Feral Herald

Newsletter of the Invasive Species Council

working to stop further invasions

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Please note the new postal, web and email addresses.

ISC before the Senate

By Tim Low

The ISC had an opportunity to outline weaknesses in government policy and to propose solutions, in its appearance before the Senate Inquiry on Invasive Species in April.

ISC president Barry Traill and councillor Tim Low spent an hour before three senators, representing the Government, the ALP and the Democrats, expanding upon the ISC's written submission to the inquiry.

Barry began with strong words. 'Our collective judgment - and my judgement personally as a conservation biologist of 20 years experience in government industry and with the non-government sector - is that invasive species are almost certainly now the No. 1 threat to nature in Australia.'

Tim criticised the failure of government to adequately document the problem. 'You find that no-one has the whole picture of this,' he said. 'There is no institution, expert or authority you can go to and ask: "What are all our exotic pests? What exotic insects do we have?" No body is vested with the responsibility for having all that information and documenting that. You can certainly find experts on weeds, but it is all compartmentalised, so there are always other pests that no-one seems to know about.'

The Labor representative, Senator Wong, made it clear that the inquiry had received plenty of submissions about the issue the ISC made public last year - the loophole in Weed Risk Assessment by which almost 3,000 genera of plants can be imported without assessment. (see *Feral Herald* issue 3) Indeed, earlier in the day Dr Rachel McFadyen, Chief Executive Officer of the Co-operative Research centre for Australian Weed Management - effectively Australia's top weed boss - had described it in her testimony as 'a massive loophole'.

The government representative, Senator Tchen, at the end of our session, said, 'I do not have many questions for Dr Traill and Mr Low because I find as a government senator what they have told us is pretty well what we are aware of and we are very much trying to tackle.'

We hope this means the government will move quickly to close the loophole in WRA. If the senator can be taken at face value it also means the government will fix the following problems we raised:

* NHT funding for weed control, including control of nationally significant

weeds, is being channeled through regional NRM Boards, rather than through national organisations with a national rather than local focus.

* When new weeds of national importance are found in northern Australia by the Northern Australia Quarantine Strategy, control of those weeds is left to state agencies, which sometimes lack the resources and commitment to eradicate them.

* Marine invaders that arrive on ships are so difficult to detect there should be regular port surveys to monitor their arrival, so they can eradicated early before they multiply out of control.

* Rabbits are out of control on Macquarie Island, where they are stripping vegetation and causing erosion of whole hillsides (Tim showed slides of this); federal funding is needed to eradicate them.

After the day's hearings, Tim and Dr Rachel McFadyen appeared on the ABC Radio National's program *Australia Talks Back*, to conduct a lively session, including talkback, on invasive species. Andrew Glanznig from the WWF also was a speaker.

On the program Rachel, a biocontrol scientist, freely admitted that biocontrol scientists deserved a rap over the knuckles for the spread of Aconophora, a lantana biocontrol agent, on to ornamental plants (see *Feral Herald* issue 6).

The radio session is summarised and can be heard at http://www.abc.net.au/rn/talks/austback/

The ISC's testimony before the senate can be viewed at http://www.aph.gov.au/senate/committee/ecita_ctte/invasive_species/index.htm

Annual General Meeting 2004

6.30pm - Thursday 16 September 2004

Space 39

Level 2, 39 Little Collins Street, Melbourne

Speaker: Tim Allen,National Co-ordinator of the Marine and Coastal Community Network

ISC members are invited to nominate for the Committee. Further Details and Nomination Forms will be emailed to all members shortly.

Fire Ant Update

The campaign to eradicate fire ants in Queensland is achieving very mixed results. Treatment of infested sites (by applying growth regulators) is proving extremely effective, with more than 97 per cent of infested properties in the core treatment zone now fire-ant free.

But fire ants keep surfacing in new areas on the periphery of known areas. Earlier this year the eradication zone was massively increased from 47,000 hectares to 73,000 hectares, to reflect this.

The increase does not represent rapid spread by the ants but rather the discovery of overlooked infestations within Ipswich City and Beaudesert Shire.

