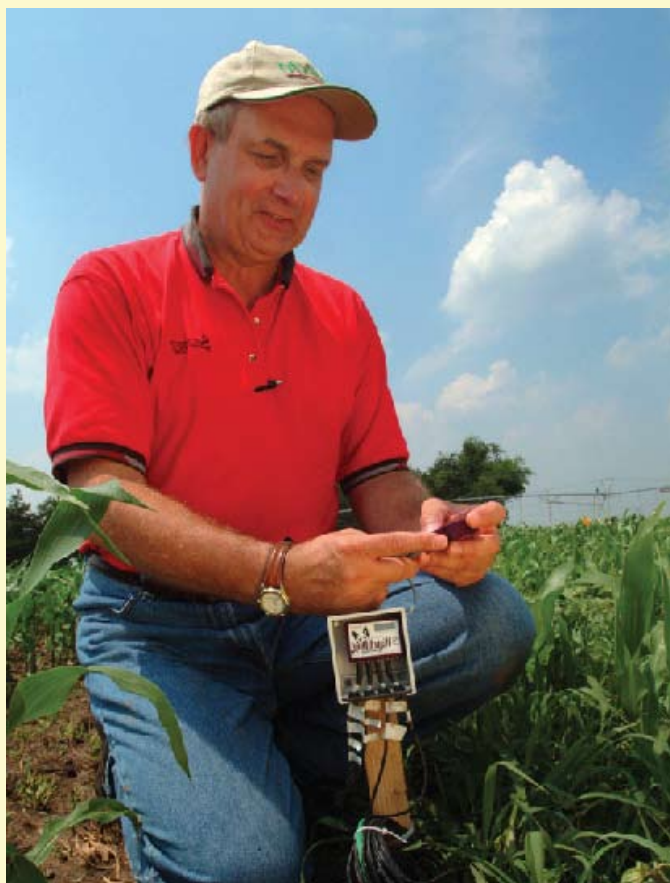
Purdue University weed scientist Bill Johnson recently summarised similar research. 'We found when corn and grass emerged at the same time, the grass was a fierce competitor. At c. 7.6 cm in height, the grass contained about the same amount of nitrogen as the corn. However, by the time the grass reached c. 30.5 cm height it contained three times as much nitrogen as the corn,' he says.

Lasting impact

Not only does corn accumulate less nitrogen in the presence of weeds, it's also unable to catch up after weeds are removed. 'The nitrogen deficit appears to last all season and that can impact crop health and grain yield. In fact, we suspect that

increasing problems with stalk rot and lodging may be related to reduced nitrogen accumulation in plants caused by early season weed competition,' says Kacvinsky.

Soil moisture is another target of competing weeds. University of Nebraska agronomist Bob Klein says corn uses roughly 160 L of water to produce 0.45 kg of dry matter. In contrast, lamb's-quarter (a common North American weed) use c. 276 L and mustards use c. 1090 L of water to produce 0.45 kg of dry matter.



Soil moisture readings taken from buried sensors allow Bob Kacvinsky to document water use by various sizes of weeds growing in corn

In his research, Kacvinsky buried moisture sensors to study water use by weeds. 'We wanted to confirm the 3-3-1 rule of thumb — 3-inch-tall grass growing for 3 days uses 1 inch of water. Three years of research has shown that adage to be accurate,' he says.



Kacvinsky studied the fate of a 4.3 cm rainfall. 'Our moisture sensor was installed at a 15.2 cm depth. In weedy corn, 40 percent of the rainfall didn't even reach the sensor. A half-inch irrigation five days later had little impact on water availability in that weedy plot and seven days after it fell, the rainfall was gone. Meanwhile 50 percent of the water was still available in corn where weeds were controlled by a pre-emergent herbicide.'

Imperial measurements have been converted to metric.

Reprinted with permission
The Furrow (Issue 1, 2008)

Research by Purdue University shows nearly half of farmers don't realise crop yields suffer from early-season weed competition

Spy in the sky: finding and treating weeds from the air

Unmanned air vehicles, or UAVs, which are used by defence forces around the world for surveillance purposes, are set to be used in the vast inland regions of Australia as weed spotters and sprayers.

A new project conducted by the Australian Centre for Field Robotics (ACFR) at the University of Sydney will develop and test UAV surveillance systems designed to detect woody weed infestations and provide the necessary information for control and eradication programs.

Woody weed infestations that cover large open grassland areas are often difficult to detect and control, so management can be costly, haphazard and time-consuming. Occupational health and safety concerns and the availability of labour also make

control difficult on larger properties.

Funded by Meat and Livestock Australia, the research aims to develop a UAV system which could support a single operator in detecting and treating woody weed infestations within large infested areas. Two types of UAV systems will be available for the project – a fixed wing UAV for broadacre surveillance and a hovering UAV for precision targeting.

The second aspect of the project is to design an efficient herbicide distributor on the hovering UAV to enable the pinpoint placement of herbicide.

