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Newsletter of the Invasive Species Council

Working to stop further invasions *Volume 1, Issue 4, July 2003*

Bumblebees (*Bombus terrestris*) are poised to invade the Australian mainland. Both New Zealand and Tasmania now have large feral populations. Fertilised queens occasionally slip through quarantine aboard ships and air-craft from these areas. Only careful vigilance will prevent these bees establishing on the Australian mainland.

Since feral bumblebees were discovered in Hobart in 1992, they have spread to even the most remote areas of Tasmania. They compete for nectar with native bees and birds, and may disrupt the pollination of native plants. On our farms bumblebees may increase seed production of weeds such as *Impatiens, Rhododendron*, Canada thistle, foxgloves and gorse. In gardens bumblebees may threaten the public by nesting in compost heaps, sheds and under footpaths. Bumblebees will ferociously defend their nest and can sting repeatedly. Their venom can cause

Bumblebees are in the limelight following the recent capture of individuals in Brisbane and Melbourne and with yet another proposal by tomato growers to introduce them as pollinators. In this issue of the* Feral Herald *we examine the worrying trends…

Bumblebees Buzzing

Anne Dollin

On 8th May 2003 a bumblebee (*Bombus terrestris*) was found by chance on Fisherman's Island, the major port in Brisbane. It was a worker, caught foraging on flowers. Worker bees are unlikely to survive a sea voyage. So this discovery unfortunately suggests that a queen bee arrived some time ago and has already built a nest and bred some workers on the island.

A single bumblebee nest may produce hundreds of new queens which may disperse up to 30 km, and in Brisbane's warm climate queens may be produced throughout the year. Even if Brisbane's summer temperatures adversely affect the population, the chances are high that bumblebees could spread from Fisherman's Island into the parks and gardens of Brisbane.

The crucial task of eradicating colonies has been given to the Queensland Department of Primary Industries. The DPI's official *Bombus terrestris* Pest Survey Procedure calls for inspection of 'all areas where foraging is likely to occur within a 2 km radius of the interception site', and of mainland areas adjoining Fisherman's Island. Worker bumblebees regularly forage 500 to 1750 m from their nest. So it is vital that this proposed surveillance is carried out. The DPI is issuing a public alert, asking that sightings be reported to the DPI call Centre on 13 25 23.

And in Melbourne…

On 20th May 2003 a bumblebee (*B. terrestris*) was caught on the Appleton Dock wharf in Melbourne. In this case the bee was a queen and it was found on the back of a wharfie unloading a ship from New Zealand. A thorough search by AQIS failed to find any other bees in the cargo.

severe reactions including swelling, nausea, vomiting and difficulty in breathing.

***Bombus terrestris* has the potential to spread through southeastern Australia as far as the southern highlands of Queensland, and may also infest south-western Australia. It will require a concerted effort by authorities and the public to prevent the invasion of the Australian mainland by this species.**

- Anne Dollin

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Victoria is already taking precautions against bumblebees because the introduction of *B. terrestris* is listed as a potentially threatening process under the Victorian Flora and Fauna Guarantee Act. The Victorian Department of Primary Industries has produced a useful Agnote entitled *Keep Victoria Bumblebee Free*, giving descriptions and photographs of the bees (available from: http://www.nre.vic.gov.au). Several thousand copies are being distributed in the area surrounding Appleton Dock and a further 10,000 copies have been sent to Tasmania for distribution to airports, seaports and government service centres. The public is asked to report any sightings to the Customer Service Centre on 136 186.

A further 8.5 hours of survey work around Appleton Dock failed to find any further bumblebees. So, hopefully this bumblebee that was found had not yet established a nest. However, the discoveries of bumblebees both in Melbourne and in Brisbane within one month highlights the level of vigilance which will be required to keep the Australian mainland bumblebee free!

Anne Dollin manages the Australian Native Bee Research Centre and the Aussie Bee website: http://www.aussiebee.com

And…

Bumblebees in Horticulture

Apart from the problem of bumblebee stowaways, there are the plans by horticulturists to import bumblebees to mainland Australia to pollinate greenhouse tomatoes. Environment Australia keeps rejecting their proposals on environmental grounds, but the applications keep coming (see page 9). In 2002, Horticulture Australia funded a massive study (costing $239,266) to assess the impact of bumblebees in Tasmania. Although this study found that bumblebees dramatically increased seed output in two weed species, horticultural associations are putting a positive spin on the findings (see page 9).

In this issue of the *Feral Herald* Andrew Hingston critiques the Horticulture Australia study (page 9), and Anne Dollin looks at the potential of native bees as greenhouse crop pollinators (page 7). We also report on evidence suggesting that bumblebees and honeybees could pose a threat to the endangered swift parrot (page 7). At a conference this month the Australian Hydroponics and Greenhouse Association will be deciding whether to submit an application to import bumblebees. We hope they will pursue the promising option of native bees instead.

– Tim Low

Special Notice
8 July 2003

The Federal Senate Environment, Communications, Information Technology and the Arts References Committee has established an inquiry into the regulation, control and management of invasive species and the *Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002* to report by March 2004.

