Feral Herald

Newsletter of the Invasive Species Council, Australia

Issue 26 December 2010

Can Australia's new biodiversity strategy deliver?
p4

A 20-year control program in Western Australia's Millstream-Chichester National Park has left only male date palm trees standing at the original source of the infestation. These trees were left because of public resistance to the removal of "heritage value" trees. Photo: Scott Godley

Climate change crop risks weedy date with destiny

Carol Booth
ISC Policy Officer

A new crop promoted to farmers suffering from climate change could become a major weed in inland Australia.

The Rural Industries Research & Development Corporation has released a report, *Towards an Australian Date Industry*, which promotes the potential for a new edible date industry in Australia without mentioning the massive weed problems date palms are already causing.

Rangers in one Western Australian national park have battled for two decades to control infestations that formed vast impenetrable thickets on river banks and wetlands.

However, the RIRDC report refers to "well-established populations" of date palms near springs and waterholes on outback transportation routes used by nineteenth century cameleers, without mentioning that some of these are weed infestations targeted for control.

Dates are recommended as a crop for farmers affected by climate change but no mention is made of them exacerbating bushfire risks posed by climate change by shedding highly flammable fronds along inland riverbanks.

Currently, there are only about 50 hectares of dates in commercial cultivation in Australia but the authors of the RIRDC report are optimistic about future prospects:

> *"... the quality of trial shipments of Australian dates has captured the imagination of consumers in the most exclusive markets of the Middle East. These are strong signals for the potential of a lucrative Australian date industry."*

ISC has previously criticised RIRDC for disregarding invasive risks associated with rural ventures they promote, and this report is the latest example of silo thinking, where one agency spawns problems other departments will have to solve.

It is difficult to believe the report's authors are unaware of the weed problems. A Google search on "date palms" and "Western Australia" generates two weed articles in the first five items.

RIRDC reports should have a section on pest risks. Had one been included in this report it would have noted that date palms have been assessed a "high weed risk" for Pacific Islands and a "high impact" invader in Western Australia.

We are not saying that dates should not

continued p2

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be cultivated in Australia. Rather, industry development should be preceded by risk assessment that considers where and under what conditions they are safe to grow. Clear enforceable protocols to address weed risk are needed.

An understanding of pest risk should be an essential part of assessing the business potential of any new agricultural industry.

The adoption of new crops is touted as an important aspect of climate change adaptation in Australia, and a report published by RIRDC in February this year, *New Rural Industries for Future Climates*, also features date palms. This report does include a general caution about the "potential weediness of new plant species" but contains no recommendations to address this problem and mentions nothing about the weediness of date palms.

Able to thrive where there is high salinity, extreme temperatures (high and low) and drought, the date certainly looks like a crop with a future. But climate change adaptation should not become the trigger to unleash new weed problems.

South Australia has been controlling date palms around the Dalhousie Springs in Witjira National Park since 2005. Ranger Tony Magor (quoted in the *Coober Pedy News*, 28 July 2010) says of the palm that it "decreases environmental flows of the springs by transpiring water, it shades out native undergrowth and releases chemicals that reduce natural vegetation growth on land and in the water. It is a highly invasive tree that spreads easily by dingoes, or even water, birds or humans."

In Western Australia, date palms are an aggressive invader in Millstream-Chichester and other national parks, replacing native vegetation, impeding stream flow, and altering wetland ecology. They are spreading at Lake Kununurra and various wetlands in the arid zone as far east as Queensland.

Feral Herald

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Feral Herald is produced by the Invasive Species Council. We welcome story ideas and contributions.

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To control date palms the fronds need to be burned away to give access to the trunk. In wildfires the palms burn very hot, and can "cook" nearby native vegetation. They also thrive after fire.

TAKE ACTION

Write to Environment Minister Tony Burke urging him to develop a foresighting unit within the Federal Environment Department to identify and recommend responses to emerging invasive species risks to biodiversity.

Take action now

Date palms can fuel fierce fires, killing native eucalypts and melaleucas.

Production and environmental silos

The failure to consider weed risk in the development of new industries is symptomatic of the disjunct between government agencies focused on production opportunities and others charged with mopping up the mess decades later.

There is currently no requirement in most states for the basic precaution of weed risk assessment prior to the development of new products such as biofuels and pasture grasses (except if species new to Australia are imported). Risk assessment is particularly important for agricultural products because they are usually cultivated over large areas (implying high propagule pressure), maximising the prospects of escape and weed establishment.

Australia should have a foresighting unit in the Federal Government to identify risks and recommend measures to prevent pest problems before new products are developed. ISC has been a strong proponent of this recommendation in the Hawke review of the federal EPBC Act. However, more than a year after the Hawke review was presented to government, there has been no response to this and other recommendations on invasive species.

Promotion of invasive products can cost the country far more than it benefits. Deer farming, promoted in the past by RIRDC, has led to the establishment of feral deer populations causing extensive agricultural and environmental damage, while the farm gate value of venison in 2006-07 was just $1.2 million, from a peak in 2001-02 of $6.3 million (see RIRDC deer program overview).

ISC has written to RIRDC about their failure to consider invasive risks of dates as well as other products and industries. We have asked them to commission risk assessments before promoting new products and ensure that weed and pest risks are suitably addressed in their reports.

References

> Reilly D, Reilly A and Lewis I. 2010.Towards an Australian Date Industry. An overview of the Australian domestic and international date industries. RIRDC. Publication No. 10/174.

> Cullen B, Thorburn P, Meier E, Howden M, Barlow S. 2010. New Rural Industries for Future Climates. RIDC. RIRDC Publication No 10/010.

> Millstream-Chichester National Park and Mungaroona Range Nature Reserve Draft Management Plan 2007. http://www.naturebase.net/component/option,com_docman/task,doc_details/gid,1932/Itemid,711.

> Recovery plan for the community of native species dependent on natural discharge of groundwater from the Great Artesian Basin. http://www.environment.gov.au/biodiversity/threatened/publications/recovery/great-artesian-basin-ec.html

STOP PRESS

The NSW Government is inviting submissions on its statutory review of the Noxious Weeds Act 1993. An issues paper is available for download. The closing date for submissions is 5pm, Friday 28 January, 2011.

For important recommended reforms to NSW's weed laws see our report Stopping NSW's Creeping Peril.

Make a submission

invasive species council

Myrtle Rust attacks young growing leaves and shoots, stunting growth and sometimes killing plants. Photo: CSIRO

Myrtle rust continues to spread along NSW coast

Since first detected in April this year myrtle rust (*Uredo rangelii*) has been found on 87 properties in coastal NSW (as at December 1), including in 10 bushland areas, and has infected more than 20 species.

The number of affected properties has escalated in recent weeks, with those detected in the past month jumping by 64%.

Most of the infected properties are commercial nurseries, others are private residences, public parks and landscaped areas.

The rust attacks young growing leaves and shoots, sometimes also affecting fruit and flowers. It stunts growth and sometimes kills plants.

Eradication has been the goal of the NSW Government. Despite the obvious difficulties of eradicating a wind-borne fungus, the goal is warranted by the potential for this disease to cause widespread devastation in Australian ecosystems by attacking a wide range of Myrtaceae species.

It is not known how myrtle rust entered Australia.

From the outside and in hindsight, it is always easy to find fault. The Invasive Species Council trusts that the relevant authorities will evaluate their various systems and responses to this exotic pathogen with regard to timeliness and effectiveness. Identifying the weaknesses is a good way to incrementally improve our ability to withstand these threats.

Report any suspected detection to the Exotic Plant Pest Hotline – 1800 084 881.

SPECIES INFECTED TO DATE

Highly susceptible species are marked with an asterix.