Eradication will thus cost much more than expected. In April, the Queensland Government requested $40 million more at the annual Natural Resource Management Ministerial Council meeting in Adelaide.

The cost of the eradication so far has been borne by all states and the federal government under a cost per capita arrangement. The total cost of eradication will be at least $175 million.

The cost of allowing the ants to spread across Australia has been estimated at $8.9 billion over the next 20 years. Eradication remains feasible because the new ant nests have been found close to existing colonies.

If colonies were to appear in distant locations, representing dispersal by mated queens over large and unpredictable distances, the prospect of finding and destroying every nest would vanish. A single fire ant nest can be very difficult to recognise, consisting only of an insignificant mound of dirt, often with no ants in attendance.

Stop Press ... Stop Press ... Stop Press ..

Some good news on the Fire Ant campaign. The head of the eradication campaign, Keith McGubbin, announced recently that very few fire ants remain and that the treatment of infested sites (by applying growth regulators) is proving extremely effective, with virtually no ants remaining in the core treatment zone.

Here's hoping that Fire Ants can be finally knocked off in the coming year.

Pests are Costly

The Pest Animal Control Cooperative Research Centre has issued a report that says feral pests cost Australia more than $720 million each year.

Four pests - foxes, feral cats, rabbits and feral pigs - account for 83 per cent of the economic and environmental losses.

* The 7.2 million foxes in Australia cost us more than $227 million each year in livestock losses, control, research, and loss of fauna.

  Foxes are thought to kill 190 million native birds each year, not to mention vast numbers of marsupials and small reptiles.

* Feral cats are costed at $144 million each year, mainly in losses of native birds.

* Feral pigs cost $100 million a year in crop losses, pasture and fence destruction, and lamb kills.

* Rabbit calicivirus has reduced the annual cost of rabbits from $130 million to $114 million.

Hitchiking Scorpions

Two live scorpions were found in Brisbane recently when a shipment of furniture from Indonesia was unloaded after it had passed through quarantine.

AQIS was called in and the scorpions identified as Asian striped bark scorpions (*Lychas mucronatus*).

Big win for Gulf Rivers
- nets to keep out noxious African fish

Avid Feral Herald readers may recall that ISC worked with other Queensland environment groups to lobby to protect the pristine rivers of the Gulf Country in far north Queensland from invasion by Tilapia, a particularly noxious African fish.

The Tilapia are unfortunately present in the waters of the Tinaroo Dam on the coast flowing Barron River, introduced from a fish farm many years ago.

Irrigation water is taken from the Barron and pumped over a low divide into the westward flowing waters of the Mitchell River catchment, which flow out to the Gulf of Carpentaria. Tilapia in the Gulf rivers would be a major disaster as in Wet seasons Tilapia could probably spread through brackish water along the coast from river to river along our northern coast.

ISC and other groups lobbied Sunwater (the corporatised body managing the Tinaroo Dam on the Barron) and the Queensland Government to put in place nets in the irrigation channels to capture Tilapia of any size entering the Gulf catchments.

Sunwater was initially reluctant but were finally persuaded of the need to put in place the nets.

The latest information is that the nets are in the process of construction and will be in place by August, before the next wet season. Fisheries staff from the Queensland Department of Primary Industries will monitor the nets and the waters on either side.

Sunwater and the Queensland Government are to be congratulated for putting in place this key piece of protection for the Gulf Rivers. The Mitchell River Watershed Management Group deserves a special pat on the back for pursuing this crucial invasive species issue.

Austin and Froggatt Awards

ISC members are invited to submit nominations for this years Froggatt and Austin Awards, to be announced at the AGM, in September.

The ISC Froggatt Award is presented annually in recognition of the early warning, preventative action, awareness raising or management of an invasive species in Australia. (see last *Feral Herald*)

The Cost of Weeds

A new report to the CRC for Australian Weed Management has estimated the cost of weeds to Australia as falling in the range of $3,554 million and $4,532 million each year.

These figures replace previously touted estimates of $3 billion or $3.3 billion.

