ISC

Invasive Species Council
AUSTRALIA

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Dear Senators,

RE: INVASIVE SPECIES COUNCIL SUBMISSION TO THE INQUIRY INTO INVASIVE SPECIES

Thank you for the opportunity to contribute to this critical inquiry.

As you will be aware from the recent PMSEIC report, invasive species pose an enormous threat to Australia's biodiversity, and its economy. Scientists now recognise that invasive species are one of the top three threats to wildlife in Australia, and cost industry an estimated $4 billion each year.

In response to this threat, the Invasive Species Council has been established by author and biologist Tim Low, and other community leaders. As an independent, non-government organisation, the Invasive Species Council is the Australian chapter of a burgeoning international network of organisations working to stop the global problem of invading species. To protect Australia from further invasions, we will carry out advocacy and awareness raising, and seek the eradication or control of invasive species already in the country.

We believe that major opportunities exist for a more effective response to this threat. Great progress could be made within existing policy frameworks if the public in general were more engaged in this issue. It would also be possible to stop the introduction and spread of many new and emerging invaders through improved prevention and rapid response systems which offer the greatest benefits for the least cost.

To build on these opportunities, the Invasive Species Council has developed a set of practical proposals based on the best scientific understanding. Many of these proposals are outlined in the attached submission.

We would welcome the opportunity to personally discuss these proposals with you and your advisers. We would also be very pleased to talk to the Committee during public hearings.

I hope you will have time to meet with us.

Yours sincerely,

Dr Barry Traill
President, Invasive Species Council

INVASIVE SPECIES COUNCIL (ISC) SUBMISSION TO

THE INQUIRY INTO THE REGULATION, CONTROL AND MANAGEMENT OF INVASIVE SPECIES AND THE ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION AMENDMENT (INVASIVE SPECIES) BILL 2002

SEPTEMBER 2003

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TOR (a) "The nature and extent of the threat that invasive species pose to the Australian environment and economy"

The Invasive Species Council (ISC) asserts that economic and environmental impacts of invasive species are immense, cumulative and sometimes irreversible.

Economic Impacts

Enormous sums of money are being lost as a result of invasive species each year. One study places annual costs at $137 billion in the USA alone [1]. Although there are no estimates of the aggregate economic impacts of invasive species in Australia, weeds alone are estimated to cost the nation $3.3 billion dollars per annum[2]. The costs to grain cropping alone is estimated to be about $1.2 billion a year.

Pest animals also have major economic impacts. Rabbits are estimated to cost at least $90 million a year in control costs[3]. The economic impact of introduced marine pests is also high, posing a threat to shellfish beds, aquaculture enterprises and tourism. For example, the 1999 outbreak of Black Striped mussel in Darwin Harbour cost more than $2 million to eradicate, and threatened to destroy the pearling industry, valued at $225 million in 1998[4]. Steve Raaymakers, an Australian member of International Maritime Organisation (IMO) stated recently: "the global economic impacts of invasive marine species have not been quantified but are likely to be in the order of tens of billions of US dollars a year"[5].

Environmental Impacts

As substantial as the foregoing figures are, they are likely to be gross underestimates because they relate primarily to the impacts of invasive species on production values. Data on the economic impacts of invasive species on natural values are rare, however, experts surmise that these costs are immense.

[1] The Nature Conservancy (2001), *Abating the Threat to Biodiversity from Invasive Alien Species.*

[2] Commonwealth of Australia (1997), *The National Weeds Strategy: A Strategic Approach to Weed Problems of National Significance,* 20.

[3] State of the Environment Advisory Council (1996*), Australia: State of the Environment 1996*. An Independent report presented to the Commonwealth Minister for the Environment by the State of the Environment Advisory Council. CSIRO Publishing: Melbourne.

[4] Joint Standing Committee on Conservation (SCC)/Standing Committee on Fisheries and Aquaculture (SCFA) National Taskforce on the Prevention and Management of Marine Pest Incursions. 1999. *Report of the Taskforce*.