- *Acmena sp.* (lilly pilly).
- * *Agonis flexuosa* (willow myrtle) 'Afterdark', 'Burgundy', 'Jeddas Dream'.
- *Backhousia citriodora* (lemon-scented myrtle).
- *Callistemon viminalis* (weeping bot tlebrush).
- * *Callistemon salignus* (willow bottlebrush).
- *Chamelaucium uncinatum* (Geraldton wax).
- *Choricarpia leptopetala* (brown myrtle or rusty turpentine).
- *Eucalyptus agglomerata* (blue-leaved stringybark).
- * *Gossia inophloia* 'Aurora' and 'Blushing Beauty' (syn. *Austromyrtus inophloia*).
- *Leptospermum rotundifolium* (round leaved tea tree).
- *Lophomyrtus x ralphii* 'Red Dragon' and 'Black Stallion'.
- * *Melaleuca quinquenervia* (broad-leaved paperbark).
- *Melaleuca linariifolia* 'Claret tops'.
- *Metrosideros collina* 'Tahiti' and 'Fiji'.
- * *Rhodamnia rubescens* (scrub turpentine).
- *Rhodomyrtus psidioides* (native guava).
- *Syncarpia glomulifera* (turpentine).
- *Syzygium leumannii* x Syzygium wilsonii 'Cascade' (lilly pilly).
- *Syzygium jambos* (rose apple).
- *Syzygium australe* 'Meridian Midget'.
- *Tristania neriifolia* (water gum).
- *Backhousia myrtifolia* (grey myrtle).
- *Syzygium luehmannii* (small-leaved lilly pilly, riberry).
- *Xanthostemon chrysanthus* (golden penda).

More information

> NSW Government website http://www.dpi.nsw.gov.au/biosecurity/plant/myrtle-rust.

> See Feral Herald, September 2010.

Australian biodiversity plan sets bar at -10%

Australia's Biodiversity Conservation Strategy talks tough about controlling invasive species, but can it deliver?

After a troubled gestation, Australia's Biodiversity Conservation Strategy 2010-2030 was released in October with an ambitious target for invasive species.

The interim 5-year national target for invasive species (one of ten targets) is to "reduce by at least 10% the impacts of invasive species on threatened species and ecological communities in terrestrial, aquatic and marine environments".

The Natural Resource Management Ministerial Council, which has responsibility for the strategy, says in the foreword that the long-term view is of a future in which "we have reduced the impacts of existing threats such as invasive species so that their impact on biodiversity is negligible."

The Invasive Species Council and other environment groups and ecologists were highly critical of the draft strategy when it was released for public comment in 2009 for its lack of targets. The draft promised to be "a roadmap to guide action" but was more like an impressionistic landscape watercolour, with vague goals and focused more on process than outcomes.

ISC is relieved to see that invasive species are recognised as one of the major threats and that there is now a defined target. But there is no information about how progress will be measured or what needs to be achieved to reduce impacts by 10% by 2015.

To achieve the target will be very demanding. The strategy itself states that "business as usual is no longer an option" but federal and state governments have provided no evidence that they contemplate abandoning "business as usual".

More than a year after completion, the 10 year review of the federal EPBC Act is languishing within government. ISC has been lobbying the government for adoption of its recommendations on invasive species reforms.

In the October media release announcing the release of the biodiversity strategy, federal environment minister Tony Burke said it "provides a clear signal of Australia's commitment to biodiversity conservation".

ISC welcomes the signal but wants to see the train. We fear that government will persist with its reliance on inputs, not outcomes, a methodology repeatedly proven inadequate. ISC will be considering how best to assess Australia's progress on the 2015 target for invasive species.

Photo credits: fox, Terry Spivey Photography, Bugwoodorg; chital deer, Biosecurity Queensland.

Australia's Biodiversity Conservation Strategy 2010-2030 can be downloaded from http://www.environment.gov.au/biodiversity/publications/strategy-2010-30/index.html.

We want to hear from you

Please email us, **isc@invasives.org.au**, if you have ideas about ways to measure Australia's progress for the invasive species target of the biodiversity strategy.

Reference

> Natural Resource Management Ministerial Council 2010, Australia's Biodiversity Conservation Strategy 2010-2030, Australian Government, Department of Sustainability, Environment, Water, Population and Communities, Canberra. http://www.environment.gov.au/biodiversity/publications/strategy-2010-30/index.html.

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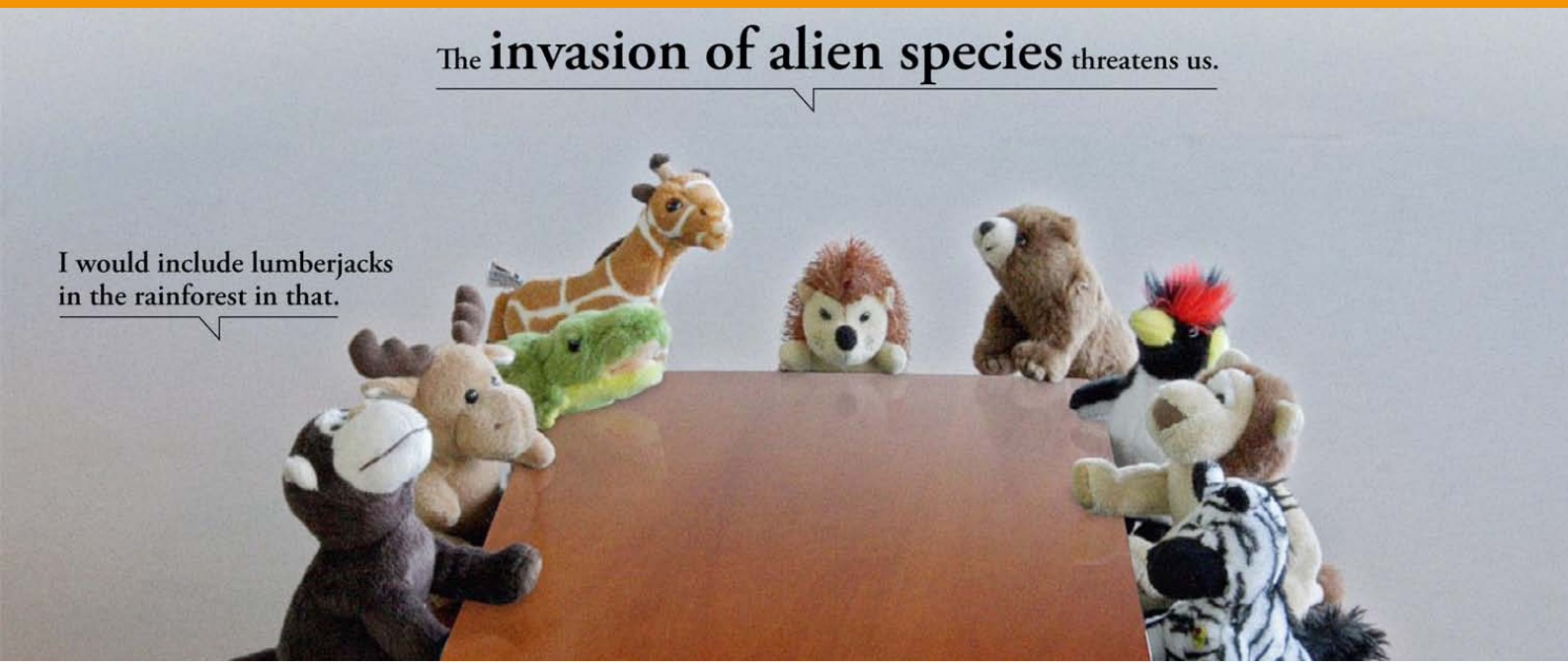


This poster was featured at the 2008 meeting of the parties to the Convention on Biological Diversity in Bonn. It was one of a number of posters designed by advertising agencies responding to a *Vanity Fair* Magazine and United Nations Environment Program project to raise awareness and catalyse action on the challenge of biodiversity loss.

Global deal to limit biodiversity loss just another toothless tiger?

When Australia's new biodiversity conservation strategy was released in October, Australian officials and those from 192 other countries were meeting in Nagoya, Japan, to agree on a new 10-year global strategy to halt the loss of biodiversity.

This strategic plan for biodiversity, 2011-2020, is intended to promote implementation of the United Nations Convention on Biological Diversity (CBD), a non-binding international agreement adopted at the Earth Summit in Rio de Janeiro in 1992 and ratified by Australia in 1993.

Australia's biodiversity strategies (the first in 1996, the second in 2010) were developed to meet one of its commitments under the Convention – article 6, which requires that countries develop strategies, plans or programs to reflect the measures they agreed to under the Convention.

The Convention also contains a commitment on invasive species – article 8(h) that each Party shall as far as possible "prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species."