The figures underestimate the true cost of weeds, say the authors, because they 'were unable to estimate the impacts of weeds on the outputs of natural environments'. Also not included are the costs of weeds in urban areas and the cost of weeds to human health.

The study estimates that a least $19.6 million is spent each year controlling weeds in National Parks and other areas listed in National Heritage Trust agreements. Spending has been rising rapidly in recent years.

The report, *The Economic Impact of Weeds*, by Jack Sinden, Randall Jones, Susie Hester, Doreen Odom, Cheryl Kalisch, Rosemary James and Oscar Cacho, is published by the CRC for Australian Weed Management.

Queensland Pigs

Queensland has a Feral Pig Management Strategy, available at local Department of Natural Resources, Mines and Energy offices, or on their website at: www.nrm.qld.gov.au/pests

How Many Weeds?

Weed Categories for Natural and Agricultural Ecosystem Management. By R.H.Groves, J.R.Hosking, and another 12 authors (sorry, too many to list). Published by the Department of Agriculture, Fisheries and Forestry.

Book review by Tim Low

In the current weed literature one often hears about Australia having 2,700 weed species, but until now there was no list of all those plants published on paper.

This report, notwithstanding its odd title, does just that. Each of Australia's naturalised plants is listed by scientific name and family, and under several other categories. Common names and distributions are not provided.

Weeds that are native to Australia, for example Cootamundra wattle and sweet pittosporum, are not included.

The report includes a list of 49 weeds that are impacting upon rare or threatened native plants, though regrettably, it does not say which plants they are harming. The report summary explains that 798 weed species are considered a major problem to managers of natural systems and 1,388 are considered a minor problem.

There is also a table of 34 species about which it is unclear if they are native or exotic. There is too little recognition in Australia of the uncertain status of many plants. Almost everyone who knows *Acacia farnesiana* assumes, because it is prickly, weedy, and native on other continents, that it is exotic to Australia, yet explorer Ludwig Leichhardt found it out in central Queensland, implying colonisation long ago, probably via floating seedpods.

Other plants on the uncertain list include roly poly (*Salsola kali*), lipia (*Phyla nodiflora)* and water lettuce (*Pistia stratoides*). Water lettuce is declared noxious in all Australian states but considered native in the Northern Territory.

When perusing this report one can almost overlook the addendum on page 14 which announces that, as of May 2003, the number of naturalised plant species known from Australia had jumped to 2,810, an increase of 110 species. These extra species are not listed. One can only wonder what the total stands at today. The Report does not, by the way, list Cecropia, the feral tree we highlighted in the last *Feral Herald*.

This report is available for $20 by phoning 1800 020 157, or it can be downloaded from www.affa.gov.au/corporate_docs/publications/pdf/rural_science/lms/weeds/brs_weeds.pdf

Attack of the pines!
Pinus radiata as an invasive species

Moira Williams
School of Biological Sciences, University of Sydney

The following article stems from work the author completed on the invasion of Pinus radiata from domestic stands into native bushland, during her honours year at the University of Sydney.

The spread of pines in the urban environment - the focus of this article - is actually a minor problem compared with the spread from large commercial plantations, which the author is now studying for her PhD.

Before Radiata pine was planted commercially as a timber crop, it was introduced into Australia for ornamental purposes. The species was first used as a decorative tree in the Royal Botanic Gardens in Sydney in 1857 and since then has developed as a common windbreak and hedge species.

The tree is now so widely planted in the Blue Mountains area that it has become a dominant feature of the landscape lining most streets. Many of the pines were planted as far back as the mid 1800's and over time local residents have developed a deep affinity for the tree. Mature stands of Radiata pine are seen to be contributing to the built heritage of the region and its village character.

The bad news is that these old pine stands are seeding into nearby bushland remnants. Wind dispersal of pine seed, and subsequent establishment of pines in native areas, can adversely affect the local environment by increasing shade, depleting soil nutrients and water, and changing soil chemistry.

Like most woody weeds the species has the ability to dominate natural ecosystems. The tree may even become so dominant that it takes on the role of a negative keystone species. The addition of negative keystones to an environment results in the modification of habitat to the detriment of many native species.