[5] Raaymakers, S. (2002), IMO ballast water update. *Aliens* (newsletter of the Invasive Species Specialist Group of the IUCN) 15: 6-11.

In fact, the invasion of native ecosystems by invasive organisms is now widely regarded as a major threat to biological diversity worldwide[6]. As stated by The International Union for the Conservation of Nature "alien invasive species…may be as damaging to native species and ecosystems on a global scale as the loss and degradation of habitats."[7] In 1993, in the journal Science, scientists warned that transport of marine pests alone "…across oceanic barriers … renders bays, estuaries and inland waters among the most threatened ecosystems in the world"[8].

In Australia, invasive species are increasingly acknowledged by ecologists as second only to land clearing as the single greatest threat to biodiversity. Weeds alone have been implicated in the extinction of four plant species[9] while pest animals, particularly the fox, rabbit and rat are thought to have contributed to the demise of many of Australia's now extinct mammal and bird species.

Despite these impacts, there is virtually no momentum to address the invasive species threat to biodiversity. Currently, institutions, policies and funding for combating invasive species are overwhelmingly concerned with protecting agricultural production values, and there is little public or private investment in environmental pests[10]. As noted at the National Weeds Experts Meeting

[6] For example:

- Article 8 of the Convention on Biological Diversity, to which Australia is a signatory, has also acknowledged the part invasive species is playing in the decline of biological diversity, requiring each 'contracting party' to "[p]revent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species" (<http://www.biodiv.org/convention/articles/>).
- The Intergovernmental Agreement on the Environment, between the Commonwealth and State Governments, and representatives of Local Government, made in 1992 states that in relation to nature conservation; "[t]he parties recognise the threat posed to both the natural environment and agricultural and maricultural production by pest species of introduced plants and animals". (State of the Environment Advisory Council (1996), *Australia State of the Environment 1996*, CSIRO Publishing Collingwood, 1997, 23).
- The Australia State of the Environment 1996 report found that invasive species "exert a major pressure on biodiversity" by eating native flora and fauna and competing with native species for habitat. (State of the Environment Advisory Council (1996), *Australia State of the Environment 1996*, CSIRO Publishing Collingwood, 1997, 23).
- The Australia State of the Environment Report 2001 confirmed that this remains the case, identifying diseases and invasive species as a 'key issue' in ongoing biodiversity loss. (Australian State of the Environment Committee (2001), *Australia State of the Environment Report 2001 (Thematic Findings).* CSIRO Publishing).
- In the recent review of the National Strategy for the Conservation of Australia's Biological Diversity (NSCABD), invasive species were identified as a "significant threatening process" in the conservation of biological diversity. (Australian and New Zealand Environment and Conservation Council (2001), *Review of the National Strategy for the Conservation of Australia's Biological Diversity*, Environment Australia: Canberra.)

[7] The Parliament of the Commonwealth of Australia (2002), Hansard, 19 November 2002 (Senator Bartlett, Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002, Second Reading Speech).

[8] Carlton, J.T. & Geller, J.B. (1993), Ecological roulette: the global transport of non-indigenous marine organisms. *Science*. 261: 78-82.

[9] Groves, R.H. and Willis, A.J. (1999), Environmental weeds and loss of native plant biodiversity: some Australian examples. *Australian Journal of Environmental Management.* 6: 164-171.

[10] For over a decade, this has been widely acknowledged in both public forums and in the literature. For example, see: Humphries, S.E., Groves, R.H., & Mitchell, D.S. (1991), *Plant Invasions of Australian Ecosystems: A Status Review and Management Direction,* Australian National Parks and Wildlife Service.

Low, T. (1999). *Feral Future: The Untold Story of Australia's Exotic Invaders*, Viking: Ringwood, Victoria;

Parliament of Victoria (1998), *Weeds in Victoria.*

Carr, G.W., Yugovic, J.V., and Robinson, K.E. (1992), *Environmental Weed Invasions in Victoria Conservation and Management Implications*, Department of Conservation and Environment and Ecological Horticulture Pty Ltd.

