Australian Association of Bush Regenerators (WA) Inc

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Fusilade: implications for the germination, emergence, growth and health of *Banksia* woodland seedlings in WA.

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Without a doubt, herbicide application is considered to be more economical and effective than mechanical or biological methods for the control of invasive species in most natural communities. However, our knowledge of herbicide effects on natural communities is limited to cases related to the growth and health of above-ground terrestrial vegetation, invertebrates and fauna; aquatic communities; soil microbial communities; and the edaphic environment; with little information on native seed germination and ultimately, seedling establishment. This is of serious concern given that seed germination and seedling establishment are keys for plant gene flow and continuation of a species.

Given its selective nature and post-emergent effects, the chemical fluazifop-P (known by the herbicide trade name of Fusilade®) is globally employed as an over-the-top (blanket) spray to control a long list of perennial and annual grass weeds in a variety of situations with, reportedly, minimal damage to non-target species. In Australia, Fusilade® is widely used as a blanket spray to control perennial grass weeds in parks, bushlands and recreational reserves that may support natural communities. However, preliminary research by Kings Park and Botanic Garden (KPBG) has suggested that Fusilade®, and an improved product, Fusilade Forte™, each applied at recommended field application concentrations, have the potential to impede seed germination and seedling emergence of native (non-target) species (Rokich and Dixon 2007, Rokich et al. unpublished). This raises serious questions about the effects of the chemical fluazifop-P, and possibly others, on biological processes that occur below ground or at soil surface level.

To answer some of these questions, scientists at KPBG have completed a series of experiments in a long line of experiments that are being undertaken to collect information related to fluazifop-P effects on seed germination, and on seedling emergence, growth and health of species native to Western Australia, together with co-occurring introduced species. Experiments to date have investigated effects of herbicide concentrations, seed burial depths, seed sowing times since herbicide application, and seedling application locations (foliage versus soil) on *Banksia* woodland species. While the herbicides are selective for grasses, the experiments have included both grasses and non-grasses.

Interestingly, both herbicides, at half to quadruple strength of recommended field application concentrations, have adversely affected seedling development of native and introduced species, both grasses and non-grasses. Herbicidal effects were observed during the seed germination phase, and if germination had occurred, during seedling emergence and, finally, during seedling establishment. However, effects were more pronounced after seed

(Continued on page 6)

in this issue:

Enclosed:
Membership renewals

Nomination forms for committee

AABR (WA)
Annual General Meeting

Wednesday
MARCH 12

See page 2 for details

web/e-mail
www.aabr.com.au
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ANNUAL GENERAL MEETING

Wednesday March 12

All committee positions will be vacant,
new committee members are welcome.

Following the AGM our guest speaker is

Dr David Merritt

Kings Park Alcoa Seed Conservation Scientist;
Kings Park and Botanic Garden

Germinating Australian seeds in the 21st century - a new attitude on an old enigma

7.30 p.m.
Kings Park Administration Centre
Fraser Avenue, Kings Park
take first right turn on Fraser Avenue & proceed ahead through the roundabout

All welcome. Refreshments served

AABR (WA)'s Management Committee

Vice President
Bob Dixon

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Dave Bright : 0412 405 730
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regen4@primus.com.au

Treasurer
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Memberships & Minutes Secretary
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WANTED

Articles & Ideas for the AABR (WA) Newsletter

If anyone has interesting articles, helpful hints, or even ideas for articles please send them to the Editor, Kirsten Tullis
(see contact details page 6)

CONFERENCE

16th Australian Weeds Conference

www.16awc.com.au

18 - 22 May 2008
Cairns Convention Centre, Queensland
Presented by the Weed Society of Queensland.

Weeds CRC needs your help

The national weed organisation *Weeds CRC* (Weeds Cooperative Research Centre) is set to close at the end of June 2008. It was notified in November 2006 that it's application for funding for a third, seven year term, was unsuccessful.