In regions such as the Blue Mountains, where tracts of National Park and World Heritage listed vegetation

Eucalyptus woodland invaded by Pinus radiata

border residential zones, the spread of seed from domestic plantings has the potential to severely compromise the biological integrity of some of our nation's most sensitive and valued environments.

One example of invasion from domestic plantings exists at the small town of Medlow Bath in the upper Blue Mountains where large pines gracing the front of the historic Hydro Majestic hotel have sourced an invasion into the Megalong Valley. Pines that line the highway at the front of the hotel were planted over 100 years ago. They are highly reproductive, with many individuals boasting more than a couple of hundred cones.

Pine cones are serotinous and are retained on the tree for many years, providing a constant seed source. Invading pines have become dominant features of the valley vegetation reaching heights of 20m, diameters of up to 60cm and densities of 750 individuals per hectare in the most heavily infested areas.

While fierce bushfires in the summer of 2002 threatened the Hydro Majestic hotel, they may have paid the local environment a service by destroying a large portion of the pines growing in the valley.

However, fire can also favour the invading population by stimulating cone opening and the release of seed. Seed release coupled with high soil nutrient levels and

high light conditions following fire can lead to high recruitment and the establishment of a new generation of invaders.

The good news is that control is effective and relatively easy in the early stages of invasion. Small pines can be pulled out of the ground and larger pines will not regrow if they are cut at the base of the trunk. Ringbarking and herbicide treatment are other effective methods.

A number of urban sites across the Blue Mountains have been identified as areas of severe pine invasion and are currently undergoing successful control treatments.

Increased light and changed ecological conditions following the removal of small pines have led to the regeneration of native species at several sites including Medlow Bath Park and Harold Hodgson Reserve in Katoomba.

Successful long term management of the species will require a change in people's perceptions of the tree. The education and co-operation of the local community is needed to put an end to domestic plantings of Radiata pine and prevent further invasions.

The threat from large commercial plantations

The spread of pine seed from large plantations into adjacent native vegetation has been reported for a number of Australian states. However, quantitative data on this spread is limited to a small number of key papers (Burdon and Chilvers 1977; Dawson *et al.* 1979; Lindenmayer and McCarthy 2001; Minko and Aeberli 1986), and much of the evidence of invasion is anecdotal.

Pines are widely cultivated in Australia with almost one million hectares growing in commercial plantations. The common juxtaposition of these plantations with native vegetation results in a high potential for invasion. *Pinus radiata* is the most commonly planted softwood species and is capable of growing in a wide range of soil and climatic conditions.

Dry Eucalypt woodlands are known to be highly invadable by *Pinus radiata*, with initial colonisers establishing at long distances from the plantation. Evidence for self-generation of pines in the Eucalypt forest suggests that in the absence of adequate control measures, reproduction and dispersal from first generation invaders will result in increased pine densities and further spread into the native vegetation (Williams and Wardle 2004 submitted to *Biological Conservation*).

In collaboration with her supervisor Dr Glenda Wardle, the author is reviewing the current state of *Pinus radiata* invasion in Australia. Quantifying the current extent of invasion is the first step towards raising the profile of this species as an invader of serious concern.

Collation of site factors including plantation age and area, vegetation composition and structure, fire history, disturbance regime and climate within invaded areas will provide insight into factors facilitating the species' spread and help determine the total invasive potential of the species.

Further aims of this project are to investigate the specific impacts associated with pine invasion and to examine the effectiveness of current control strategies.

References

Burdon, J.J. and Chilvers, G.A. (1977) Preliminary Studies on a Native Australian Eucalypt Forest Invaded by Exotic Pines. *Oecologia 31: 1-12.*

Dawson, M.P., Florence, R.G., Foster, M.B. and Olsthorn, A. (1979) Temporal variation of Pinus radiata invasion of eucalypt forest. *Australian Forestry Research 9: 153-161.*

Lindenmayer, D.B. and McCarthy, M.A. (2001) The spatial distribution of non-native plant invaders in a pine-eucalypt landscape in south-eastern Australia. *Biological Conservation 102: 77-87.*

Minko, G. and Aeberli, B.C. (1986) Spread of Radiata pine into indigenous vegetation in North-eastern Victoria. *State Forests and land service conservation, forests and lands 30: 17-25.*

Cecropia

The last *Feral Herald* reported on Cecropia, a tree from Latin America that is starting to take off in the Wet Tropics of north Queensland.