You are invited to comment. The deadline for submissions is 10 October 2003.

The Committee prefers submissions to be lodged in electronic form, sent by email to ecita.sen@aph.gov.au. The email must include full postal address and contact details.

Alternatively, submissions may be sent to: The Secretary, Senate Environment, Communications, Information Technology and the Arts References Committee, Parliament House, CANBERRA ACT 2600, fax: 02 6277 5818.

Senate Inquiry

As some of you may already know, the Senate has just referred the Democrats' *Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002* to the Senate Standing Committee on Environment, Communications, Information Technology and the Arts for inquiry and report by the last sitting day of Federal Parliament in March 2004.

This is a very exciting development. Not only will it stimulate debate in relation to the Democrats' Bill, but the terms of reference for the Senate inquiry extend to matters relating to the regulation control and management of invasive species in general, including the adequacy and effectiveness of current Commonwealth, state and territory regulation and control of invasive species.

This is an excellent opportunity to put this issue on the Federal Government's environmental agenda. The Senate Committee is inviting written submissions from interested individuals and organisations to be lodged by Friday, 10 October 2003 (*see notice at left*). Whilst the Invasive Species Council will certainly be lodging a written submission with the Senate Committee, we encourage all members to also make submissions.

Further details of the terms of reference for the inquiry and where to lodge submissions are at:
http://www.aph.gov.au/senate/committee/ecita_ctte/invasive_species/

- Lucy Vaughan

See the Review of the Bill on page 12.

Quotes from the Bumblebee *Study funded by Horticulture Australia* *(see page 9):*

"Given a low number of establishing queens and, therefore, low genetic diversity, bumblebees in Tasmania have been extremely invasive." *(page 29)*

"Many quirky changes to seed set of various plants were recorded by the public, eg. an increase in the seed set of orange nasturtiums over yellow nasturtiums, cross-pollination of snapdragons by bumblebees producing a new colour variety, efficient pollination of rhododendrons by bumblebees resulting in early flower droop, and an increase in seed set of some beans crops and blueberries, but a dramatic reduction in yield of one broad bean crop due to nectar robbing." *(page 3)*

W.R.A. – The Latest

Canberra still dithers on proper Weed Risk Assessment

Barry Traill, ISC president

In the last *Feral Herald* we wrote of the investigations undertaken by the ISC into Australia's Weed Risk Assessment system. As readers may recall, Tim Low found there was a major anomaly resulting in many known or potential weeds, including whole genera, appearing on the 'permitted list' and therefore not requiring any weed risk assessment. These plants can be imported legally into the country irrespective of their status as weeds.

Since then we have received a reply to our queries from Biosecurity Australia. Unfortunately the news is not reassuring. Biosecurity Australia has confirmed that the original permitted list has whole genera listed, and that this 'would be finalised at species level over time' and that this long term project is now under way.

Unfortunately no time-line has been offered other than the time required for the development of a final permitted list will be 'considerable'.

This gap has now been in place since Weed Risk Assessment was introduced in 1997. We believe it is completely unacceptable that such a major loop-hole should occur in the first place - and that there is still no fixed time for when the loop-holes will be plugged after six years.

The ISC will continue to pursue the issue with Biosecurity Australia and the relevant Federal Minister, Warren Truss, to get this gap in quarantine fixed as soon as possible.

You can help:

Write a short, polite letter to Minister for Agriculture, Fisheries and Forestry-Australia- and ask him to ensure that the permitted list of plants under the Weeds Risk Assessment is finalised to species level as soon as possible, and that species with any potential to be environmental (or agricultural) weeds are removed from the list.

Send them to:
Hon. Warren Truss,
Minister for Agriculture, Fisheries and Forestry
Parliament House,
Canberra 2601

New Fish for Tassie

Mosquito fish (*Gambusia holbrooki*) have turned up in Tasmania. These American fish long ago colonised the waters of every mainland state and territory, but Tasmania had remained Gambusia-free. Recently they were found thriving in the Tamar Island Wetlands near Launceston.

Released in streams in the past to eat mosquito larvae, they are now reckoned a threat to certain rare fish and tadpoles of endangered frogs, which they eat. The mosquito fish in Tasmania must have been deliberately introduced. Because the name 'mosquito fish' implies that Gambusia are better at controlling mosquitoes than native fish, which they are not, the alternative name 'plague minnow' has been proposed.

Court Action over Weed Invasion

by Tarnya Cox

Douglas Shire Council in north Queensland is preparing to take legal action against the Department of Primary Industries (DPI) to cover the cost of combating the weed Olive Hymenachne (*Hymenachne amplexicaulis*). A ponded pasture grass grown for cattle, Hymenachne was introduced from South America in the early 1970s. It was released in 1988 and made it onto the Weeds Of National Signficance list in just eleven years. Douglas Shire mayor Mike Berwick said that documents obtained by the council under Freedom of Information laws indicated environmental agencies and government departments had advised against the weed's introduction. Douglas Shire has allocated $97 000 to fight the weed but needs four times as much to control the problem.