Nairn, M.E., Allen, P.G., Inglis, A.R., and Tanner, C. (1996), *Australian Quarantine: a Shared Responsibility*, Department of Primary Industries and Energy, Canberra.

Australian and New Zealand Environment and Conservation Council (2001). *Review of the National Strategy for the Conservation of Australia's Biological Diversity*, Environment Australia: Canberra. Pg. 52.

Wilson, B. (2002), Avoiding weed spread – post border weed incursion management. In: *Proceedings of the National Weeds Workshop*, held at Rydges Lakeside Hotel, Canberra, 19-20 February 2002. Plant Health Australia: Canberra. Pg. 26. ;

(2002): "…seems no responsibility exists for national level funding of weeds with purely an environmental or social impact".[11]

The ISC contends that before long, invasive species are likely to be the biggest threat to Australia's biodiversity. The ISC also emphasises that every year of neglect is a year when the long term costs blow out, usually with irreversible consequences on indigenous biodiversity.[12]

TOR (b) "The estimated cost of different responses to the environmental issues associated with invasive species, including early eradication, containment, damage mitigation and inaction, with particular focus on the following pests…and the following weeds…":

It is not within the scope of the Invasive Species Council to address the costs of each of the pests and weeds as listed in the terms of reference. Nevertheless, the ISC questions the criteria used to determine which species should be the focus of inquiry. The list of weeds and pests presented in the TORs appears as a handful of randomly selected species. Furthermore, the focus is almost exclusively on exotic terrestrial species which are already relatively widespread, and for which government control programs already exist. The ISC notes with concern the omission of other invasive species, especially:

- New and emerging invaders for which control is eminently more feasible and cost-effective than species which are already wide-spread.
- Introduced marine pests (IMPs) which have received little attention but pose an immense threat to Australia's coastal waters.
- Invasive native species which can cause as much damage as exotic introductions when translocated beyond their natural range, or when lacking natural limiting factors.

The ISC considers that these omissions are broadly indicative of a general failure to approach invasive species issues systematically and strategically. As noted in the 2001 National State of the Environment Report: "considering the magnitude of the issue…there is some concern that focusing resources on a small number of …species may not be the best approach[13]."

Ideally, the focus should be on prioritising species and habitats according to the potential for damage to indigenous biodiversity and the likely effectiveness of effort. The ISC asserts that unless a more considered approach is adopted, national policy and funding support for invasive species are not likely to be fully and effectively realised. The Invasive Species Council examines these issues in greater detail below, and proposes practical, strategic solutions.

Williams, J., Read, C., Norton, A. Dovers, S., Burgman, M., Proctor, W. and Anderson, H. (2001), *Biodiversity*, Australia State of the Environment Report 2001 (Theme Report). Pg. 3.

[11] Wilson, B. (2002), Avoiding weed spread – post border weed incursion management. In: *Proceedings of the National Weeds Workshop*, held at Rydges Lakeside Hotel, Canberra, 19-20 February 2002. Plant Health Australia: Canberra. Pg. 26.

[12] The Parliament of the Commonwealth of Australia (2002), Hansard, 19 November 2002 (Senator Bartlett, Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002, Second Reading Speech).

[13] Williams, J., Read, C., Norton, A., Dovers, S., Burgman, M., Proctor, W. and Anderson, H. (2001), *Biodiversity*, Australia State of the Environment Report 2001 (Theme Report). Pg. 3.

For now, the ISC urges the Senate Committee to acknowledge and document the full extent of the problem of invasive species, including new and emerging invaders, marine pests and invasive native species, and develop recommendations consistent with the scale of the threats and feasibility of control.

In view of the immense threat caused by Introduced marine pests (IMPs), and the minor attention these pests receive, the ISC examines the problem of marine pests further in Attachment 1, and provides specific recommendations for consideration and adoption by the Senate Committee.