The organisation was to become the *Invasive Plants CRC* however the then Federal Department of Education, Science and Training, determined the proposal did not meet the selection criteria on delivering returns to taxpayers, scientific capabilities, and capacity to commercialise research results and secure their uptake.

This means that after June, Australia will no longer have a national coordinating organisation on weed research for the benefit of Natural Resource Management (NRM) regional bodies, bush regenerators, farmers, and others. Weeds CRC believes that increased productivity comes from improved weed management, and is confident its information products have significantly benefited the agricultural sector. Unfortunately the CRC Programme has a strict criterion that puts the emphasis on delivering benefits through direct commercialisation processes such as spin-off companies and licensing products.

This previous government's move toward commercialisation and away from 'public good' research was criticised in March last year in a document entitled *Public Support for Science and Innovation (Research Report)*. The Productivity Commission is the Australian Government body that reports on science and innovation. The document recommended that 'the original objectives of the program — the translation of research outputs into economic, social and environmental benefits — should be reinstated. This is likely to produce greater community benefits than focusing public support on the commercialisation of industrial research.'

Labor pledged $15m for a new national weeds research and productivity program pre-election, and indicated that it would bring back the original CRC Guidelines. While too late for the Weeds CRC, perhaps interested parties will eventually be successful in developing an equivalent research body.

Weeds CRC is calling for help and asks people to contact politicians to make them more aware of the benefits of the initiative. Please go to the website below for further information and how to help. They suggest people contact their local Federal member and also give contact details for relevant ministers and shadow ministers.

What's Under Threat?

http://www.weeds.crc.org.au

The Weeds CRC has:

- developed a world-class, nationwide network of researchers, built up over 12 years, which includes internationally recognised leaders in several areas of weed management
- contributed expertise in areas ranging from weed risk assessment and eradication science to weed biocontrol and management of herbicide resistance, a knowledge and credibility that has led to its inclusion on national advisory groups
- helped achieve long-delayed, national policy changes such as the revision of Biosecurity Australia's 'Permitted Seed List'
- reached farmers through a network of agricultural advisors, using publications and workshops to deliver integrated weed management methods based on the best research
- provided a wide range of materials, ranging from scientific publications to media articles, factsheets and web games for school children
- led the national development of the Weed Warriors school program and the northern, community-based Weed Spotter program, as well as projects to raise weed awareness in indigenous lands.

If the Weeds CRC is not replaced, there will be:

- a major gap in the national ability to deliver on-ground biosecurity in rural Australia
- no national research body to provide the scientific basis for the Australian Biosecurity System for Primary Production and the Environment (AusBIOSEC) or for the newly-revised Australian Weed Strategy
- loss of specialists in weed management and identification, people who, once lost, are not easily replaced if needed in the future. In time, even the ability to train people in weed management will be compromised no national research body to assist in the control and detection of weeds post drought, nor in the longer term. The first rain period after a drought is always the worst time for weeds, as they successfully colonise wide areas of disturbed and denuded land.
- no national research body to assist in the control and detection of weeds post drought, nor in the longer term. The first rain period after a drought is always the worst time for weeds, as they successfully colonise wide areas of disturbed and denuded land.

(What's Under Threat as copied from Weeds CRC website)

Swan Catchment Council / Coastcare Program

Regional Rabbit Control in the Perth metropolitan region 2008

Reprinted with kind permission

Background

Feral rabbits can be considered Australia's most serious vertebrate pest, costing millions of dollars every year in terms of loss of native flora and fauna, as well as primary industries. It is recognised by the Department of Agriculture and in the 'Threat Abatement Plan for Competition and Land Degradation by Feral Rabbits' (DEW 2007) that the complete removal of rabbits from Australia is well beyond the capacity of available techniques and resources. Control programs are most effective when they include the greatest number of different methods and cooperation between neighbours (Dept. of Ag. Farmnote 92/2001). Most rabbit control programs now aim to achieve long term suppression of the population to reduce the damage that rabbits cause to the environment in a cost efficient manner.