The new 10-year global strategy has 20 targets, with Target 9 on invasive species:

By 2020, invasive alien species and pathways are identified and prioritised, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

The media release by the CBD Secretariat announcing agreement on the strategic plan described it as giving birth to "a new era of living in harmony with Nature".

This is likely to evoke wry smiles from an audience habituated to the regular release of non-binding strategies – prefaced with statements about the immense values of biodiversity at stake and aspiring to halt the extinction crisis through the development of ever more agreements and plans – that at their expiration are found to have failed, to the surprise of no-one.

The verdict on the previous strategic plan agreed to in 2002, which was meant to "achieve by 2010 a significant reduction of the current rate of biodiversity loss", is outlined in the draft rationale for the new plan and makes for dismal reading.

… actions have not been on a scale sufficient to address the pressures on biodiversity.

… the underlying drivers of biodiversity loss have not been significantly reduced.

… the value of biodiversity is still not reflected in broader policies and incentive structures.

Most parties identify a lack of financial, human and technical resources as limiting their implementation of the Convention.

The diversity of genes, species and ecosystems continues to decline, as the pressures on biodiversity remain constant or increase in intensity mainly as a result of human actions.

Scientific consensus projects a continuing loss of habitats and high rates of extinctions throughout this century if current trends persist …

It is difficult to be optimistic that the 2020 verdict will be better. In contrast to the negotiations on climate change, those on the Biodiversity Convention barely registered with the public. They did not attract the attendance of national leaders, and many countries, including Australia, did not even send their environment ministers. This implies that biodiversity conservation is low in national priorities. Funding of conservation programs falls far short of what is needed – the draft strategic plan suggested that it needed to be at least 100-fold greater than current allocations.

However, it's not helpful to greet international and national agreements and plans with total cynicism. They have provided the basis for some reform – some species and habitats are better off because they exist – and they provide a standard to which governments can be pressured to meet and held to account.

Mostly they highlight the work that needs to be done in civil society by groups like ISC to generate the community pressure necessary to compel implementation and adoption of binding targets backed with sufficient funding.

ISC spreads the message in Africa

At a public talk in South Africa in October, Invasive Species Council project officer Tim Low warned about invasive species impacts under climate change, and highlighted some of our recent campaigns.

Speaking to a full house at Stellenbosch University he called for more collaboration between invasive species experts and climate change biologists to develop policies for the future. Invasion biology can help clarify some contested issues in climate change biology (see side story).

Tim discussed *Double Trouble*, ISC's ebulletin on invasive species and climate change, which has subscribers in several African nations, and mentioned ISC's long-running campaign about weedy biofuels, on which we have liaised with the CABI Africa and other groups.

During his visit Tim was interviewed by Channel Africa, a radio station broadcast throughout the continent. He spoke about climate change and invasive species, about risk assessment, and about invasive reptiles.

Tim's talk was at the invitation of the Centre for Excellence in Invasion Biology at Stellenbosch University. It was timed with his participation (not as a representative of ISC) in a workshop in South Africa about weedy wattles. Wattles from Australia are extremely serious weeds in South Africa and elsewhere. On a field trip, workshop participants were shown five species growing as weeds plus invasive weeping bottlebrush (*Melaleuca viminalis*) and sweet pittosporum (*Pittosporum undulatum*), also Australian plants, all within walking distance of each other.

Wattles were imported into South Africa in the 19th century for sand stabilisation, for tannins and as ornamental plants.

Photo: www.flickr.com/photos/dhobern

Fumaria muralis is one of 20 weeds whose Australian climatic range extends outside its native climatic range. In Australia it has invaded two biomes not occupied in its native range.

Our worst weeds are rewriting the rule book on climate control

Tim Low

Some of the worst weeds invading Australia are thriving under climatic conditions outside those they experience in their countries of origin.

Rachael Gallagher and three colleagues at Macquarie University concluded this after comparing the native and introduced distributions of 26 major Australian weeds.

Their study shows how invasive species research can help inform climate change science. Claims are often made that a 2°C rise in temperature will cause many extinctions, but they flow from modelling studies in which it is assumed that the distribution of a species indicates its climatic tolerances.

The Gallagher paper is one of a growing number in recent years to undermine this assumption by showing that plants can sometimes thrive outside the climatic envelopes they occupy in their native range.

This means the direct impacts of climate change have sometimes been over-emphasised. It calls for a greater focus on indirect impacts such as invasive species that benefit from higher temperatures and more extreme events.

References

> Gallagher RV, Beaumont LJ, Hughes L and Leishman MR (2010). "Evidence for climatic niche and biome shifts between native and novel ranges in plant species introduced to Australia." Journal of Ecology 98(4): 790-799.

Journal accepts biofuels paper

A paper about weedy biofuels by Invasive Species Council staff officers Tim Low and Carol Booth, co-authored with CSIRO scientist Andy Sheppard, has been accepted into the journal *Current Opinion in Environmental Sustainability*.

It was an outcome of Tim's presentation at an OECD-sponsored conference about biofuel pest issues held in Canberra last November.

And although the paper won't be published until next year, here is a short excerpt:

As high-volume, low-value crops with many of the attributes of weeds, biofuels present a dangerous combination of high propagule pressure and limited landholder capacity for weed management. For these reasons, the biofuels industry warrants high levels of weed precaution: the risks and costs of invasion are high and long-term while the benefits may be transient. Government regulators should assess the risk of proposed biofuel crops before research or producer investments are made and only permit the cultivation of species assessed as low-risk. ... A precautionary approach to biofuels does not compromise the industry's future because there are many low-risk species, including native species, that can be used instead of invasive species.

Join us on facebook

The Invasive Species Council is dipping its toe in the social media world by starting up a facebook page.

We'll be using it to try and keep supporters in touch with invasives issues across the country, but also to make sure you get our news as soon as it happens.

We've been very quiet about this new medium and only have 10 people following us so far, so if you already have an account, login and follow us on facebook.

If you haven't joined this new social media phenomenon now might be the time to dip your toe in too!

invasive species council

Northern mammals face perils of fire and ferals

Many mammals face extinction in northern Australia in the next 10-20 years, claims a new report that places most of the blame on fire and feral animals.

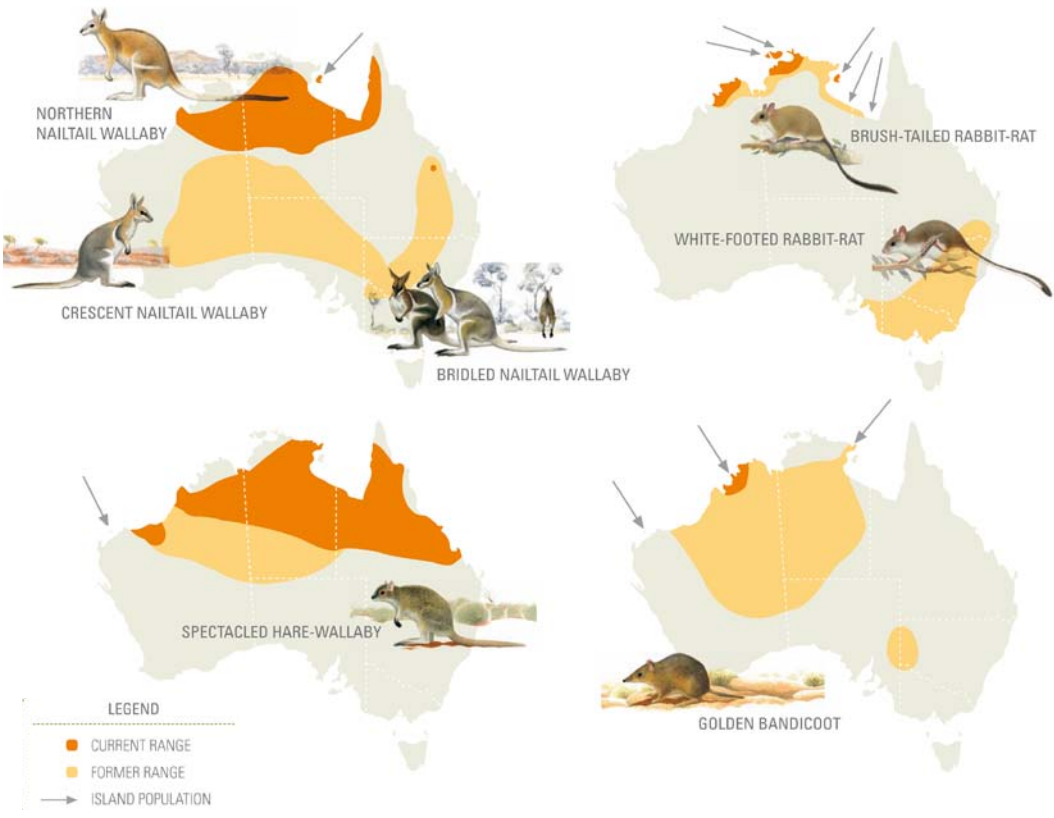
"A new wave of extinctions is now threatening Australian mammals" says *Into Oblivion*, published by a coalition of conservation groups and indigenous organisations.