Tony Grice of the CSIRO Sustainable Ecosystems Program has warned of a looming environmental crisis, saying that hymenachne could spread tenfold in the next three years. It is invading wetlands and dams in central and north Queensland and many fisheries biologists fear that fish will suffer from the plants ability to stagnate water and reduce oxygen levels. Hymenachne clogs waterways and is also a serious weed of sugarcane. Most infestations originate from nearby grazing properties. It continues to be planted in Queensland.

Hymenachne is currently growing in close proximity to tropical freshwater wetlands with high conservation values and it is feared the plant will invade seasonal wetlands and affect dependent fauna. Hymenachne also contaminates many water supply dams and appears likely to invade many more.

In May 2002, the Minister for Natural Resources and Minister for Mines, Mr Stephen Roberston was asked how his department was addressing the hymenachne problem. He stated that under the *Rural Lands Protection Act 1985* the responsibility for control of declared plants lay with the landholder and that because hymenachne was not a declared plant there was no statutory obligation for landholders to control it. He did state however that in line with both individual Local Government Area Pest Management Plans and National Weeds Program projects, his Department (as a landholder) would attempt to undertake some strategic control of hymenachne on Unallocated State Lands. A spokesman for the Primary Industries Minister Henry Palaszczuk has stated that the planting of hymenachne was no longer recommended and that the DPI is involved in removal programs in the Burdekin Shire.

Control costs are likely to be in the order of $652-$688 per hectare. The Department of Natural Resources and Mines states that control within catchments containing natural wetlands of high conservation values is desirable but that enforced control on grazing land would be opposed by graziers as it is a valuable source of cattle fodder in coastal Central Queensland in the dry season.

Currently the Queensland Government has no policy on the development and use of ponded pastures in Queensland, and the Hymenachne Strategic Plan remains unimplemented due to the lack of a National Hymenachne Management Group. But hymenachne was recently declared a class 2 weed in Queensland, which means landholders must take 'reasonable steps' to control it.

Tramp Ant Attack

The Federal Government will launch a national initiative aimed at wiping out tramp ants. It is creating a national framework for a threat abatement plan where research, public education, surveillance and monitoring, quarantine and border control, and contingency plans will be coordinated across all States and Territories.

According to Dr David Kemp, the Minister for the Environment and Heritage, "The plan will target all tramp ant species, including the fire ant, crazy ant, big-headed ant and Argentine ant, that have the potential to devastate Australia's threatened species and sensitive biodiversity if left uncontrolled."

In April the fire ant was listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as a threatening process. The Australian Bureau of Agricultural and Resource Economics (ABARE) has calculated that fire ants, if not eradicated, will cost the agricultural sector about $8.9 billion over a 30 year period.

On Christmas Island Parks Australia and Monash University have been controlling yellow crazy ant super-colonies Island by aerial baiting. The ants have killed millions of giant red crabs and put 10 bird species on the critically endangered list.

Said Kemp: "The national threat abatement plan will not duplicate this work which is targeting specific areas where infestations have been found. It will be a coordinated national approach, not only aimed at eradicating these ants but to, in the interim, prevent them from spreading through border control and quarantine and surveillance measures."

"By taking action now, we have given ourselves the best chance of national control and eradication of not only Fire Ants, but all tramp ant species."

From a Department of Environment and Heritage press release (dated 2 April 2003)

More on Weeds

As viewed from the 12th NSW Biennial Noxious Weeds Conference & Expo, held in Taree (1-3 July)

How many weeds there are depends on how hard you look. In Victoria, many species have been added to Australia's national weed list by sharp-eyed consultant Geoff Carr. In New South Wales, John Hosking of NSW Agriculture is playing a similar role. At the conference he spoke about seven potentially-serious weeds first recorded by him in New South Wales in the past three years.

They include three firsts for Australia, shrubby hypericum (*Hypericum kouytchense*), karo (*Pittosporum ralphii*) and November shower (*Senna multijuga*). Karo from New Zealand may become a serious environmental weed. Hosking found it at Katoomba invading undisturbed native forest. Like sweet pittosporum, one of our more notorious weeds, it has bird dispersed seeds. The other firsts for NSW were creeping cinderella weed (*Calyptocarpus vialis* – which thrives in Brisbane gardens but has never been recorded from NSW before), karamu (*Coprosma robusta*), patula pine (*Pinus patula*), and tropical wild petunia (*Stephanophysum longifolium*). During the past three years about 20 new naturalised plants per year had been added to the New South Wales flora list. Hosking emphasised the importance of identifying plants correctly. Many weeds are overlooked because they resemble other exotic species.

Continued page 8

Here we take up the* bumblebee *story again (below, at right, and on page 9)

Native Bees or Bumblebees for Crop Pollination?

by Anne Dollin

Australian horticulturalists are campaigning to import European bumblebees to mainland Australia for greenhouse crop pollination. Bumblebees are often used overseas to pollinate greenhouse crops such as tomatoes, greatly improving productivity. However, Australia has no native species of bumblebee and applications to import bumblebees so far have been rejected by AQIS on environmental grounds.