Rabbit populations along the metropolitan coast fluctuate seasonally according to the availability of food and fresh water. Irrigated private lawns and public grassed areas provide excellent habitat for rabbits. Rabbit activity needs to be controlled with an integrated baiting, fumigation and habitat removal program, and carried out in a coordinated approach between coastal local governments (LG's).

Funding has been identified through the Swan Catchment Council to carry out a regional coordinated control program that will ideally succeed in reducing the overall population of rabbits in the metro area.

Region

The control program will be implemented in the following local government / authority jurisdictions, in the sections of land west of the major coast roads.

- Town of Kwinana
- City of Cockburn
- City of Fremantle
- Town of Mosman Park
- Town of Cottesloe
- City of Nedlands (including Dept of Defence managed land)
- Town of Cambridge
- Botanic Gardens and Parks Authority (Bold Park coastal strip)
- City of Stirling
- City of Joondalup
- City of Wanneroo

Methodology

The rabbit control program is to be carried out by Animal Pest Management Services, who are highly qualified and licensed consultants in all aspects of feral animal control, including Pindone use and assessing non-target risks; training in 1080; fauna identification; fauna trapping; phosphine use and firearms training.

A variety of methods will be used throughout the region, each used to maximise the control achieved in the area. The control method used will depend on the level of the rabbits present, the amount of rabbits utilizing warrens versus vegetative cover, access to the areas to be treated, and risks of each method in that location. Methods will be selected to allow for a minimum average of 70% control of rabbits across all areas treated.

The methods used may include pindone poisoning, fumigation of warrens with phosphine and release of RHD and myxomatosis. ***Pindone will not be applied in areas where there is at-risk native fauna present (based on evidence from tracks, dung etc). At-risk fauna include kangaroos and bandicoots.***

The Pindone that will be applied is a water-soluble concentrate mixed with grain (oats). This product is cleared relatively quickly from animals which receive a sublethal dose, (presumably by the indole structure which may allow metabolism and detoxification via standard metabolic pathways). Water soluble sodium salt Pindone does not persist for long periods in moist soils and Pindone residues have not been found in streams draining areas treated with large quantities of poison (Boswell 1995). It also poses a lower risk to non-target animals and the environment compared with keto forms of pindone poison. The grain will be dyed (green) to reduce take by grain eating birds (Kalmbach 1943, Kalmbach and Welch 1946, Brunner et al 1983, Caithness et al 1971, Hartley et al 1999) without reducing uptake of grain by rabbits (Caithness et al 1971, Day et al 1999). Risk to domestic animals is therefore minimal.

The oats used will be graded to ensure no weeds are present. Oats do not become weeds in this environment so this will not pose any further environmental challenges.

Access will be required along the reserve and beach utilising four wheel drives along suitable roads and tracks, and the use of a 4wheel motorbike along the beach (off vegetated areas) and along walk trails.

Reporting

The effectiveness of the treatments will be determined by visually assessing the level of rabbit activity before and after treatment. This program is currently only funded by Swan Catchment Council for one season – a report will be completed at the end of the control program which will include the methods used, the effectiveness of each, any problems encountered, the results of the control program and any recommendations for the future.

Frequently Asked Questions

Who is coordinating this project?

This project has been coordinated by the Metropolitan Coastcare Program, which is funded by the regional Natural Resource Management group Swan Catchment Council (SCC). The program has been implemented in response to the identification of rabbits as a key threat to coastal reserves by both Department of Agriculture and Department of the Environment and Water Resources, as well as Swan Catchment Council and individual local governments.

Who will be carrying out the control program?