TOR (c) The adequacy and effectiveness of the current Commonwealth, state and territory statutory and administrative arrangements for the regulation and control of invasive species

In addressing this term of reference, the ISC considers it imperative to consider three key areas of management, in priority order:

1. Preventing the introduction of new invasive species.

2. Responding quickly to eradicate or contain new or emerging invasions.

3. Stopping the spread of invasive species and driving established invasions into retreat.

Each area is addressed in turn in the following section, with recommendations for action.

Priority 1: Preventing the introduction of new invasive species

Thousands of species have been introduced to Australia from other parts of the world, either deliberately for agriculture, horticulture, nurseries or pet trades, or unintentionally through ballast water from ships or as 'hitch hikers' in packaging.

Deliberate Introduction

A large proportion of introductions have been deliberate, including the very worst mammals (rabbit, fox, pig), birds (starling, myna, sparrow), fish (mosquito fish and carp), our one alien amphibian (the cane toad) and weeds (blackberries, Patterson's curse and lantana).

Plants

Deliberate introduction of exotic species is of particular concern for weed management. A list of Australia's 18 worst environmental weeds indicates that with the exception of Japanese kelp, all were introduced to Australia deliberately, usually as garden or pasture plants[14]. Ten new weeds establish in Australia each year, and a federal government report has found that two thirds of these are escaped garden plants.

[14] See Humphries, S.E., Groves, R.H., & Mitchell, D.S. (1991), *Plant Invasions of Australian Ecosystems: A Status Review and Management Directions*, Australian National Parks and Wildlife Service.

Pasture plants pose a particular quandary. Unlike most plants imported into Australia, they are expected to behave like weeds - be quick growing, competitive, prolific seeders, and tolerant of drought and grazing. Grasses are probably the worst offenders. Of the 18 worst environmental weeds referred to above, one third are pasture grasses[15]. A landmark study by the CSIRO, found that of 460 exotic pasture grasses trialled in northern Australia between 1947 and 1985, less than one percent proved useful without becoming a weed[16]. The ISC contends that Australia's history of disastrous pasture introductions warrants a tough precautionary approach. The ISC notes that the cattle and sheep industries already have access to a wide range of exotic pasture grasses and legumes, for example buffel grass, rhodes grass, kikuyu grass, Mediterranean clover and stylos, and the introduction of further species is not warranted on economic grounds, given the very high weed risk.

Garden plants are also problematic. Many thousands of plant species are sold by the horticultural industry, and vast numbers of these have gone on to become weeds, for example ivy, arum lily, buddleia, cotoneaster. Horticulturists continue to import new plants, some of which are destined to become weeds.

Clearly quarantine systems have been woefully deficient at preventing import approvals for environmental weeds.

In recognition of a deficient plant quarantine system, AQIS recently introduced Weed Risk Assessment (WRA), a system for assessing new imports by rating the attributes of the plant. Although WRA is viewed by some as a big step forward, the system still has several major weaknesses[17]:

- More than 3,000 genera are exempted because of a major loophole identified by the ISC (see Attachment 2). Many of the exempted genera, for example, Paspalum, Portulaca, contain well well-known weeds.

- Thousands of seed species maintained in germplasm banks by pasture researchers are also exempted. These seeds were imported before the introduction of WRA and many of them pose a serious weed risk, considering the past performance of new pasture plants.

- It is based on the assumption that most pests can be predicted in advance, a conclusion refuted by recent international research.

- There is no requirement to demonstrate that no suitable alternative, non-invasive species are already in Australia prior to considering importation. Nor is there a requirement to demonstrate any public benefit before a new species is imported

[15] See Humphries, S.E., Groves, R.H., & Mitchell, D.S. (1991), *Plant Invasions of Australian Ecosystems: A Status Review and Management Directions,* Australian National Parks and Wildlife Service.

[16] Lonsdale, M. (1994), Inviting trouble: Introduced pasture species in northern Australia. *Australian Journal of Ecology*, 19:345-354.

[17] Many of these weaknesses were acknowledged by Low, T. (1999). *Feral Future: The Untold Story of Australia's Exotic Invaders*. Viking: Ringwood, Victoria

- Not all of the questions included in the assessment process need to be answered properly for a plant to pass; some questions can effectively (and conveniently) be ignored if the answer is 'don't know'.