To grow large, round tomatoes, the flowers must be well pollinated. Outdoor crops are pollinated by wind currents but inside a greenhouse the flower trusses must be individually vibrated. In Australia this is currently done with an electric wand – a costly and labour intensive process. So growers are keen to acquire exotic bumblebees which can do this for them.

Practical Hydroponics and Greenhouses magazine (Issue 69) suggested that there is a good chance that bumblebees will be illegally imported by impatient tomato growers. Such attempts, however, may be doomed to failure. The feral bumblebees in Tasmania are all descended from a single fertilised queen. They are so inbred that breeding of these stocks may not be commercially viable. The Tasmanian bees also carry an extremely high infestation of the pollen mite, *Kuzinia laevis*, which would adversely affect commercial breeding. So bringing a couple of Tasmanian bumblebees to the mainland will not solve the tomato grower's dilemma.

Melissa Bell of the University of Western Sydney – Hawkesbury, in collaboration

Parrots & Bees

Andrew Hingston & Stephen Mallick

The swift parrot (*Lathamus discolor*) is listed as nationally endangered, because fewer than 2500 adults remain in the wild. The processes traditionally considered as the principal threats to the swift parrot are destruction of foraging and nesting habitat, and collisions with human-made structures. Because swift parrots are dependent largely on the nectar and pollen of *Eucalyptus globulus* and *E. ovata* for food while breeding, we considered the possibility that introduced social bees that also consume these resources can also be regarded as threats to the swift parrot. We found that honeybees (*Apis mellifera*) and bumblebees (*Bombus terrestris*) usually consumed most nectar from these flowers, and that flowers were virtually devoid of nectar when these bees were active. Thus, introduced social bees have the same net effect as the destruction of foraging habitat, and must also be considered as threats to the swift parrot. Because honeybees do not forage in large numbers at temperatures below 15°C, early mornings and cold days have provided a window of opportunity for swift parrots in the absence of competing honeybees. However, the recent introduction of the bumblebee appears to be closing this window because it is able to forage at much lower temperatures than honeybees.

This is the abstract from the following article:

Hingston, A. B. and Mallick, S. A. (2003) Are introduced social bees a threat to the endangered swift parrot? In: *Proceedings of the Birds Australia Members' Day and Annual General Meeting*. Birds Australia, Geography Department, University of Tasmania.

with the Australian Native Bee Research Centre, is researching the potential of native blue banded bees (*Amegilla*) for greenhouse tomato pollination. The research is still in progress but already Melissa has shown that these bees adapt well to the confined conditions of the greenhouse and will nest in compact mud bricks. Furthermore in a recent tomato pollination trial, blue banded bees were as effective as the electric wand in increasing fruit weight and improving fruit roundness.

Other native bee species have also shown potential for the pollination of greenhouse crops. Pablo Occhiuzzi of the University of Western Sydney – Hawkesbury found that Australian stingless bees (*Trigona*) thrived in greenhouse conditions and improved fruit weight and yield in a capsicum crop. Katja Hogendoorn of Flinders University found that green carpenter bees (*Xylocopa*) effectively pollinated a tomato crop in a flight cage.

Further research is urgently needed to allow commercial development of these species. Nevertheless the use of Australian native bees by the greenhouse crop industry could save our vulnerable environment from the impact of yet another exotic invader.

For further information about research into Australian native bees, please visit: http://www.aussiebee.com

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Notice of Meeting:

The Annual General Meeting of the* Invasive Species Council *will be held on Thursday 28 August 2003, starting 6.30 pm, at The Green Building, 60 Leicester Street, Carlton, Melbourne

Nomination & proxy forms will be sent out soon

Continued from page 6

Barbara Waterhouse of the Australian Quarantine and Inspection Service spoke about the weed threat along Australia's northern boundaries. Anyone who has encountered Barbara will know how terrifying her talks are. She flashes up slides of rampant tropical weeds taking over Indonesia and New Guinea, then talks about the sites where she has found them in Northern Australia. You are left in no doubt there are plenty more infestations of who-knows-what hiding out in remote locations in northern Australia. Barabara has a lot of coastline to cover. One weed she mentioned was Miconia (*Miconia calvescens*), recently found on sale at a nursery in northern NSW.

The Honourable Mark Vaille, Minister for Trade, delivered an opening speech that demonstrated a remarkable lack of knowledge about weeds. 'Interestingly, a lot of the really serious weeds we've been combating have been introduced species,' he said. 'I mean, lantana is an introduced species in Australia.' Presumably he doesn't know much about the link between trade and exotic invasions.

Craig Walton from the Queensland Department of Natural Resources and Mines spoke about the weedy pasture plant leucaena, but his comments will be summarised in the next issue of the Feral Herald.

- Tim Low

Quote of our times

"I don't think Australia realises that buffel grass is going to kill the inland red gums. "They [land managers] have no f---ing idea - you can't get it into their heads."

- Germaine Greer, in the *Sydney Morning Herald*

Potential ecological impacts of the Eurasian bumblebee *Bombus terrestris* in Australia: assessing the assessment.

Andrew B. Hingston

School of Geography & Environmental Studies, University of Tasmania,
GPO Box 252-78, Hobart 7001, Tasmania.