The control program will be carried out by a licensed and qualified contractor, Animal Pest Management Services. This company has had many years experience in feral and wild animal control throughout Australia and have a

(Continued on page 5)

(Continued from page 4)

comprehensive safety and environmental management plan. Further information on qualifications and experience can be found on their website: **www.animalpest.com.au** Animal Pest Management Services carry licenses and permits from the relevant authorities for all material / chemicals / poisons used.

Why is it necessary to exercise rabbit control in the metropolitan region?

Rabbits are considered Australia's most serious vertebrate pest – they are the country's most abundant small mammal, and severely affect native flora and fauna, as well as primary industries. Competition and land degradation by feral rabbits is listed as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Feral rabbits are a confirmed or perceived threat to a large number of endangered species, and can have serious implications for coastal vegetation and dune stability. Each year local governments and community groups invest a great deal of time and money towards revegetation and rehabilitation of our coastline, so it is vital that we protect these fragile areas from the degradation caused by feral rabbits.

What method of control will be used?

The control method used will depend on the level of the rabbits present, the amount of rabbits utilizing warrens versus vegetative cover, access to the areas to be treated, and risk of each method in that location. The methods used may include pindone poisoning, fumigation of warrens with phosphine and release of RHD (Rabbit Haemorrhagic Disease) and myxomatosis if appropriate.

Do any of these control methods pose a threat to humans, domestic pets, birds or other native fauna?

Pindone is a weak anti-coagulant that will be used by the application of trails and scatter baiting by hand. It will be applied 3 times at intervals of 3-5 days, and is therefore safer for domestic or non-target animals as it requires multiple doses to be effective. The type of Pindone used is a water-soluble concentrate mixed with grain (oats). This product is cleared relatively quickly from animals which receive a sub-lethal dose (ie non target animals consuming the bait) and the antidote to Pindone is vitamin K, which can be administered if consumption is suspected in non-targets.

Water soluble Pindone does not persist for long periods in moist soils, and Pindone residues have not been found in streams draining areas treated with large quantities of poison.

The grain will be dyed (green) to reduce the take by grain eating birds without reducing the uptake of grain by rabbits.

There are some fauna which are considered 'at-risk' of Pindone poisoning – these include kangaroos, bandicoots and possums. Wherever there is evidence of these animals, Pindone WILL NOT be used.

All other methods which may be utilised as a part of the rabbit control program do not pose any risk to humans, domestic pets or other native animals.

What if my dog were to come in contact (bite or consume) with a rabbit poisoned with Pindone?

The degree of hazard in this instance would depend on the amount of toxin accumulated in the rabbit (Pindone is a cumulative poison, meaning multiple doses are needed to be effective). Due to the fact that water soluble Pindone is being used, the toxin will break down relatively quickly in the carcass and not be of threat.

A readily available antidote (vitamin K) is available and there are only 2 reported incidents of dogs poisoned by pindone in past 25 years of use – both recovered.

What do I do if I see a sick looking rabbit?

Most rabbits will retreat into warrens or burrows when ill or dying, however occasionally they will be sighted in this state in open areas. As feral rabbits are not a priority for local government rangers, vets or the RSPCA, it is best to leave the rabbits and let nature take its course. If the rabbit is in a highly visible location or distressing members of the general public, contact your local government and they will deal with it accordingly.

If I touch a sick or poisoned rabbit will I also get sick?

Humans are not susceptible to either of the biological controls (RCD or mayxomatosis) that may be used in this program, so there is no chance of contracting these diseases. For Pindone to have a toxic effect on a human, significant amounts would have to be ingested over a short period of time, making it extremely unlikely to happen. By touching a rabbit affected by Pindone you will not be poisoned.

It is important to remember that rabbits can carry ticks and fleas, and also have very sharp teeth! Therefore any contact with them should be avoided unless you have appropriate protective clothing and handling equipment.

If bait stations are to be used, will they be of any danger to small children or pets?

It is likely that most of the Pindone will be distributed by trails and scatter baiting by hand. If bait stations are used in any regions they are strategically placed away from commonly used paths and walkways, and are designed to exclude any other animals apart from rabbits.