- Many plants continue to win the benefit of the doubt, even though it cannot be demonstrated that they won't become weeds. Since 1997, roughly 67% of applications to introduce foreign plants have been accepted. Some of them undoubtedly *will* end up on our weed lists.

- There is no condition that importers pay for the costs of control and repair should a plant become a weed. This runs contrary to "polluter pays" principles which are generally applied to other sectors.

Animals

Generally speaking, Australia's approach to import approvals for animals has been more effective than that for plants, with the noticeable exception of aquarium fish. The large number of aquarium fish species imported freely into Australia is a cause of major concern, and must be reviewed. Quarantine officers have told the ISC that the officers responsible for identifying imported fish species are often inadequately trained for the task.

Unintentional introductions

Unintentional introduction is of particular concern for disease management, especially diseases carried with aquarium fish, bait, and fresh fruit, vegetables and flowers. Some experts believe that most of the diseases in Australia's streams were imported with fish. One theory is that chytrid fungus, probably introduced with aquarium fish, is responsible for the extinction of five of our frogs. If proven, this disease may emerge as a greater agent of extinction in Australia than any feral animal, except perhaps the fox.

Australia is effectively obliged to address the issue of diseases carried with fish and bait following a recent World Trade Organisation (WTO) decision ruling against a national ban on imported uncooked salmon. Australia tried unsuccessfully to justify the ban on the basis of disease risks, but the WTO found that Australia's quarantine policy was inconsistent, because aquarium fish and herring bait are permitted entry, both of which carry greater disease risks than salmon[18].

New pests can also enter through any of our ports, especially new insect pests carried with soils on cargo such as farm machinery, and new marine pests - carried with ballast water and exacerbated by hull fouling - see Attachment 1. In addition, new pests can be unintentionally introduced as hitch hikers with international travellers.

The feasibility of prevention

Fortunately, a range of tools is available to prevent the introduction of known or probable invasive species. Prevention in the form of border controls offers the greatest benefits for the least cost. The priority of prevention is further heightened by the limited success of most efforts to control pest species that are already widespread.

[18] Low, T. (1999), *Feral Future: The Untold Story of Australia's Exotic Invaders*, Viking: Ringwood, Victoria, 133-5.

The feasibility of prevention and mitigation is greater with higher plants and vertebrates than for invertebrates and microbes. For example, it would be possible to stop the intentional introduction (e.g. via government-approved imports) of most known invasive species through improved policy. This would cut off a major source of damaging invasions (mostly consisting of vertebrates and higher plants).

Unintentional introductions (mostly consisting of insects, other invertebrates, and microbes), however, can be reduced but not stopped altogether. The distinction between unintentional and intentional introductions is therefore important from a policy perspective, with intentional introductions yielding a potentially higher change to effort ratio.

Recommendations:

Intentional introductions

- *Prohibit the introduction of new pasture plants.*
- *Ornamental plants and aquarium fish should be imported only if it can be demonstrated that they are incapable of establishing feral populations.*
- *Ensure that quarantine officers with specialised training identify and assess aquarium fish, not officers vested with general responsibilities.*
- *Remove weaknesses in WRA. No genus should be exempted from WRA, and seeds held in germplasm collections should be subject to WRA. Unless there is evidence to show that a plant will not spread or can be very readily contained, a presumption of guilt must be applied.*
- *Extend the (strengthened) approach of WRA and the presumption of guilt to all exotic introductions.*

Unintentional introductions

- *Phase out the importation of fish bait because of the disease risk it poses.*
- *Address the problems posed by ballast water and hull fouling – for details see Attachment 1.*
- *Improve the education of international travellers to reduce the risk of "hitch hikers".*

Priority 2: Responding quickly to eradicate or contain new and emerging invasions

Even if Australia closed the door on all new introductions today, our pest numbers would multiply because many non-native species are already here and are simply awaiting their chance to escape, or have escaped but only in small numbers. Similarly, some native species can cause just as much damage as exotic introductions when translocated beyond their natural range, or when lacking natural limiting factors. In addition, of course, the extent to which new unintentional introductions can be prevented remains to be seen.