The ACFR is also developing a similar program detecting aquatic weeds as part of the Australian Government's Defeating the Weed Menace program.



Researchers aim to develop an unmanned air vehicle that will help to find and treat large weed infestations

WEED PROFILE

Matthew Baker

WEED TAXONOMIST
TASMANIAN HERBARIUM

Common rhododendron

Rhododendron ponticum L. (Ericaceae)

What is it?

Common rhododendron is native to Europe where it has a disjunct distribution with centres in the Iberian Peninsula in the west and the Pontiac Alps in the east. It has been cultivated widely throughout Europe, and has become naturalised in Belgium, Britain, France and Ireland. It is also naturalised in New Zealand.

It was first recorded as a weed in Tasmania in 2005, when it was discovered as a garden escape in the townships of Queenstown and Strahan on the west coast. It has not been recorded as a weed in any other areas of Tasmania, and the only other place in Australia it is known to be naturalised is the Central Tablelands of New South Wales.

Common rhododendron is thought to be one of the earliest of the rhododendron introductions to Australia as a garden plant. It is used as grafting stock for less vigorous species and in breeding programs to develop new cultivars and hybrids. It does not appear to be a readily available commercial nursery line, and is most likely restricted to older gardens in the State.

The genus *Rhododendron* is extremely diverse, with an estimated 850 species occurring throughout the world. The most species-rich areas include the Himalayas, southeast Asia and Malesia. In Australia, two species (*R. lochiaie* and *R. virosum*) are native in the highland regions of tropical northern Queensland.

Rhododendrons are an extremely popular group of garden plants; over 1,500 cultivars are commercially available in Australia, and over 20,000 cultivars are registered with the Royal Horticultural Society.

Let's be very clear here and point out that, of the 850 species of *Rhododendron* and its 20,000 or so cultivars, only one species – *R. ponticum* – is known to be a weed in Australia. Furthermore, only a small number of rhododendron species have become naturalised throughout the world. Having said this, *R. ponticum* more than makes up for the inability of its benign cousins to jump the garden fence.



Flower head of *R. ponticum* – note the characteristic brown dots on the upper corolla lobe

What is its weed potential?

Most of the information in this section is derived from experiences in the British Isles, where common rhododendron is responsible for the destruction and abandonment of vast tracts of land. Both woodland and heathland have suffered greatly from the invasion of this species. It out-competes native plants, grows very large, and allows little light penetration into the understorey. It severely hinders the recruitment of native plants and supports little to no native fauna. It thrives in mild, wet climates with poor acid soils.

Common rhododendron spreads by vegetative means and through the production of seed. Vegetative spread is facilitated by the lateral growth of branches that root where they touch the ground. This type of spread forms impenetrable thickets, and a single plant may cover up to 100 square metres. Seed production is vast with up to 7,000 seeds produced per inflorescence. Seed is readily dispersed on wind and can last in the soil for many years.

As per most weed species, seedlings of common rhododendron have difficulty establishing in areas with a good cover of native vegetation. Disturbed sites such as those that have been overgrazed, burnt or mechanically disturbed are readily colonised. Moss-covered areas are also prime sites for seedling establishment.

Common rhododendron contains toxic compounds that make the plants unpalatable to most herbivores. Along with its tough and unpalatable mature foliage, this characteristic rules out its control via grazing. Human poisoning is also known, particularly through the consumption of honey produced from its flowers. The condition, which causes intestinal and cardiac problems, is termed 'Mad Honey Disease' or honey intoxication. It is usually not fatal; even so, the placement of hives near plants should be considered carefully.



A naturalised plant growing amongst other weedy and native shrubs



*Fruiting capsules of *R. ponticum* – these capsules have opened and released seed*

What does it look like?

Owing to the large numbers of cultivars grown in Tasmania, it can be difficult to reliably identify specimens. The following characteristics and associated images may assist.

Common rhododendron is a large evergreen shrub that grows up to 6 m tall. It has alternately arranged leaves. The leaves (up to



Seedlings readily germinate and thrive amongst moisture-retentive mats of moss

15 cm long and 4.5 cm wide) are narrow-elliptic in shape and have a slightly rolled margin. The 5-lobed, bell-shaped flowers (each up to 5 cm long) are clustered together into large showy balls each up to 15 cm wide. The flowers are mauve-purple with several small brownish spots on the upper lobes. The fruit is a woody capsule, about 15 mm long, splitting lengthwise at maturity to release numerous small seeds.

If you have discovered naturalised rhododendron plants, please submit samples to the Tasmanian Herbarium for formal identification.