We can report that the Queensland Department of Natural Resources & Mines is taking our submission on this tree very seriously, and we are quietly hopeful that they will decide to eradicate it.

Bumblebees (again!)

Horticulturists are once again applying to the federal government for permission to import bumblebees to mainland Australia.

They seem to think that the study they funded (summarised in a previous issue of the *Feral Herald*) shows that bumblebees will not harm the Australian environment.

When the opportunity arises, the ISC will submit a critique of their proposal. Stay tuned.

Slugs

ISC member Barbara Setchell has written in to voice her concerns about a feral slug *Arion ater*, attacking native orchids in the Dandenongs.

The slug, which can be spread about in potplants, is black, can reach 15cm in length and a width of 2cm, and has a wide natural range in the northern hemisphere.

Barbara says that nodding greenhood orchids (*Pterostylis nutans*) and bird orchids (*Chiloglottis valida*) succumb quickly to its attacks.

She tried ringing orchid plants with pellets, and using repellant, without success. The slugs seem to prefer orchids to lettuce seedlings.

Aconophora Update

In the last issue we reported on Aconophora, the biological control bug that jumped from lantana onto fiddlewood, an ornamental tree. Since then the story has taken a turn for the worse.

Aconophora has been found in southern Queensland attacking grey mangroves *(Avicennia marina)*, native trees in the same family as lantana and fiddlewood (family Verbenaceae). This finding has been played down because the bugs were only found in very small numbers, too few to harm the trees they were on.

But the bugs could do real harm to grey mangroves further south. In southern Queensland, *Aconophora* dies away during the hot summers, limiting the harm it can do.

But CLIMEX modelling suggests the bug will establish throughout the range of the grey mangrove in eastern Australia, from Cape York right down to southern Victoria, although conditions in Victoria may be marginal for it. *Aconophora* may do real harm to grey mangroves in New South Wales and Victoria. We will have to wait and see.

Grey mangroves are more than just a native tree. They are a major habitat type, important in stabilising estuarine mud and providing habitat for young fish and crustaceans.

The *Feral Herald* has obtained a list of all the plants on which *Aconophora* was tested, and grey mangrove was one of them. The problem for biocontrol scientists was how to test a sap-sucking bug against a mangrove tree. Tests were conducted against seedling plants in pots, and bugs in that situation did not like them. Unfortunately, the situation has proved different in the wild where the bugs have been found to attack adult trees growing in tidal mud.

Aconophora was tested against 62 plant species including 17 within family Verbenaceae, and 13 in the related family Lamiaceae.

The list of plants can be found, along with the CLIMEX modelling, in the following paper: Palmer, W.A., Willson, B.W. & Pullen. K.R. (1996) The Host Range of Aconophora compressa Walker (Homoptera: Membracidae): a potential biological control agent for Lantana camara L. (Verbenaceae). Proc. Entomol. Soc. Wash. 98(4): 617-624.

Monkeys One Day

In her testimony before the Senate Inquiry on Invasive Species, Dr Rachel McFadyen, Chief Executive Officer of the Co-operative Research Centre for Australian Weed Management, mentioned Irian Jaya's feral monkey problem, and raised the prospect of them invading Australia one day:

Ferrets in Queensland

Ferrets are feral in New Zealand, where they pose a threat to the chicks of endangered black stilts and royal albatrosses. They are trapped at sites where these birds breed. A similar problem could arise in Australia, where some states allow ferrets to be kept as pets, and where reports of wild ferrets are periodically received.

In April, a ferret was caught in a home laundry in Charleville in inland Queensland. The Queensland Government does not allow ferrets to be kept as pets.