"Sleepers" (cultivated plants and minor weeds with the potential to become major weeds) are a particular concern. They are all around us, in our gardens and aviaries, on farms and plantations, in laboratories and aquaria. Australian weed experts have compiled a list of 300 sleepers that are likely to become

the nation's next set of aggressive invaders.[19] This figure is likely to be a gross underestimate, however, because it does not take into account the vast

reservoirs of weeds in seed collections held by pasture scientists. None of these species are screened for invasiveness because they are already in the country.[20]

Current programs are woefully inadequate to deal with the next wave of invaders. For example, the Queensland Department of Natural Resources & Mines knows of many 'minor' weeds in north Queensland which have the potential to become highly invasive in future. At one site they recently eradicated a small stand of Cecropia, a tree that is a major roadside weed in Central America. DNRM officer Steve Csurhes acknowledges that this tree has the potential to become a major weed in north Queensland, but the department lacks the resources to detect and eradicate further infestations. All too often resources are invested in projects where a clear pest problem already exists: areas where early intervention is urgently required generally go unfunded. Return-on-investment models demonstrate that prevention and early detection are vastly more cost effective than neglect or late action.

Although the National Weeds Strategy (NWS) acknowledges the need to recognise and eliminate sleepers during their benign phase, and institute a detection and rapid response program,[21] authorities have been slow to act. The National Weeds Strategy has to date focussed most efforts and resources on major widespread weeds (the Weeds of National Significance), and is only belatedly starting to address high priority 'sleeper' and emerging weeds.

Recommendations:

- *Institute processes to recognise and extinguish known or "suspect sleepers", for which eradication is feasible.*

- *Extend the (strengthened) approach of WRA (see Priority 1) to all species in Australia intended for cultivation or release.*

- *Institute a permanent, national rapid response task force to detect and eradicate or contain new and emerging invasions while it is still feasible and cost effective. This task force would only require a small core staff, able to draw on experts and "on-ground control" capacity as needed.*

[19] Csurhes, S. and Edwards, R.. (1998), *Potential Environmental Weeds in Australia*. Environment Australia, Canberra.

[20] Low, T. (1999), *Feral Future: The Untold Story of Australia's Exotic Invaders*, Viking: Ringwood, Victoria, 219-220.

[21] Commonwealth of Australia (1997), *The National Weeds Strategy: A Strategic Approach to Weed Problems of National Significance*.

Priority 3: Stopping the spread of invasive species and driving established invasions into retreat

State and Territory governments have primary responsibility for the control of invasive species through noxious pests legislation. This legislation includes provisions to prevent intra and interstate sale and spread (e.g. spread of weed seeds on machinery) of proscribed pests. However, there are a number of major problems associated with this legislation:

- The legislation is directed at protecting agricultural values, and few environmental pests have been proscribed. Consequently, many of the nation's worst environmental pests are still being used and promoted by industry (e.g. invasive pasture grasses) and the broader public (e.g. invasive garden plants). Furthermore, there is no requirement that the users of these species meet the costs of control and repair.

- There is inconsistency between legislation in different states and territories. For example, Queensland has proscribed and completely eradicated Honey Locust, a seriously invasive prickly tree, but it can still be legally grown in NSW.

- State legislation is inadequate to deal with pests of national significance. Some plants listed as Weeds of National Significance are not proclaimed under noxious weeds legislation, and are still available for sale.

- The legislation is framed around political boundaries, yet invasive species are clearly one of those "environmental concerns and impacts" identified in the Intergovernmental Agreement on the Environment (1992) which:

  > respect neither physical nor political boundaries and [which] are increasingly taking on inter-jurisdictional, international and global significance[22]

Ultimately, nation-wide efforts to control invasive species are substantially hindered by inadequate and inconsistent state legislation. This is not 'news' to anyone working in the area of environmental management. The National Weeds Strategy identified the fact that "States have not always harmonized legislation to address situations where a weed in one State can affect another State or where infestations cross State borders".[23]

The ISC strongly contends that invasive species are a national issue, requiring urgent national action. The Commonwealth must take an active regulatory role in preventing the sale and spread of invasive species to protect biodiversity. Specific mechanisms to pursue an active regulatory role are considered further in TOR (e) below.