The major threats are summed up as follows:

> *"The main drivers of the mammal decline in northern Australia include inappropriate fire regimes (too much fire) and predation by feral cats. Cane Toads are also implicated, particularly in the recent catastrophic decline of the Northern Quoll. Furthermore, some impacts are due to vegetation changes associated with the pastoral industry. Disease could also be a factor, but to date there is little evidence for or against it."*

The report contrasts high mammal densities in the nineteenth century with the rarity today of such iconic species as the golden bandicoot (*Isoodon auratus*) and brush-tailed phascogale (*Phascogale pirata*). Monitoring in Kakadu National Park has revealed an "alarming decline" over the last 10-15 years in numbers of northern quoll (*Dasyurus hallucatus*), fawn antechinus (*Antechinus bellus*), northern brown bandicoot (*Isoodon macrourus*) and even the common brushtail possum (*Trichosurus vulpecula*).

One piece of evidence implicating cats (*Felis catus*) is that extinctions have occurred on islands in the Gulf of Carpentaria following their release. The report suggests that cat numbers are rising in the north due to baiting of dingoes (*Canus lupus dingo*), the outstation movement introducing cats to remote areas. and the decline of northern quolls.



Black rats (*Rattus rattus*), which are increasing in remote areas, may be contributing to the declines by spreading diseases. A project to test this is underway in Kakadu.

Cane toads (*Rhinella marinus*) pose a major threat to quolls, which survive today mainly on toad-free islands. It is cause for concern that toads have rafted on floodwaters to all the islands in the Sir Edward Pellew group in the Gulf of Carpentaria, eliminating the resident quoll population.

Exotic gamba grass (*Andropogon gayanus*) and mission grass (*Pennisetum polystachion*) are mentioned in the report as contributing to hotter and more destructive fires.

The report's recommendations include calls for better controls over feral cats and feral herbivores. Paper copies can be obtained by emailing Australia@tnc.org or it can be downloaded at www.feral.org.au/into-oblivion/.

References

> Fitzimmons, J., Legge, S., Traill, B. and Woinarski, J. (2010) Into Oblivion; The Disappearing Native Mammals of Northern Australia. The Nature Conservancy, Australian Wildlife Conservancy, Pew Environment Group

Removing invasive willows saves water

Removing invasive in-stream willows (*Salix species*) can save up to 5.5 megalitres of water per hectare a year, according to a study by Tanya Doody and Richard Benyon.

With at least 300 ha of in-stream willows in NSW and Victoria, comprehensive removal could return more than 1500 ML a year to streams.

According to the CSIRO, the 220 hectares of in-stream willows already removed may have returned 1200 ML of water worth $2.4 million dollars based on an average market price for high security water.

Willows on creek banks do not use as much water as in-stream trees so their replacement by native riparian vegetation would not affect water balances.

References

> Doody T, Benyon R. 2010. Quantifying water savings from willow removal in Australian streams. Journal of Environmental Management. Published online.

Down the rabbit hole

In September this year **John DeJose** was appointed ISC's new CEO. In his first Feral Herald foray he discusses the challenges that lie ahead for everyone working in the field of invasive species management.

Firstly, let me publicly acknowledge my personal debt and that of the Invasive Species Council to Carol Booth, who has done much to ease my transition into ISC. I quickly realised that the 4000 odd pages of electronic documents she lodged with me was but a small subset of the corporate memory she carries with her. I continue to rely upon Carol and appreciate the privilege of working with her in advancing the important objectives of the Invasive Species Council.

Tim Low, author of the seminal 1999 invasives classic "*Feral Future: The Untold Story of Australia's Exotic Invaders*" possibly hasn't the physiognomy to launch a thousand ships. However, it was directly responsible for the creation of ISC, now a potent advocate for invasive species management. Through ISC, Tim's work will continue to benefit the Australian environment and its people far into the future.

My role is to develop ways of motivating new audiences to enhance our capacity to help save the nature of Australia from invasive species. Invasives is one sector where we can be sure that investment now will reap escalating rewards in the future. The potential is enormous but the challenges are great. That is what attracted me to ISC. Whenever we work in prevention, success can sow the seeds of its own destruction. It is human nature for doubts to surface about the need to remain vigilant as threats recede. It's a delicate balance.

It is important we celebrate the good work of scientists, managers and field staff in effective quarantine that has already averted ecological catastrophe and in control that have kept us safer than we might have been. However, the need to step up invasives prevention and control activities, especially with climate change hitting the accelerator, must be assiduously pursued. Our political action must be strong but our case must be balanced, nurturing the hope that is born of real, if incremental, progress being made at all levels from bush regenerators to diplomats.

Since accepting the position of CEO, I've been surprised by the number, pace, scope and scale of invasive species activities both in Australia and abroad. There seem to be some universal features in the invasives landscape which I will explore in this and coming issues.

Colleagues have commented on how easy it is, even for biologists and conservation professionals, to be blind to invasives concerns. Sometimes this blindness seems born of organisational culture, for example, in collecting institutions such as zoos, botanic gardens and herbaria.

When I read *Feral Future* in my first days with ISC, I was embarrassed to find myself in there as the CEO of the Perth Zoo responsible for a significant planting of particularly nasty, invasive African thorn trees (*Acacia* spp.). In creating an authentic environment in which to explore conservation issues in developing countries, I was blind to the risks of invasives at home.

After considering the possibility of chemically rendering the trees unable to set seed I reluctantly decided the offending trees had to be removed. It is a sobering thought that, eyes fixed on motivating 700,000 people a year to take positive conservation action, I might have unleashed a terrible pestilence on the land. If even those whose life's work is conservation can be blind to the dangers of invasives, how can we expect more from our politicians? This is a key question for ISC.

Similarly, institutions for agricultural productivity and regional development have cultural blind spots for environmental damage caused by invasives. Mandarins on a mission may choose to ignore the invasive dimensions of their activities. Promoting cultivation of one of the world's worst invasive weeds, giant reed, for biofuel production is but one egregious example.

In this issue of *Feral Herald*, we reveal that a federal government authority (RIRDC) is promoting an industry based on a plant species other agencies are working to eradicate, without considering weed risk. This exemplifies the silo mentality dominant in natural resource management.

Australia's new Biodiversity Conservation Strategy, discussed in this issue, says biodiversity should be everyone's business and part of "every relevant transaction, cost and decision". The strategy also recognises that "business as usual" is not an option if Australia is to stop further loss of species and ecosystems. Unfortunately, while government has correctly characterised the problems we face, it has largely failed to invest in the new strategies required to tackle them. Business as usual prevails.

The invasives target of the Biodiversity Conservation Strategy covers only the impacts of invasives on threatened species and communities. Given the capacity for

Ex-Perth Zoo CEO finds a new home with Invasive Species Council

John DeJose was appointed as the new CEO of the Invasive Species Council after coordinator Carol Booth decided to devote more of her time to other activities.