Later that month the *Courier Mail* ran a very large article about a women in Brisbane with two ferrets, forced to keep them with a friend in northern New South Wales. This article was very sympathetic to the pet-owner and made no mention of the risk that ferrets pose.

In June, ferret owners put up a website, at www.queenslandferrets.org.au to push for legalisation of ferrets in Queensland. The website claims that ferrets are a separate species from polecats when in fact they are a domesticated version of the polecat.

Tassie Foxes

Evidence is growing that Tasmania has foxes. Environment Minister, Judy Jackson, said there have been 730 sightings, 120 of which have been credible.

In 1998, a fox was suspected of escaping from a ship at the Burnie wharf, and a dead fox was found

'For example, take the monkeys that have currently gone feral in Irian Jaya. They are native Indonesian monkeys, from Java; they are not native to Papua New Guinea and they are not native to Australia. If they come down through Australia we will lose our tree kangaroos, gliders and possums because they do not compete with monkeys. We will still have an ecology, but it will have monkeys instead of our native animals.'

The monkeys in question are long-tailed macaques or crab-eating macaques (*Macaca fascicularis*), and they were brought to Jayapura by Javan immigrants. They eat fruits, seeds, buds, insects, lizards, frogs, crustaceans, shellfish, and attack crops.

Last year, the ISC sent a message of support to a group operating in Irian Jaya that is hoping to remove the monkeys, which would devastate the ecology of New Guinea. The Northern Australia Quarantine Strategy keeps an eye out for them in Torres Strait and northern Australia.

An article on the monkeys in Irian Jaya can be found at:
http://www.wwfpacific.org.fj/bulletin7.htm

Invading Turtles

Red-eared sliders have been a news item in Queensland, following discovery of two colonies living in farm dams at Mango Hill and Kallangur north of Brisbane. The Queensland Government and AQIS are working together to eliminate the turtles.

Red-eared sliders come from North America, but have established feral populations in many parts of the world as a result of pet escapes or releases. The World Conservation Union includes them in its list of 100 of the World's Worst Invasive Alien Species.

About 80 turtles have been found so far, and another was handed in on the Gold Coast as part of an illegal pet amnesty. The turtles that founded these colonies were probably bought from a pet shop in Asia or the US and smuggled into Australia with personal luggage.

Sliders are colourful freshwater turtles with cream and red markings on the face, cream stripes on the legs, and a strongly patterned shell. They can be distinguished from native turtles by their strong patterning, and particularly by the red stripe behind the eye.

Unfortunately, a feral population of sliders is present in New South Wales as well, in wetlands around Sydney. The response by the Queensland Government to sliders found in that state stands in stark contrast to the disinterest and inactivity of the New South Wales Government.

If you find a red-eared slider in Queensland, phone 1800 999 367.

Invasive species email information services – a blessing or a curse?

By Kate Blood, ISC Councillor

There are a number of email services available for sharing and receiving information on invasive species. Subscribing (usually free) to these services can be both a blessing and a curse. It can be difficult keeping up with all the emails but regular gems of information make it all worthwhile.

The services I have listed below reflect my weed interests but I am sure there are many others that cover other invasive species.

The advances in technology allow these 'listservers', or email discussion groups, to act as switchboards for information distribution. Most operate by having a server computer loaded with special software (e.g. a software program called Majordomo) that allows you, the subscriber, to send your message to one email address and it automatically gets sent to every email address registered or subscribed to that service.

It doesn't matter where the server computer sits – it could be anywhere on the planet. It acts instantly and is a great way to distribute information or ask questions. You can actively participate in 'conversations' or just sit back and eavesdrop.

Many of the services archive all the back and forwards correspondence so you can access a mine of information on subjects of interest. These archives are usually accessible from a related website. Some services allow readers to search archives based on topics rather than having to trawl through emails month by month.

Some services offer a digest - a weekly or monthly email containing all the emails for that period. It is a good way of avoiding the distraction of the regular arrival of email on your computer. Who can resist checking their email when the computer pings at you? Very distracting!