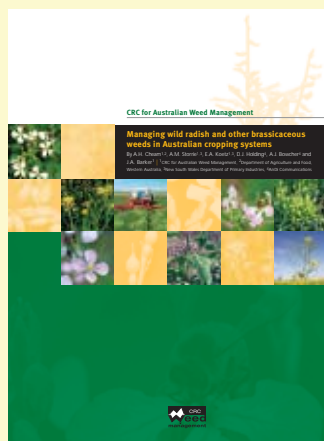
As well as out-competing the native flora by dominating the understorey and reducing light penetration, common rhododendron is thought to have an allelopathic effect on other plants. Substances produced by common rhododendron may inhibit seed germination or the establishment of seedlings. Even after plants have been removed from the soil, a toxic humus layer remains. This mat of decomposed rhododendron leaves and stems prevents natural regeneration, and must be removed to allow colonisation by native plants.

In Tasmania, only small populations and isolated plants have been discovered. The largest population occurs in Queenstown, on a south-facing, moss-covered embankment. The population is comprised of small saplings through to large flowering shrubs to 2 m tall. At Strahan, isolated mature plants have been recorded growing in remnant *Melaleuca squarrosa* scrub. It is highly likely that this species will become more widespread and dominant in similar habitats throughout Tasmania's west and northwest coast areas.

Anecdotal evidence suggests that bumblebees may be responsible for the naturalisation of common rhododendron in Tasmania. As reported by Andrew Hingston of the School of Geography and Environmental Science at the University of Tasmania, the major pollinators of the plant in Europe appear to be bumblebees and other similar-sized bees. Also, John Tooth of the Rhododendron Association of Southern Tasmania has noticed that the percentage of fertilised flowers in tall rhododendron species (like the common rhododendron) has increased from about 15 to 85 per cent since the introduction of bumblebees. For more information on bumblebees and weeds in Tasmania see Andrew's report at www.aussiebee.com.au/bumblebees-and-weeds.html.

Managing wild radish and other brassicaceous weeds in Australian cropping systems

A.H. Cheam, A.M. Storrie, E.A. Koetz, D.J. Holding, A.J. Bowcher and J.A. Barker



Farmers have a new weapon for managing Australia's worst broadleaf weed of winter cropping systems, wild radish, which costs agriculture millions in lost production each year.

Produced by the CRC for Australian Weed Management (Weeds CRC), *Managing wild radish and other brassicaceous weeds in Australian cropping systems* is dedicated to combating wild radish, but also includes options for managing other brassicaceous weeds including charlock, turnip weed and Indian hedge mustard.

Prompted by mounting cases of herbicide resistance in brassicaceous weeds, this 86-page publication brings together the latest research information, and presents management tactics within an integrated framework that combines chemical and

non-chemical methods of control.

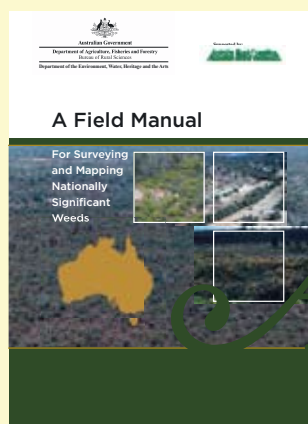
With the widespread and rapid development of herbicide resistance, especially in Western Australia, the management of wild radish has become increasingly complex. The management tactics in the book focus on the various parts of the weed lifecycle and aim to keep the pressure on the weed seedbank.

This free publication is targeted at agronomists, farmers, researchers, land managers and their advisors, and is available in hard copy or electronically. Details are available on the Weeds CRC website (www.weedscrc.org.au).

Department of Agriculture and Food
Western Australia/CRC for Australian
Weed Management

A field manual for surveying and mapping nationally significant weeds

I. McNaught, R. Thackway, L. Brown and M. Parson



The Bureau of Rural Sciences has revised and reprinted this field manual.

Aimed primarily at land managers, land management agencies and research organisations, the manual explains standardised, systematic procedures for collecting core weed infestation data for mapping of weeds of national significance.

You can order hardcopies or download a PDF of the manual at www.daff.gov.au/brs/land/weeds by clicking on the link 'A field manual for surveying and mapping nationally significant weeds'.

The manual and an Excel version of the field data sheet are also available from www.weeds.org.au/mapping.htm.

Environmental Weeds of Australia

S.C. Navie and S.W. Adkins

Developed by the CRC for Australian Weed Management and the Centre for Biological Information Technology (CBIT) at the University of Queensland, this comprehensive weed identification and information product includes:

- a Lucid3 key to over 1,000 environmental weeds
- detailed descriptions of major weed species
- links to website information
- a search engine
- a detailed cross-linked glossary
- thousands of images



Environmental Weeds of Australia is an invaluable resource for everyone involved in research, training and management of weeds in Australia, especially State and local weed control officers, Bushcare and Landcare volunteers.

This product is also an extremely valuable teaching resource for university, TAFE and secondary school students.

Price: \$59.00 (excluding GST and postage)

For more information about this product and how to purchase it, please visit www.cbit.uq.edu.au/software/envioweeds or contact CBIT at Enquiries@cbit.uq.edu.au.

High resolution PDFs of the guides and low resolution versions for slower internet connections are available on the Weeds CRC website at www.weeds.crc.org.au/publications/weed_man_guides.html#biodiversity.