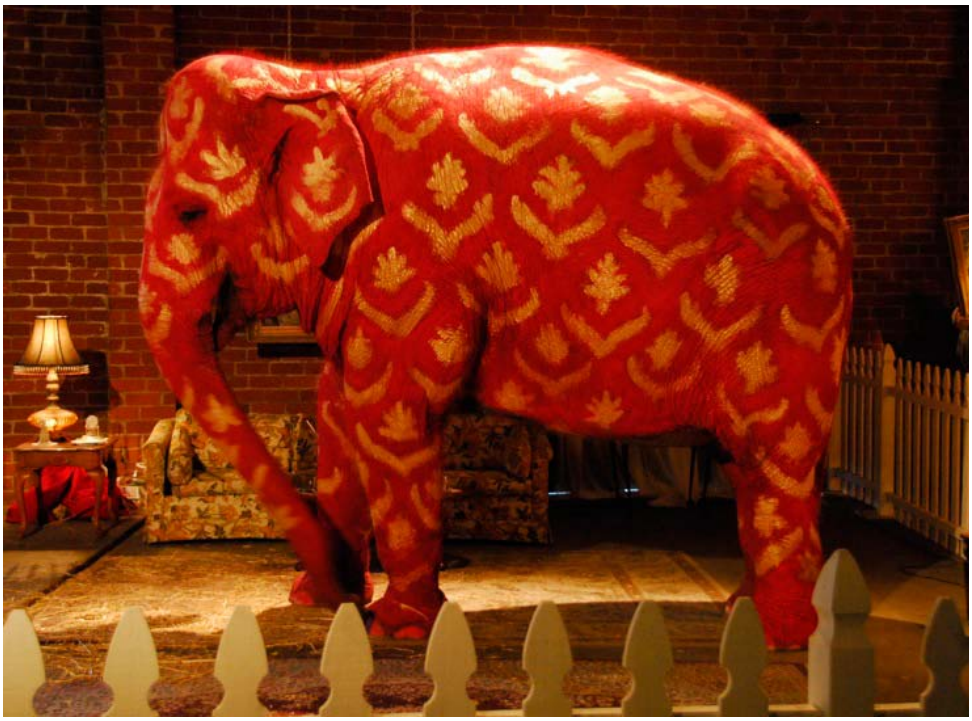
John has had a long and varied background in the natural sciences. He has worked in government and the private sector at both CEO and Board level, as well as founding industry and conservation bodies in Australia and internationally.

Throughout much of his career, John has worked with exotic, translocated, and native animals in Australia. As CEO of Perth Zoo, he was responsible for its regulation as a Permanent Post Entry Quarantine station.

From robust negotiation with chief veterinary officers regarding animal imports for zoo-based conservation programs to managing feral cats and setting up an industry association in aquaculture, John has never been far from the conservation/invasives interface.

In appointing John DeJose as its CEO, the Board is confident that he will lead the institution to greater popular appeal and effectiveness as we campaign for stronger laws, policies and programs to keep Australian biodiversity safe from weeds, feral animals and other invaders.

with our new CEO



Government failure on invasvie species, did anyone mention there is an elephant in the room?
Photo: flickr/BitBoy

invasives to destabilise, transform and degrade ecosystems at landscape scale and the clear need, also mentioned in the strategy, to preserve ecosystem services, ISC believes this focus is too narrow and short-sighted.

As the saying goes, actions speak louder than words. I believe the Federal Government's delay in implementing the Beale recommendations for federal biosecurity and the failure to respond to recommendations in the Hawke review of the Environment Protection and Biodiversity Conservation Act indicate that environmental health, the foundation of Australia's prosperity, is too low a priority for this government.

Certainly, the effort required to reduce threats is massive and expensive but one which economists would advise is a prudent investment in our future productivity, as is accepted for climate change.

This issue of the *Feral Herald* also discusses the magnitude of control measures required to reduce populations of common mammal pests in Australia. The science is clear. Yet governments persist in acting against scientific advice for political expediency. This article highlights what folly it is for governments to promote ad hoc hunting as pest control. ISC condemned this particular form of greenwashing in the recent Victorian state election when the extension of sambar hunting into more national parks was justified as a pest control measure.

Our piece on the recent High Court case over government's attempts to muzzle civil society institutions reminds us of the increasingly important role NGOs play in ensuring that our systems do change. Wherever concerned people are rejecting the status quo defended by their governments and allied business interests, NGOs and other internet-enabled, like-minded groups are making a difference in virtually every facet of human endeavour. ISC is proud to take the stand that charity sometimes begins in proclaiming what is wrong in the home.

We also report on the recent Conference of the Parties to the International Convention on Biodiversity in Nagoya, the results of which are inevitably less than inspiring. If this was not a science-based publication, we might be tempted to say that continuing to do the same thing while expecting a different result is a commonly accepted definition of insanity.

Governance failure is the elephant in the room so far as invasive species are concerned. In 1998, Ian Reeve of the University of New England reminded us that the "sad litany of species extinctions and chronic land degradation over the last two centuries should by now have made it clear that it is unrealistic to expect the institutions born of a resilient post-glacial landscape to be capable of coordinating the access of primary industries to the fragile and unique ecosystems" of Australia. I find myself looking for evidence we have heeded this call.

If only our governance institutions showed the hope, grit and resilience so clearly demonstrated by the staff and volunteers on the ground as described in our wet tropics article and as repeated daily by countless others across Australia.

The damage caused by invasive species worldwide is estimated at almost five per cent of the world economy. Invasive species pose a clear and massive danger to both the Australian environment and economy, which current governance mechanisms fail to adequately address. It is the role of NGOs such as ISC to cajole the defenders of the status quo into recognising the need for and implementing systemic change if we are to secure our common future.

Ombudsman backs ISC complaint against NSW Game Council

The prevailing view among pest experts is that ad hoc recreational hunting does not achieve effective feral animal control in Australia.

But reports the Invasive Species Council has published on these issues have come under attack from the NSW Game Council, a statutory authority of the NSW Government, and this has included personal vilification of the author and misrepresentation of ISC's positions.

ISC asked the Game Council to correct a paper published on their website, including a statement attributed to us that we had not made, which was used to undermine our credibility. They refused.

We complained to the NSW Ombudsman who agreed with us that we had been misquoted and misrepresented. The offending article was finally removed from the Game Council website following government intervention.

We did not plan to mention this to ISC members, but an article about the Ombudsman's findings appeared in the *Sydney Morning Herald* in October, and an offensive and highly inaccurate speech was made to the NSW Parliament by Shooters Party MP Robert Borsak, formerly Chair of the Game Council, about it.

Here are the ombudsman's findings, as published in his annual report. Although the Game Council has removed the misleading paper, they have not given us any opportunity to correct the record and the original version remains on another hunting website.

During his time as chair of the NSW Game Council Robert Borsak, now a sitting member in the NSW upper house representing the Shooters & Fishers Party, starred in a series of newspaper ads promoting deer hunters as "first in conservation".

Extract from NSW Ombudsman Annual Report 2009-2010

Inappropriate website content

We found that the Game Council had published inappropriate material on their website, including a paper that misquoted and misrepresented the work of a conservation advocacy group.

We wrote to the Director General of the Department of Industry and Investment, the super department responsible for the Game Council, about our concerns that:

- The Game Council had not corrected the quote voluntarily when asked to do so.
- The content and tone of other articles on the website was inappropriate for a statutory authority.
- The advocacy role played by the Game Council might potentially conflict with their regulatory function of administering the licensing system for game hunters.
- The Game Council's complaint-handling policy was inadequate.

The Director General expressed his disappointment that the Game Council had not voluntarily amended the quote and agreed some of the media releases on their website appeared to be inconsistent with what would normally be associated with a government department.

He said he believed the Game Council could undertake an advocacy role as well as a regulatory function, but advised that in the future the super department's media unit will check all material before it goes on the Game Council's website.

Game Council staff will also be given clear information about the super department's policies and procedures, including those to do with complaint-handling.

Mortal blow dealt to rinderpest virus

In a stunning example of what can be achieved by concerted control, the rinderpest virus (a Morbillivirus that infects cattle and other hoofed animals) has been declared eradicated by the UN Food and Agriculture Organisation. The last case was seen in Kenya in 2001.

From origins thought to be in Asia, rinderpest virus spread via cattle trading throughout Asia, Europe and Africa. There has been one outbreak in Australia – in 1923 in Western Australia.

All livestock within one mile of the outbreak were killed and the virus has not recurred.

Rinderpest has a mortality rate of about 80% in cattle, lower in wildlife species.