Since 1988 the Eurasian bumblebee (*Bombus terrestris*) has been used in many countries to pollinate greenhouse crops, particularly tomatoes. Within four years of the development of the international bumblebee breeding industry, feral bumblebees were discovered in Tasmania. How they entered is not known, but their importation was not sanctioned by government.

After their establishment in 1992, the Tasmanian Greenhouse Tomato and Vegetable Growers Association applied in 1995 for permission to import more bumblebees to widen the genetic base. In 1997 Gosford Integrated Pest Management Services applied to import bumblebees to the mainland, and in 1999 the Australian Hydroponics and Greenhouse Association (AHGA) also applied to import bumblebees. Although these applications were rejected because of ecological concerns, some horticulturists continue to lobby for bumblebees (e.g. Goodwin & Steiner 1999; Cooke 2001; Carruthers 2003). However, the AHGA has vowed to reapply only if further research shows that bumblebees are ecologically benign.

To obtain a clearer picture of the impact of bumblebees in Tasmania, Horticulture Australia Ltd (HAL) agreed to provide $239,266 for a three-year environmental impact study (EIS) conducted by the Tasmanian Museum and Art Gallery (Hergstrom *et al.* 2002). That EIS was published late last year, and has been embraced by the vice-president of the AHGA as evidence that bumblebees have little impact (Carruthers 2003). Carruthers wrote a recent article in the magazine he edits and concluded that 'the environmental impact study into bumblebees in Tasmania is evidence that bumblebees will not dramatically change the current status of native and agricultural ecosystems'. In the editorial he stated that there were 'no compelling reasons why bumblebees should not be allowed import into mainland Australia'. However, his view is not supported by the EIS, nor by papers published in scientific journals.

Rate of spread

Carruthers stated that 'It seems that bumblebee populations are spreading in Tasmania at the rate of 10km annually' and 'in the decade since its introduction into Tasmania, the bumblebee is far from ubiquitous'. However, both the EIS produced by the Tasmanian Museum and a study by other researchers showed that bumblebees had spread at around 25 km annually and were established across most of Tasmania within 10 years of their introduction (Hergstrom *et al.* 2002; Hingston *et al.* 2002).

Invasion of native vegetation

Carruthers also concluded that bumblebees were 'generally found in urban areas' in Tasmania. Similarly, the EIS concluded 'In Tasmania, constant flower abundance occurs mainly in urban and rural areas, and this was where bumblebees (and their impact) are concentrated'. However, the EIS data do not prove this contention.

Their conclusion was based on the finding that only 11% of bumblebee observations reported by the public that involved more than one bee were in native vegetation, while 46% were in urban areas and 39% in rural areas. However, their survey reflects only the frequency with which people encounter bumblebees, which depends upon the densities of humans as well as bumblebees. People may see bumblebees more often in

urban and rural areas because there are more people in these areas.

Also, the EIS did not interpret the many observations of only one bee as evidence of colony establishment). While this is justified if an area was searched thoroughly, the questionnaire merely asked 'In one minute, how many bumblebees did you see in the area'. Obviously, seeing one bumblebee in one minute does not rule out the presence of a colony. A study published in *Austral Ecology* found evidence of bumblebees breeding in native vegetation in wet and dry zones across an area of approximately 30,000 km^2 in Tasmania. This included six national parks, including four of the five in the World Heritage Area, and the most remote parts of Tasmania, up to 40 km from gardens, 61 km from small towns and 93 km from large towns. Evidence of breeding was found in all of Tasmania's major native vegetation types, from sea level up to 1180 metres (Hingston *et al.* 2002).

Impacts on native flora and fauna

Carruthers alleged that bumblebees exhibited 'a distinct preference for introduced, rather than native plant species'. This claim was also made in the EIS, on the basis of observations made by the general public and by observers walking through a variety of vegetation types. Because of this, Carruthers concluded that bumblebees have 'little impact on native plant species'. However, the EIS did not prove this contention because both studies may have been confounded by differing abundances of introduced and native flowers in the areas surveyed, which were not recorded.

Irrespective of whether bumblebees show a preference for foreign plants, they are clearly capable of impacting on a wide range of Australian plants because they have been recorded foraging on many of these in Tasmania. Bumblebees were recorded visiting the flowers of 60 species and 19 families of native Tasmanian plants near Hobart in 1996-97, often in large numbers (Hingston & McQuillan 1998a). This list continues to grow and now encompasses 139 species and 32 families (species observed by the general public being visited only once by bumblebees in the HAL-funded EIS not included).

Impacts on weeds

Bumblebees forage heavily on flowers of many introduced plants, raising the possibility that they will enhance seed production in some existing weeds and cause other previously benign plants that were poorly pollinated (sleeper weeds) to become weeds. Of this extensive list of beneficiaries of bumblebee pollination, the EIS investigated only three existing weeds and no sleeper weeds.