Much of the information below has been copied directly from the services emails or websites. I subscribe to a number of them and I am sure there are many more services not covered here. Feel free to share your experiences with the *Feral Herald*. My comments on each follow in italics.

Enviroweeds

The Enviroweeds list server, established in 1998 by the Cooperative Research Centre for Australian Weed Management (Weeds CRC), is used to help distribute and discuss information on the management of environmental weeds in natural ecosystems.

You have the opportunity to share information, ask questions, participate in discussions and respond to the queries of others. You can automatically send a message to everyone who is registered on Enviroweeds simply by sending the message to one email address. The computer program does the rest. It makes discussion and information exchange easier. No log-in is required.

To subscribe to Enviroweeds, send an email to: enviroweeds-request@adelaide.edu.au and in the body of the email type: subscribe. Do not type anything in the subject line.

Having started Enviroweeds in 1998 and managed it until 2002 while with the Weeds CRC, I am rather biased about the value of this service. It has allowed many people (over 600 when I passed it onto Kelly Scott) to share information. It has also released a relative few experts from the burden of answering all the weed queries.

Now, everyone gets to share their experiences from all over Australia and some from overseas. Regular postings include information on weed jobs, events, new weeds, observations, and requests for information. Well worth subscribing if you don't mind receiving lots of emails.

Aliens-L

Aliens-L is a listserver dedicated to alien invasive species, with a focus on those that threaten biodiversity. It allows users to freely seek and share information on alien invasive species and related issues globally. Participation from all who are interested in the invasive species problem is welcome.

To subscribe, send an email without a subject header to: Aliens-L-join@indaba.iucn.org OR listadmin@indaba.iucn.org with the message: subscribe Aliens-L. When you have subscribed you will get a message with instructions for using the list.

I subscribed to Aliens-L for a number of years but removed myself as I could not keep up with the quantity of emails. Many of the subscribers are from the USA so that gives an interesting perspective to which weeds they have and how they deal with them. It also covers other invasive species apart from weeds. Good service. You can alternatively look at the archives to search for specific information.

IPMnet NEWS

IPMnet is a free, global, integrated pest management information resource service sponsored by the Consortium for International Crop Protection (CICP) in close collaboration with the Integrated Plant Protection Center at Oregon State University and the U.S. Department of Agriculture.

To subscribe, send the message "subscribe" to: IPMnet@science.oregonstate.edu including an email address. IPMnet NEWS welcomes short articles describing research or other IPM-related information, and opinions, as well as notices of events, publications, and materials or processes.

Send contributions to the email address above. HTML and PDF versions of each issue are available on the IPMnet website http://www.ipmnet.org

This is a useful bulletin that arrives monthly. It has a global perspective on IPM. From the perspective of my weed interests, it contains the odd article, event or product of interest and relevance. It has a great calendar of global events. A good way to plan ahead for that overseas trip to attend a conference etc... and have a holiday!

EnviroInfo

EnviroInfo is an information service offered by Hallmark Editions for people involved in the natural resources and environment management fields, distributed to over 9,000 people. It is free to receive, but there is a charge to advertise. To access the latest environment and water job opportunities, click on to: http://www.envirojobs.com.au

You can obtain a subscription by sending an email to: info@envirocentre.com.au with the words 'Subscribe EnviroInfo' in the subject line. Customer enquiries: 03 9530 8900, Email contact: estirling@halledit.com.au - Web address: www.halledit.com.au

Good service to hear about news relating to a broad range of natural resource management issues.

Plant Protection News

A newsletter for groups working towards higher standards of plant health and plant protection in Australia. Published by the Office of the Chief Plant Protection Officer.

To subscribe, send an email to: ocppo@affa.gov.au or fax: 02 6272 5835, Internet: www.daff.gov.au/planthealth

This email newsletter from the Federal Government contains lots of information on new pest incursions.

NRMjobs

NRMjobs is a once-weekly email bulletin which advertises opportunities in the environment, water and natural resource management field in Australia and New Zealand. 'NRMjobs' is free to receive, but there is a charge to advertise.