The disease had devastating impacts in Africa during the 19th and 20th centuries. Entire cattle herds were destroyed, causing widespread famine. A third of Ethiopians died in a rinderpest-induced famine.

The disease was eradicated by a global vaccination program. It is the second virus eliminated by humans, smallpox being the first (with the last case in 1977).

The Queensland Government is inviting submissions to its draft feral deer management strategy. Photo: courtesy Biosecurity Queensland

Queensland releases draft deer management strategy

The Queensland Government has released a consultation draft Feral Deer Management Strategy 2010-2015 following on from its declaration of deer as pest species.

Queensland's approach to feral deer stands in stark contrast to that of the Victorian, NSW and Tasmanian governments, which protect deer as a hunting resource.

ISC has called on these state governments to each declare deer as pest species as a first step to better management.

During the recent Victorian election campaign, ISC highlighted the inadequate policies of each of the major parties. The Victorian ALP proposed to extend deer hunting into more national parks as a pest control measure despite the government acknowledging on its website that hunting was failing to control numbers.

The vision for Queensland's strategy is to "minimise the impact of feral deer on the environment, economy and social amenity of Queensland". Encouragingly, it includes strategies to "eradicate feral deer from defined areas where feasible and where eradication will have a long-term effect", and to "train and accredit feral deer control operators in best practice management techniques".

TAKE ACTION

Make a submission on Queensland's deer strategy in support of strong control measures. Public comments are due by 31 December. The strategy can be downloaded from the Queensland Government website.

Download strategy

The impacts of deer are summarised in the document as:

- Substantial agricultural and economic impacts in some areas, including competition with livestock and destruction of crops and pastures.
- Destruction of plants, animals and habitat; disturbing soil with secondary erosion; siltation; and water quality effects.
- A cause of motor vehicle accidents, a threat to human safety, damage to suburban gardens and damage to bushland rehabilitation plantings.

The strategy recognises there are economic benefits from recreational deer hunting and the wild venison trade, but says the benefits these "bring to some individuals or smaller communities *do not outweigh the costs imposed by feral deer on the wider society and the environment*" (emphasis ours). One of the potential impediments for deer control mentioned by the strategy is that some landholders "may be reluctant to exercise control because they have an economic interest in the recreational hunting market".

A major flaw in the strategy is its failure to address escapes from deer farms as a contributer to Queensland's deer problems.

The Pest Status Review of Deer published by the Queensland Government in 2005 noted that to "limit the spread of wild deer, safeguards are needed to ensure that farmed deer are not returned to the wild." But the strategy fails to mention any safeguards and hardly mentions farmed deer at all. This is a serious omission.

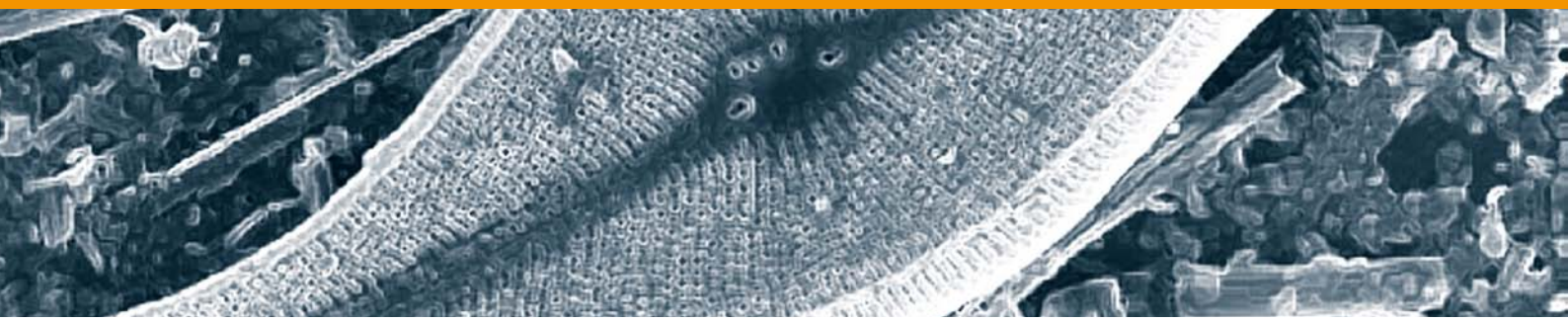
ISC will be making a submission on the draft strategy.

Status of feral deer in QLD

Class 1: Not present and subject to eradication: hog deer, sambar deer, white-tail deer.

Class 2: Landowners must take reasonable steps to keep land free of deer: rusa deer, chital (axis) deer.

Class 3: Landholders are required to control these species if their land is adjacent to an environmentally significant area: red deer, fallow deer.



Silica cell wall of *Didymoshpenia geminata*.

Invisible world of microbes harbours the tiniest invaders

An Australian wattle (*Acacia longifolia*) and its rhizobia (soil bacteria that fix nitrogen in mutualistic relationships with plants) have both become invasive and dominant in a coastal dune ecosystem in Portugal.

A study by Susana Rodriguez-Echeverria has found that the rhizobia are infecting native legumes, and disrupting their symbiosis with native rhizobia. The Australian rhizobial bacteria, which made up 95% of the samples taken in the invaded ecosystem, promote the growth of acacia but not the native plants.

The Invasive Species Council has been concerned about the risks of introducing exotic microbes that form mutualistic relationships with invasive plants – such as nitrogen-fixing rhizobia for pasture plants – and that could increase their invasiveness (see our report *Sowing the Seeds of Destruction*), infect other plants and alter soil nutrient cycles. But there is almost no information about these risks.

The general lack of information about invasive microbes, particularly non-pathogenic microbes, was highlighted in a recent review by Elena Litchman. Microbes receive very little attention despite contributing almost half of global primary productivity and driving major biogeochemical cycles.

Invasive microbes can have major ecosystem impacts. In one example, the invasive grass tall fescue (*Festuca arundinacea*) in the US hosts a symbiotic fungus that is toxic to herbivores. It suppresses tree establishment and slows the succession from grassland to woodland.

The invasive protist didyo (*Didymosphenia geminata*), probably spread by recreational fishers, is highly efficient at using organic phosphorous, which gives it a competitive advantage in low-nutrient streams. It can form large mats, taking over from native benthic communities.

Climate change and other stressors such as nutrient input may act synergistically to promote microbial invasions. Because there are fewer dispersal barriers for microbes compared to macro-organisms "environmental change may play a disproportionately large role in allowing microbial spread". Tropical toxic cyanobacteria are spreading into temperate areas where water temperatures are rising. Heatwaves seem to stimulate their emergence from cysts.

Litchman noted that the global spread of mycorrhizal species for agriculture is likely to promote invasions. Genetically engineered microbes are also a cause for concern.

You can tell by its common name, rock snot, that *Didymoshpenia geminata* is reviled wherever it has invaded. It can form large mats, taking over from native benthic communities with a repulsive monoculture of slime. Photo: courtesy National Institute of Water & Atmospheric Research

Download the report

> Get our report, Weedy Pasture Plants for Salinity Control from our website, www.invasives.org.au.

Litchman says that quarantine may prevent some microbe invasions – by preventing the movement of host plants or animals or treating ballast water – but many microbes have a multitude of dispersal pathways that are poorly known and "virtually impossible to control at present".

Invasive microbes warrant a lot more conservation focus. Please let ISC know if you know of Australian examples that may have an environmental impact by emailing us at isc@invasives.org.au.

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> Litchman E. 2010. Invisible invaders: non-pathogenic invasive microbes in aquatic and terrestrial ecosystems. Ecology Letters 13: 1560-1572.

> Rodriguez-Echeverria S. 2010. Rhizobial hitchhikers from Down Under: invasional meltdown in a plant-bacteria mutualism? Journal of Biogeography 37: 1611-1622.

invasive species council

How many do you have to kill?

Controlling feral animals is a daunting challenge for Australia. A recent paper by **Jim Hone** and two colleagues on population dynamics helps explain why.

Huge numbers of feral animals are killed, but many of them for no environmental or agricultural benefit, because they would have died anyway (as part of a large, naturally "doomed surplus") or been quickly replaced by those that would otherwise have died. Species with high population growth rates can bounce back very quickly from control programs.