[22] Intergovernmental Agreement on the Environment (1992), <http://www.ea.gov.au/esd/national/igae/>

[23] Commonwealth of Australia (1997), *The National Weeds Strategy: A Strategic Approach to Weed Problems of National Significance*, 20.

National legislation would dramatically improve the overall outlook for pest management. However, legislation alone will not stop pests from spreading. New or substantially expanded government field programs are required to both enforce the legislation, and to reverse the spread of established invasions in priority ecosystems. To improve the effectiveness of nation-wide efforts, these programs should be centrally coordinated at the national level in tandem with national legislation. In line with the conclusion of the marine pests task force, the ISC contends that Environment Australia is the most appropriate authority.

We must urgently redress the ongoing promotion of invasive species by state and territory government agencies, often supported by Federal funding (e.g. the use of Natural Heritage Trust funding to supplement state government incentives for *Phalaris aquatica* - one of the nation's worst environmental

weeds). Constitutional issues make it difficult, if not impossible, to institute national legislation against this practice. However, substantial inroads would be made if Federal funding for this practice ceased.

Recommendations:

- *Enact commonwealth invasive species regulations to foster a nationally consistent approach across Australia, and develop measures to limit the geographic spread of invasive species*
- *Institute new or significantly expanded field programs to reverse the expansion of established invasive species (e.g. a new, national "ground control task force" or substantially expanded national "Weed Buster" program). These programs would also support the proposed rapid detection and response task force (as a precedence, see Priority 2).*
- *Cease funding the use and promotion of invasive species.*

TOR (d) The effectiveness of Commonwealth-funded measures to control invasive species

The level of national investment to abate the invasive species threat is grossly inadequate relative to current and projected costs. Although there are no estimates of aggregate national expenditure, the Federal government only spends about $3 million per annum on weed control. The Federal government of the USA invests over a billion dollars per year on invasive species prevention and control.

In Australia, most pest management expenditure is on agricultural pests. There is widespread consensus that more money is urgently needed for the prevention and on-ground management of environmental pests.[24] Currently

[24] For over a decade, this has been widely acknowledged in both public forums and in the literature. For example, see:
Humphries, S.E., Groves, R.H., & Mitchell, D.S. (1991*), Plant Invasions of Australian Ecosystems: A Status Review and Management Directions,* Australian National Parks and Wildlife Service.;
Low, T. (1999), *Feral Future: The Untold Story of Australia's Exotic Invaders*, Viking: Ringwood, Victoria.;
Parliament of Victoria (1998), *Weeds in Victoria.*;

environmental pests compete for resources with farm pests and inevitably fall behind. Unless a separate budget line is created specifically for environmental pests this situation is not likely to change, and there is the risk that new money for environmental pests will be diverted towards agriculture. The ISC strongly contends that national funding support for environmental pests needs to be of at least a similar standard to that in place for production pests and diseases, and centrally co-ordinated. Funds should be nationally coordinated by Environment Australia, as part of the National System. New levels of policy and funding support should be complemented by a national education campaign to raise awareness about pests.

Recommendations:

- *A first-ever invasive species budget to fund the prevention, eradication and control of environmental pests, including funding for new national legislation; a rapid response task force; new or expanded field programs and a national education campaign to complement these measures.*

- *A separate budget line for environmental pests to ensure that there is a dedicated funding source for environmental pests (comparable to production pests), and to enable future monitoring of expenditure on environmental as well as agricultural pests.*

TOR (e) Whether the *Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002* could assist in improving the current statutory and administrative arrangements for the regulation, control and management of invasive species

The *Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002* proposes to introduce a national regulatory structure in order "to prevent the introduction of further species in Australia and to eradicate or control those already here".[25] It proposes to do this by amending the *Environment Protection and Biodiversity Conservation Act 1999*, which provides for regulations to control non-native species under section 301A.