For details, visit: http://www.nrmjobs.com.au
To subscribe, send a blank email to: nrmjobs-subscribe@emailmedia.com.au
This service is offered by Email Media, PO Box 212, ALDGATE, SA 5154, phone: 08-8359-5035 (+61-8-8359-5035), fax: 08-8388-5372 (+61-8-8388-5372).

Great way to hear about job opportunities in natural resource management.

COMjobs

COMjobs is a free, weekly email which advertises opportunities for communicators.

For details, visit: http://www.comjobs.com.au
To subscribe, send a blank email to: comjobs-subscribe@emailmedia.com.au
This service is also offered by Email Media (see above).

Great way to hear about job opportunities in the communications area – often relating to natural resource management.

ABC Science Updates

Science Updates is a weekly email alert about recent online science coverage and upcoming TV and radio science programs from the Australian Broadcasting Corporation (ABC).

To subscribe to this weekly alert, visit: http://www.abc.net.au/science/play/lists.htm

If you are into monitoring the media for coverage of invasive species, this is one way to keep an eye on the ABC. There is lots of other good stuff too.

Sustainable Gardening Australia

SGA is a not-for-profit association committed to achieving real, continually improving and easily understood environmental solutions for gardeners.

Sustainable Gardening Australia provides advice on gardening practices and clearly identifies low environmental impact products. Their mission is to change the way all Australians garden to ensure that they are working with our environment while engaging in their favourite hobby - gardening.

More information is available at: www.sgaonline.org.au There is a sustainable gardening electronic newsletter and discussion forum on the SGA website, just follow the link on the left hand side to 'SGA Forum'.

A relatively new service mainly based on businesses in Victoria but expanding as it grows and evolves. Join so you can monitor the evolution of sustainable gardening practices and businesses such as nurseries, garden centres, landscapers etc. Or, join to learn more as a gardener or contribute to this worthy cause.

The regular newsletter contains a weed profile amongst many other goodies. One of the sustainability issues they are addressing is invasive garden plants.

DOC Science Publishing

This monthly distribution memo lists new publications that record the outcome of science projects undertaken by Department of Conservation (NZ) staff and contractors for the Science & Research Unit.

Contact: science.publications@doc.govt.nz for orders, or send to: DOC Science Publishing, PO Box 10 420, Wellington, NZ, Fax: (+64-4) 496-1929. They can offer you a choice of email service: all messages now contain links to the pdf files on the DOC website. To subscribe or inquire, contact: science.publications@doc.govt.nz

I have included this in case you are interested in keeping up with some of the developments in New Zealand. The service regularly contains science publications on invasive species research in NZ. I have ordered some useful weed publications (we have many weeds in common).

The Australia Network for Plant Conservation Inc (ANPC)

The National Office, GPO Box 1777, Canberra ACT 2601, Tel: 02 6250 9509, Fax: 02 6250 9528, email: anpc@deh.gov.au ; website: www.anbg.gov.au/anpc

Join the ANPC and receive regular email bulletins on events, publications etc.

Australian Rare Fauna Research Association (Inc) Bulletin

This short bulletin is intended as a summary of information recently reported to the Australian Rare Fauna Research Association (ARFRA) in relation to animals not officially listed as extant in Australia. These animals include Thylacines, Pumas & Panthers, Tasmanian Devils and other animals.

The Association documents all incoming reports and now has a database of many thousands of sightings. All recipients of this email are invited to report related incidents to ARFRA, either by email to this address or by phone on 03 5968 6766.

Contacts: Message service 03 5968 6766; Reports: Peter Chapple 03 5968 6144; Post: PO Box 179 Emerald Vic 3782; Website: www.arfra.org for further information and membership enquiries.

For involvement in rare fauna research, membership of ARFRA is available in 3 categories; newsletter only, associate membership, and full research.
email: strange_animals@yahoo.com.au

This is a bit of an obscure one and I don't even know if it is still operational but it sounds like fun.

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: **_$_____**

Donations are tax deductible

Please send this form and a cheque to:

Invasive Species Council
PO Box 571 Collins St West, Vic. 8007.
(Sorry we do not have credit card facilities at this stage).