As the Invasive Species Council has been stressing in response to claims that ad hoc hunting is effective feral animal control, up to half or more of a population may have to be killed annually to achieve population reduction.

Hone and co-researchers have calculated the maximum annual population growth rate (under ideal conditions) and the annual maximum "harvest rate" that would stop population growth in various native and exotic animal species.

Compare the southern right whale (*Eubalaena australis*) with the black rat (*Rattus rattus*). The whales don't reproduce until they're nine years old and under ideal conditions can increase their population by just 7% a year. Killing more than 6% a year would cause extinction.

Black rats start reproducing when they're only three months old, and can more than triple their population in a year. More than 90% may have to be killed annually to reduce population levels.

In Victoria sambar (*Cervis unicolour*) are proliferating despite being hunted, with an estimated 35,000 killed by hunters last year. Population biology explains why hunters are not keeping numbers down.

Under ideal conditions, sambar populations can increase by up to 55% a year and more than 40% may have to be killed annually to reduce populations.

For cats, removal of more than 57% may be needed to achieve population reduction. See the table for examples for other feral animals.

HOW MUCH IS ENOUGH?

FERAL ANIMAL	SCIENTIFIC NAME	MAXIMUM ANNUAL POPULATION GROWTH RATE	MAXIMUM ANNUAL KILL REQUIRED TO HALT POPULATION GROWTH
Chital	*Axis axis*	76%	**49%**
Hog deer	*Axis porcinus*	85%	**53%**
Banteng	*Bos javanicus*	32%	**26%**
Rusa deer	*Cervus timorensis*	70%	**46%**
Sambar	*Cervus unicolor*	55%	**40%**
Fallow deer	*Dama dama*	45%	**34%**
Cat	*Felis catus*	99%	**57%**
Brown rat	*Rattus norvegicus*	471%	**95%**
Black rat	*Rattus rattus*	357%	**91%**

References

> Hone J, Duncan R, Forsyth D. 2010. Estimates of maximum annual population growth rates (rm) of mammals and their application in wildlife management. Journal of Applied Ecology 2010, 47, 507-514.

Aid/Watch victory a win for free speech

In a decision with enormous ramifications for the Invasive Species Council and other advocacy NGOs, the High Court has ruled that advocacy and lobbying governments for public good outcomes are legitimate activities of charitable organisations.

The majority ruling by five of seven judges delivered on December 1 overturned a decision by the Federal Court in favour of the Australian Taxation Office's decision to revoke the charitable status of Aid/Watch, an NGO that campaigns for reform of Australia's aid programs (Aid/Watch Incorporated v Commissioner of Taxation 2010).

The charitable status of Aid/Watch was revoked in 2006 after it criticised the Federal Government's overseas aid policy. If it hadn't been successfully appealed, this decision would have put at risk the charitable status of ISC and many other advocacy NGOs.

Gary Lee, the director of Aid/Watch, declared the decision "a win for freedom of political communication in Australia".

"It resolves almost a decade of uncertainty for many charities and strengthens the ability of charities to advocate for the public good," he said.

Giri Sivaraman, senior associate at Maurice Blackburn, solicitors for Aid/Watch, said the outcome "makes it clear that charities can speak out fearlessly, can generate public debate and can push the government for change on issues that are relevant to the work they do".

ISC congratulates Aid/Watch on its win.

More information

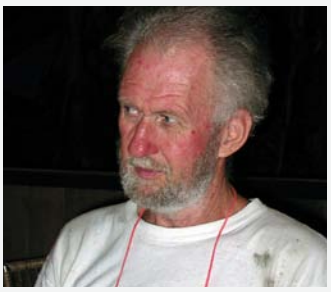
> See the AidWatch website story on this issue.

Controlling weeds in the Daintree Lowlands

Hugh Spencer
Director, Cape Tribulation
Tropical Research Station

Frontline stories: passionate people protecting Australia from invasions

With invasive species, the frontline is everywhere. It's in bushland where regenerators yank out weeds, on wharves where biosecurity officers check shipping containers, in departments where government officers develop new policies and regulations, in laboratories where biologists figure out the weaknesses of a new invader, and so on. It's also in NGO offices, where advocates marshal compelling rationales for reform.



Hugh Spencer, director of the Cape Tribulation Tropical Research Station.

In this new section of the *Feral Herald*, we invite a person working in one domain of invasive species work – whether research, policy, advocacy, or control – to write about some of the invasive challenges they are grappling with.

Our first frontline worker is from the Daintree: Dr Hugh Spencer, a biologist and director of the Cape Tribulation Tropical Research Station. The Daintree tends to evoke an image of unspoilt wilderness – "we saved the Daintree, didn't we?" – but invaders have little respect for wilderness and not all inhabitants of this special area respect the original flora and fauna.

Hugh and his team, including lots of volunteers, investigate weed threats and management solutions and do a lot of weeding. He writes here about the weed bane of his life – coconuts, shares some good news about controlling Singapore Daisy, and canvasses a few other weed challenges in the Daintree.

It is amazing how cultural biases can blind one to weeds. Although I was a biologist who'd spent lots of quality time whacking weeds on the NSW south coast, I planted coconuts when I first arrived at Cape Tribulation in 1988. My farmer neighbour encouraged me to plant the sprouting coconuts on the beach, because "they are native and they hold the beach together". Twelve years later, we at the Cape Tribulation Tropical Research Station have developed a terrible reputation as the "coconut killers".

We now see coconuts as major feral disasters, and staff and volunteers expend considerable energy exterminating the masses of seedlings that spring up under adult trees, plus some of the adults (judiciously selected).

After coconuts were introduced to Australia in the late 1700s to early 1800s, colonial government policy was to encourage their spread, primarily to provide succor for sailors.

Coconuts do not appear to have reached the Daintree until the 1910s, when the early settlers on the coast built "humpy houses" near the beaches and planted small groves. Aerial photographs from 1945 show very few coconuts on the beaches. But in the 1970s the pace of planting quickened. Recruiting from new and earlier plantings, coconuts spread and eliminated native vegetation from patches of beach. The 1980s saw even more coconut planting and invasive spread.

A study of nut characteristics by two French students working at the Research Station last year identified at least 14 distinct varieties of coconut, to which we can now add at least 1 dwarf variety.

Coconut seeds have very large food reserves and a young plant can attain considerable size before it has to get effective root purchase. Most of the varieties are highly fecund, with virtually all nuts sprouting. They quickly generate an impenetrable thicket around the parent plant. The dense fronds suppress existing native vegetation and prevent new growth. The fall of very large dead fronds adds to the shading effect. It is possible that coconuts are also somewhat allelopathic, which means that the plant secretes chemicals into the soil that inhibit germination and growth of other species.

Native foreshore species (*Scaveola, Sophora*, *Hibiscus* etc) hang over the high tide margin and act as shock absorbers in heavy seas. In areas invaded by coconuts, sea water is channelled between the coconut trunks, which offer very little flow resistance, and the sand gets washed out – the areas of least damage after the Asian Christmas tsunami were those with intact mangrove and foreshore communities; beach coconut groves offering no resistance. Because of the massive amount of coconut planting along the Queensland coast, there is now a continuous northward flow of seeds, making total control difficult. Especially problematic are coconuts planted near waterways, carrying the dropped seeds out to estuarine flats.

Coconut control

We first destroy sprouting nuts, a tedious annual operation. We pull them up, saw off the fronds at the base, and apply gelled 10% Roundup (brightly dyed) to the cut end of the nut. An equally effective approach is to split them with an axe. Adult trees are "drilled and filled" using a 400 mm long 1 cm auger, at least three full-depth holes, and filled with 10% Roundup using a veterinary dosing injector with a blind-end needle. Trees take about a month to die, with the stem standing for at least five years, crumbling from the top. They do not appear to be a safety hazard, but look unsightly and sometimes attract negative attention to our operations. We would rather "leave no corpses", but this is difficult for big trees. The speed of native recruitment after clearing has to be seen to be believed.

Native white-tailed rats appear to be the only natural enemy of coconut seeds, eating them both on the ground and on the tree. They seem to become effective control agents once the coconut density is reduced to less than one tree per 200 metres of beach. Unfortunately, even seeds chewed by rats do, on occasion, sprout. We don't know what regulates white-tailed rat numbers, which are surprisingly low considering the super-abundance of coconuts (a worthy PHD project for someone).