Who are the natural predators of the feral rabbits? Will the rabbit control program cause problems for these animals?

The main predators of rabbits in the metropolitan region are foxes, and to a lesser extent feral cats. Where rabbit populations are high, fox populations generally thrive. There is also evidence that environments are made more suitable for feral cats by the presence of rabbits, as they are a preferred food item and create sheltering burrows for the cats. As both foxes and feral cats are also considered threats to Australia's native wildlife, any rabbit control program is considered to be a positive step toward reducing the presence of these other serious pest animals.

How long will this rabbit control program last?

This program will be carried out over one season only. The rabbits will be targeted between February and May 2008, with evaluation of the program and all reporting finalised by June 2008. These are the months over which rabbit populations are at their most vulnerable, and so will result in a more effective result.

In future years the rabbit control may be continued by individual local governments that see it as a priority, or extended as a regional program if the necessary funding is obtained.

For further details:
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Tel: (08) 9374 3333
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(Continued from page 1)

germination, particularly on development of seedlings, with retardation and/or discoloration of either radicles or shoots. Not unexpectedly, seedlings from seeds buried deeper in the sand medium (20mm) struggled to emerge. Both herbicides demonstrated residual characteristics by impeding seedling emergence and growth from seeds sown at various dates (up to maximum test duration of 3 weeks) following exposure of the sand medium to the herbicides. Further, herbicide application to sand only, produced effects on >3 month old seedlings that were similar as application to foliage only, demonstrating herbicide uptake from sand. The findings seem to contradict the purported herbicide characteristics - namely, grass selective, post emergent, non-residual, rapid breakdown, and active through foliar application only. The implications of these herbicides for natural communities need to be seriously considered and studied further.

References

Rokich DP and Dixon KW. (2007) Recent Advances in Restoration Ecology, with a particular focus on the *Banksia* woodland and the smoke germination tool. *Australian Journal of Botany* 55:375-389

Rokich D, Harma J, Turner S, Tan B (unpublished). Herbicides: implications on the germination, emergence, growth and health of Australian native plant species (submitted to *Environmental Management*).

Wildflower Society of WESTERN AUSTRALIA (Inc.)

50th ANNIVERSARY

Since 1958 Wildflower Society

Since March 1958 the Wildflower Society of WA, a voluntary community organisation, has played a significant role in developing an appreciation of the unique flora of Western Australia. Members and supporters are invited to:

A CELEBRATORY BREAKFAST

TAMALA ROOM, WA ECOLOGY CENTRE, BOLD PARK, PERRY LAKES DRIVE, FLOREAT WA

7.30AM, TUESDAY, 18th MARCH, 2008.
Cost: $15

Please RSVPs essential by Thursday 13th March to Julie at Wildflower Society of WA office on either 9383 7979 or by email to wildflowers@ozemail.com.au

AABR

was established in 1986 in NSW (with the WA branch forming in 1992) out of concern for the continuing survival and integrity of bushland and its dependent fauna in or near bushland areas. AABR seeks new members and friends for promoting good work practices in natural areas. The Association's aim is to foster and encourage sound ecological practices of bushland management by qualified people, and to promote the study and practice of Bush Regeneration.

To join AABR (WA) .....

Contact Bill Betts on - Ph: (08) 9300 1206 Mob:0408 094 412
Fax: (08) 9206 5839 E-mail: Bill.Betts@joondalup.wa.gov.au

OR

go to our **website** for a membership form
www.aabr.com.au

For newsletter contributions:

Contact the Editor: Kirsten Tullis
(08) 9271 3549 : kt500@iinet.net.au

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AABR Membership
open to appropriately qualified & experienced bush regenerators
$20.00 (includes newsletter and GST)

AABR Newsletter Subscriptions
open to all interested people
$15.00 (incl. GST)

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