Of the three weeds, a dramatic increase in seed set was found in two species in the presence of bumblebees. To quote from the EIS: 'A significant increase was found in the seed set of two weed species with pea-type flowers: Greater Trefoil, *Lotus uliginosis* (40.2%) , and Tree Lupin, *Lupinus arboreus* (29.7%).' A decrease in seed set was found in a third weed, Scotch thistle (*Onopordum acanthium*). However, the research methodology employed was flawed, leading to potential underestimates of the role of bumblebees in increasing seed set. When comparing seed set in areas with and without bumblebees, the researchers did not take account of other variables such as flower numbers, abundances of other pollinators, levels of seed predation, environmental conditions, and the spatial arrangement of flowers. Also, the decision about whether or not bumblebees were present was based upon only 20 minutes of observations, conducted at the time of seed harvest rather than when the harvested stalks flowered.

Conclusions

Numerous articles in journals indicate that bumblebees could have serious impacts on native and agricultural ecosystems on the mainland (see reference list), and the small amount of sound data in the HAL-funded EIS is consistent with this. However, Carruthers, the vice-president of the AHGA stated 'the AHGA would be remiss not to proceed with the application to import bumblebees into mainland Australia'. This contradicts the earlier commitment from the AHGA not to introduce bumblebees unless they are benign, because they did not want to be responsible for another extensive invasion of Australia by a feral organism (Cooke 2001). The position taken by Carruthers parallels that of Reginald Mungomery almost 70 years ago, when he

denied the evidence indicating that cane toads would prove harmful in Australia.

Key References

Carruthers S (2003) Plight of the bumblebee. In: *Practical Hydroponics and Greenhouses* 69, 23-30.

Hergstrom K, Buttermore R, Seeman O, McCorkell B (2002) *Environmental research on the impact of bumblebees in Australia and facilitation of national communication for/against further introduction.* Horticulture Australia Project No: VG99033, Horticulture Australia Ltd, Sydney, and Tasmanian Museum and Art Gallery, Hobart

This is a shortened version of an article that will be posted in full – with all the references appended - on our website at http://www.invasives.org.au

Worth the Risk?

The federal government is showing a growing commitment to addressing future weed problems. But very little progress – if any - has been made in resolving the conflicts of interest that arise when a plant that is useful to one sector of society is a weed elsewhere. The three main problem areas are garden, pasture, and now salinity plants. It is thus of interest to see a new paper that questions current policies: *Worth the Risk? Introduction of legumes can cause more harm than good*.

It was put together by the CSIRO's Quentin Paynter and nine other government weed experts. Most new legumes are deliberately introduced as pasture plants by government agencies, so this article represents government pleading to government. The authors note that five of the 20 Australian weeds declared as Weeds of National Significance were deliberately introduced legumes.

Here are some quotes:

'With the benefit of hindsight, continued promotion of woody legumes should be seriously questioned.'

'Currently, it seems environmentally and economically prudent to avoid introducing any new plant material, even if this means excluding some beneficial species, until our predictive ability improves.'

'It is also environmentally and economically prudent to reassess the risks and benefits of continued planting of species such as [tagasaste] Cytisus proliferus and [leucaena] Leucaena leucocephala, which were introduced before the WRA was set up.'

'For most Australian noxious legumes to be the result of deliberate introductions for their perceived beneficial properties …there must have been inadequate consideration of their potentially detrimental attributes, prior to introduction'

'Novel introductions should be discouraged if there are native species that could perform the tasks for which the exotic species is being imported.'

'We believe the creation of national weed problems due to the desire for novelty in the nursery industry is unacceptable.'

The article was published in *Australian Systematic Botany*: 16: 81-8. Copies can be obtained from Quentin Paynter at CSIRO.

A Quick Look at the Democrats' Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill (2002)

by Lucy Vaughan (Secretary, Invasive Species Council and Environmental Lawyer)

The *Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002* ('the Bill') was tabled in Federal Parliament by the Democrats on 19 November 2002. At the time of writing, the Bill has not yet been debated in the Parliament.

The Bill proposes to introduce a national regulatory structure in order *"to prevent the introduction of further species in Australia and to eradicate or control those already here"*.[i]

It proposes to do this by amending the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act), and in particular, by inserting a new division 4AA called "Listed Invasive Species" into Part 13, Chapter 5 of the EPBC Act which otherwise deals with 'species' and 'ecological communities' and the 'conservation of biodiversity'.

The Bill proposes to define "invasive species" as a "non-indigenous species" which:

> "...has been, or may be, introduced into Australia and either, directly or indirectly, threatens, will threaten or is likely to threaten, the survival, abundance or evolutionary development of a native species, ecological community, ecosystem or agricultural commodity or which is "a genetically modified species".[ii]

The starting point for this national regulatory structure is the establishment of a list of invasive species, in which species will be included in one of the following categories:

(a) species determined by the relevant agency or Minister to be permitted for import;
(b) species determined by the relevant agency or Minister to be prohibited for import;
(c) invasive species of the following types currently present in Australia:
  (i) eradicable;
  (ii) substantially containable;
  (iii) beyond eradication;
  (iv) controlled;
  (v) disregarded as an invasive species;
  (vi) exempt from listing.[iii]

Prohibited Imports

In order to prevent the introduction of further species into Australia, the Bill proposes to immediately prohibit the import of the following categories of species:

(a) pasture grasses;
(b) ornamental plants;
(c) aquarium fish;
(d) any other species as determined by the Minister, if the Minister is satisfied, on the advice of the Invasive Species Advisory Committee, that a species should be deemed to be a prohibited import.[iv]

It is within the discretion of the Minister to prohibit the import of a species under (d) above on advice from the Invasive Species Advisory Committee (also established by the Bill) if the species "is a threat, either directly or indirectly, to the survival, abundance or evolutionary development of a native species, ecological community, ecosystem or agricultural community".[v]

Ministerial Permits

The Bill establishes a permit system whereby the Minister can issue a permit for the commercial sale, trade or propagation of a non-indigenous species in certain situations, including:

(a) where there is a demonstrated need for the species to be used in food production in Australia;
(b) where there is a low risk that the species will have an impact on listed threatened species or ecological communities; and
(c) where the Minister has approved an invasive species threat abatement plan for the species.[vi]

Offences

The Bill also creates a number of offences where a person imports or possesses species which are either prohibited or which are categorised as eradicable, substantially containable, or beyond eradication, without a permit[vii].

Managing existing invasive species

The Bill also proposes a number of practical management strategies for dealing with invasive species already in Australia, including establishing a process for the creation of an 'invasive species threat abatement plan' in co-operation with relevant States.[viii]

These invasive species threat abatement plans improve on existing 'threat abatement plans' currently provided for under the EPBC Act, in two ways:

i) they facilitate a *preventative* approach to dealing with invasive species
(current 'threat abatement plans' are only triggered at the point when the existence of a threatened species or ecological community hangs in the balance);

ii) they *may, under certain circumstances,* be implemented by the Commonwealth outside 'Commonwealth areas'
(this is a qualified improvement on current 'threat abatement plans' which can never apply outside 'Commonwealth areas').

However, it should be noted that, as currently drafted, the Bill appears only to require Commonwealth agencies (i.e. not State agencies) to comply with the invasive species threat abatement plan[ix]. The ultimate effectiveness of this management strategy must therefore be questioned.

Discussion

The establishment of a national list of invasive species is a constructive beginning to any attempt to provide a national regulatory framework for invasive species. There remain, however, issues with the definition on which the list (and the Bill) rests.

The definition of invasive species, whilst fairly broad, nevertheless does not capture those native species which could be considered 'invasive' if occurring beyond their accepted normal distribution and which are adversely impacting on local native species and ecosystems.

In fairness, Senator Bartlett has acknowledged the difficulties in defining 'invasive species'. In the Second Reading Speech, Senator Bartlett stated that *"[i]n introducing this bill, the Democrats recognise that questions of what is natural and what is invasive are legitimate and extremely difficult questions to resolve,"* but that it was still necessary to have a workable definition of invasive species[x]. Point taken.

A far more serious weakness in the proposal for a national regulatory structure for the control and management of invasive species put forward by the Bill, is that it does not propose to include 'invasive species' as a matter of national environmental significance[xi].

Matters of 'national environmental significance'[xii] operate as the triggers for the environmental impact assessment provisions under the EPBC Act.

These environmental impact assessment provisions establish a process for the assessment of proposed 'actions' by either private persons, corporations or government and its agencies, that have, will have, or are likely to have a 'significant impact' on any of the nominated matters considered to be of 'national environmental significance'.

Given that the damage caused by invasive species has largely been attributed to human activity, it is a curious omission. There are plenty of examples where 'actions'[xiii] have resulted in both native and exotic flora and fauna expanding its range and becoming an invasive species.

The National Weeds Strategy has identified the introduction of para grass (*Brachiaria mutica*) as a case in point. Para grass was introduced by farmers as a pasture grass for wet areas, but it has spread to places like Kakadu National Park where "it is now a threat to wildfowl habitats, shallow wetlands and streams in tropical and temperate Australia"[xiv].

An environmental impact assessment of the 'action' of sowing a new pasture grass (which

under the Bill would have been listed under one of the identified categories of invasive species) could have prevented the threat it now poses to biodiversity, by either preventing the introduction of the pasture grass altogether or ensuring that effective measures were taken in order to mitigate the possibility of it 'escaping'.

Urban development is another case in point. In his book, *Feral Future*, Tim Low complains of the times when he has served as an expert witness in the Planning and Environment Court "warning that a new housing estate would send waves of new weeds into nearby forests."[xv]

Again, this kind of environmental harm could be prevented if such 'actions' were expressly required to consider the impact they would have on facilitating or contributing to the spread of invasive species.

An assessment of the impact that the 'actions' of private persons and corporations as well as governments and their agencies could have, and do have, in facilitating the introduction or further spread of invasive species is essential if a national regulatory structure for invasive species is to be effective.

Conclusion

If enacted, there can be little doubt that the Bill would have a dramatic and beneficial impact on the environmental problems created by invasive species.

As with the existing EPBC Act, however, it appears to stop short of taking on an active regulatory and management role in relation to the impact of the 'actions' of private persons, corporations and the States in facilitating the problems brought about by the introduction and presence of invasive species.