Because of the iconic status of coconuts on beaches for some tourist operators, our coconut obliteration program has generated hostility, including some from government quarters. However, our Cairns Regional Council Environment Office is right behind us, recognising coconuts not only as an environmentally threatening process, but also a substantial public liability issue. Considerable sums of public funds are spent de-nutting trees.

invasive species council

Juvenile coconuts re-sprouting three years after a major clean-up operation.

Juvenile coconuts forming impenetrable regrowth under palms.

Juvenile coconuts sprouting, with regeneration in background.

Photos: courtesy of the Cape Tribulation Tropical Researech Station

Slugging Singapore daisy

About 10 years ago when we at the Cape Tribulation Tropical Research Station were agonising over the alarming spread of Singapore Daisy (*Sphagneticola trilobata*) on our beaches, Mick Jeffries, the then environmental officer of the then Douglas Shire Council, gave me a 500 g bottle of Brushkiller 600 and activator, and said "try this". This was before it lost patent protection, so it was very expensive. To our joy, it killed the Singapore daisy quickly and efficiently.

Singapore daisy has spread at an alarming rate in regions south of Cairns (especially the Babinda catchment) and in the Kuranda area, where it seems to have completely taken over in some areas, especially along the Barron River. Many Daintree beaches we thought were more-or-less pristine have been seriously infested.

Metsulfuron-methyl (Brushoff, Brushkiller, etc) is now out of patent protection, so is much cheaper, probably the cheapest herbicide available.

In trials, conducted with the able assistance of our volunteers, to assess the impact of spraying on native flora, we found that 85% of 80 native rainforest species seedlings exposed (full spray) to the herbicide were unaffected or, after a minor setback, recovered. Most of the 15% of species affected were pioneer species. As a broad-leaf herbicide, it does not affect grasses, although some burn slightly and then recover. The results have been very encouraging (and consistent with later work on the control of *Gloriosa superba* by Giles and Milneron on the Sunshine Coast). We are compiling a comprehensive list of resistant species (a report is in preparation).

A volunteer with our pride and joy – a special purpose, all electric (and silent!) sprayer with 250 metres of hose. We couldn't operate without it.

This work has allowed us to be far less obsessive about avoiding spraying native

continued next page

from p15

plants (almost unavoidable considering the density of some Singapore daisy infestations). Another plus is that it is considered one of the least toxic herbicides for aquatic organisms.

In contrast, glyphosate has been ineffective in controlling Singapore daisy, which burns back, and then re-sprouts. It is also a broad spectrum herbicide and wreaks serious damage on virtually all native vegetation, which can sometimes take years to recover.

We were also very pleased to find that metsulfuron-methyl kills other serious exotic invaders in our region: lantana, *Elephantopisis mollis*, *Brilliantasia*, *Ipomea indica* (sensu lato), fishbone fern (*Nephrolepsis* spp), philodendron and *Syngonium podophyllum* (arrow vine). The latter is rapidly becoming a serious problem, spread by both runners and birds and forming thick infestations in trees (where it can become an epiphyte if cut). It comes in a variety of forms, which appear to be able to inter-convert.

Based on our positive experience, I recommend Metsulfuron-methyl be trialled as a herbicide of first attack, rather than the ubiquitous glyphosate (Roundup). As it spares grasses, that ensures, in most cases, that at least ground cover is maintained.

Other Daintree monsters

And then there are the grasses. The settlers who cleared land in the 1970s for cattle grazing (a very short-lived enterprise) introduced several species of para grass from Argentina and Africa (*Brachiaria* spp), which thrive in wet and flooded environments, and are allelopathic. As a result, hundreds of hectares of land look like lush pasture, but are monocultures of *Brachiaria*, with almost no regeneration having occurred in 40 years. Fortunately it is an easy grass to regenerate through, as after flattening (we call it "stomping") and spraying with glyphosate, it produces a thick mulch bed, which greatly reduces weeding and conserves soil moisture.

The graziers also introduced Guinea grass (*Panicum maximum*), an aggressive, fast growing grass than can easily reach 3 metres in height and climb trees. Its shades out and crowds out small seedlings but native species can eventually replace it. Hard to kill, it is far more difficult to deal with than *Brachiaria* in regeration work, even with determined stomping of the growing crowns before spraying.

Since some people have a strange desire to replace natives with alien imports (ok, some of the *Heliconias* from Costa Rica are really very beautiful) we now have to contend with multiple garden escapees. The yellow heliconia (*Heliconia psittacorum*) is fast becoming a serious weed of waterways and damp locations. Unfortunately, short of cutting and poisoning each stem with gelled Roundup, or wreaking Roundup vengeance on everything in their general area, they are very hard to control. The list of exotics here is large; luckily bromeliads have not found a pollinator, or we'd look like a Florida swamp.

Syngonium climbing trees in a parking lot. This had been sprayed about five days earlier,so there are some leaves yellowing. The density of infestation is evident.

Even Australia has contributed weeds, including locals. The famous Captain Cook vine (*Merremia peltata*, related to morning glory, Ipomea) swamps trees in disturbed areas with massive wreaths of leaves, which can shade a tree out and cause it to collapse. *Merremia* is a natural part of the structure in intact forest but in regeneration areas (exposed to lots of sun) it can wreak a lot of damage, as can native grapes (*Cissus* spp.) and *Tetracera* (fire vine). So we indulge in 'DeVine' activities, cutting and poisoning vines in areas being regenerated or rehabilitated. You can hear the trees sigh in relief, and don't worry – the vines grow back very quickly.

Another weed oddity is a local ginger – and a native rare and threatened species at that. *Etlingera australasica* is a ginger with an extensive underground rhizome network. It is a non-clumping ginger, which makes it unusual amongst our five local gingers. The flowers are produced from the rhizome often as much as half a metre from the nearest stem (they look like red, open chicken mouths on the ground). Brush turkeys seem to spread the seeds, but we still don't know what pollinates it. It is severely allelopathic, so if it gets established in old grassland before we get to regenerate, no natural regeneration occurs and we instead have a field of ginger. We've had to resort to cutting and poisoning to control it, after which the suppressed natives take off very quickly.

More information

> Ella Bay Forever! Are Coconut Palms Native to Australia?

Australia, a continent under threat

Australia has the worst animal extinction record in the world, due mainly to invasive species.

With fire ants turning up in Brisbane, foxes in Tasmania, ongoing weed and disease spread, it could get worse. Australia needs a strong community voice to stop that happening.

The Invasive Species Council is the main conservation group pressuring governments to do more about weeds, pests and wildlife diseases.

Help make us stronger. With your support we can do more.

– Tim Low, a founder of the Invasive Species Council

PS You can now donate online. Go to **www.invasives.org.au** and click on the **DONATE** link.

Tim Low on Australia's Macquarie Island, a World Heritage site now overrun by rabbits.

Invasive Species Council donation form

☑ **Yes**, I want to help protect Australia's native plants and animals from weed, pest and disease invasions.

PERSONAL DETAILS

Mr/Mrs/Ms/Other First name Surname

Address Suburb/Town

Postcode Tel (home) Tel (work) Fax

Email (please print clearly)

Work or voluntary position(s) (if relevant)

Affiliations

☐ I do **not** wish to receive email bulletins and news from the Invasive Species Council.

DONATION (prices include 10% GST)

I would like to make a donation* of:

☐ **$50** ☐ **$100** ☐ **$250** ☐ **$500**

☐ **MY CHOICE** _____

* Representing a donation to the Invasive Species Council Fund – the Invasive Species Council Fund is a public fund listed on the Register of Environmental Organisations under item 6.1.1 of subsection 30-55(1) of the *Income Tax Assessment Act 1997*.

WHERE TO SEND YOUR CHEQUE/MONEY ORDER

Thank you for supporting the Invasive Species Council. Please send this form and a cheque or money order to: **Invasive Species Council, PO Box 166, Fairfield, Vic 3078**. Cheques and money orders should be made out to the **"Invasive Species Council Inc"**. You can also donate online at **www.invasives.org.au**, or if you would like to organise a bank transfer please email us, isc@invasives.org.au.

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