In this way, arguably the Bill continues to honour and preserve the articulation of Commonwealth and State roles provided for in the Inter-governmental Agreement on the Environment (IGAE)[xvi] in much the same way as the existing EPBC Act.

The IGAE is perhaps the definitive example of the policy of co-operative federalism (the approach preferred by the current Federal Government) at work.

Whilst the IGAE recognises that the Commonwealth has a legitimate role in respect of national environmental issues, it gives the States primary responsibility for environmental management within their respective jurisdictions. This often leads to the 'hands-off' approach taken by the Commonwealth in relation to many national environmental problems, like invasive species.

The Democrats should be applauded for introducing the Bill.

Whilst it is almost certain that Australia is not 'politically' ready to adopt the kind of national regulatory scheme for addressing the problem of invasive species proposed by the Bill, the Bill presents an excellent opportunity to raise the profile of this issue not only with all levels of Government in Australia, but also with relevant industry and the general community.

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The views expressed in article are not necessarily those of the ISC, nor of Maddocks Lawyers.

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[i] The Parliament of the Commonwealth of Australia, Hansard, 19 November 2002 (Senator Bartlett, *Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002,* Second Reading Speech)
[ii] s 266AB.
[iii] s 266AA.
[iv] s 266AC(2).
[v] s 266AC(3).
[vi] s 266BE.
[vii] s 266BA.
[viii] s 266CA.
[ix] s 266CB.
[x] Senator Bartlett, Second Reading Speech, above n1.
[xi] Which could be facilitated in the current drafting of the EPBC Act by listing the preservation of biological diversity as such a matter.
[xii] Currently, these matters (which are set out in Part 3 of the EPBC Act) include: world heritage properties, wetlands of national importance (i.e. declared Ramsar wetlands), listed threatened

species and communities, listed migratory species, nuclear actions and Commonwealth marine areas.
[xiii] defined by the EPBC Act to include a project, a development, an undertaking, an activity or series of activities or any alteration to any of these so called 'actions'.

[xiv] Commonwealth of Australia, *The National Weeds Strategy: A Strategic Approach to Weed Problems of National Significance* (1997) 20, 31.
[xv] Low, T., *Feral Future: The Untold Story of Australia's Exotic Invaders,* (1999), 74.
[xvi] made in 1992 between the Commonwealth and State Governments (and representatives of Local Government).

Letter To the Editor

Submitted in response to a letter in the previous issue, from Elwyn Swane of the Nursery & Garden Industry NSW & ACT Limited (NGINA)

The Bushland Friendly Nursery Scheme – Passionate About Weeds.

Ian Turnbull, Secretary North Coast Weeds Advisory Committee (NCWAC)

The Bushland Friendly Nursery Scheme (BFNS) was an initiative of Logan Shire Council in SE Qld that the NCWAC adopted to cover the North Coast of NSW (Taree to the Qld Border). The Scheme is a ***voluntary*** agreement between Nursery's and Councils that the nursery's will not sell a number of plants identified as currently or potentially invasive to natural ecosystems.

The NCWAC drew together representatives of "weed committees" and other organisations from the Hunter to Qld (including a Nurseryman) and using a system similar to that used to rank the 20 Weeds Of National Significance prioritised the most invasive species of environmental weeds.

The list was distributed to all stakeholders (including NGINA representatives & Head Office) for comment and a number of alterations were made based on this feedback. The North Coast now has **ONE** list of environmental weeds and an attachment on where they are already having an impact on the North Coast.

In the meantime the NCWAC was fortunate enough to receive Environmental Trust Funding to implement the scheme. Project Officers were employed to invite Councils and Nurseries to join the scheme, create extension material, signage and other publicity activities.

All of the 17 councils in the region have signed up to the scheme, agreeing to have a BFNS Officer within the Council, not planting or selling any of the listed species and utilising Nurseries registered to the scheme as preferred suppliers. The scheme also recommends that Councils do not approve Landscaping Plans which include any species on the list.

The creation of the BFNS Environmental Weeds and Native Alternatives Booklet has been a great achievement. This provides identification information of each of the weeds and is reproduced on the BFNS Website www.bfns.org.au.

The scheme utilises the contact the Nursery operators have with the general public. They are an excellent source of information for providing advice on the most suitable plant for a location. The Scheme has also been embraced by Landcare groups and garden clubs who will utilise the extension material in their respective arenas.

The NCWAC will continue to work in conjunction with NGINA in the implementation of the Scheme. Approximately 1 in 5 nurseries on the North Coast are members of NGINA. The NCWAC acknowledges the importance of the organisation in the adoption of the scheme.

Invasive Species Council *Membership application form*

(ABN 27101522829)

Name: _____

Address: _____

_____

_____

Phone (H) ( ) **(W) ( )**

Email: **Fax ( )**

Work position (if relevant):

Membership rates:
(all prices are GST inclusive)

Regular	$22
Concession	$11
Group/Institution	$55

I would also like to make a donation:

Total: __**$**_____

Thank you for joining us as a founding member! **Please send this form and a cheque to the Invasive Species Council, PO Box 571, Collins St. West, Vic. 8007.**
(Sorry we do not have credit card facilities at this stage).