Carr, G.W. , Uugovic, J.V., and Robinson, K.E. (1992), *Environmental Weed Invasions in Victoria: Conservation and Management Implications*, Department of Conservation and Environment and Ecological Horticulture Pty Ltd.;

Nairn, M.E., Allen, P.G., Inglis, A.R., and Tanner, C. (1996), *Australian Quarantine: a Shared Responsibility*, Department of Primary Industries and Energy, Canberra.;

Australian and New Zealand Environment and Conservation Council (2001), *Review of the National Strategy for the Conservation of Australia's Biological Diversity*. Environment Australia: Canberra. Pg. 52. ;

Wilson, B. (2002), Avoiding weed spread – post border weed incursion management. In: *Proceedings of the National Weeds Workshop*, held at Rydges Lakeside Hotel, Canberra, 19-20 February 2002. Plant Health Australia: Canberra. Pg. 26. ;

Williams, J., Read, C., Norton, A., Dovers, S., Burgman, M., Proctor, W. and Anderson, H. (2001), *Biodiversity*, Australia State of the Environment Report 2001 (Theme Report). Pg. 3.

[25] The Parliament of the Commonwealth of Australia (2002), Hansard, 19 November 2002 (Senator Bartlett, Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002, Second Reading Speech).

Under the Bill, section 301A would be used to prohibit interstate trade and any other actions involving listed species,[26] including the importation of the following categories of species:

(a) pasture grasses;
(b) ornamental plants;
(c) aquarium fish;
(d) any other species as determined by the Minister, if the Minister is satisfied, on the advice of the Invasive Species Advisory Committee, that a species should be deemed to be a prohibited import.[27]

Attachment 3 provides further background to the EPBC Act and the Invasive Species Bill.

Suffice to say for now that the ISC strongly supports using the EPBC Act as a basis for regulations to control invasive species.

The important role of the EPBC Act has been recognised by a Commonwealth-State Marine Pests Task Force (1999), which recommended:[28]

> "that the Commonwealth government explore the option of developing statutory plans to reduce, eliminate or prevent the impacts of introduced marine species on the biodiversity of Australia using Section 301A of the *Environment Protection and Biodiversity Conservation Act 1999*. This should be nationally coordinated by Environment Australia, as part of the National System (Recommendation 4.20)".

The ISC considers that establishing a national list of invasive species is a constructive beginning to developing a national regulatory framework for invasive species. Furthermore, the ISC asserts that prohibiting the importation of species with a high potential for invasiveness is a most effective means of improving invasive species outcomes.

the ISC is also strongly of the view that, in line with the recommendations of the Commonwealth-State Marine Pests Task Force (1999), the regulations could, and indeed should, also provide a national statutory foundation for the National System for the Prevention and Management of Introduced Marine Pests.

In a similar way, the regulations should also provide statutory support for rapid detection and response capabilities by identifying and listing new or emerging invasions (see TOR (c), Priority 2). To prevent late action, the process for listing new or emerging invasions would need to be swift, and take precedence over more established invasions.

[26] S266AA

[27] S266AC(2)

[28] Joint Standing Committee on Conservation (SCC) / Standing Committee on Fisheries and Aquaculture (SCFA) National Taskforce on the Prevention and Management of Marine Pest Incursions. (1999), *Report of the Taskforce*. Pg. 57.

Recommendations:

- *Pursue commonwealth legislation to control invasive species through the Environment Protection and Biodiversity Conservation Act (1999), and the Invasive Species Bill (1992).*

- *Ensure that commonwealth legislation provides a national statutory foundation for the National System for the Prevention and Management of Introduced Marine Pests; rapid detection and response, and other proposed national systems.*

INVASIVE SPECIES COUNCIL (ISC) SUBMISSION TO

THE INQUIRY INTO THE REGULATION, CONTROL AND MANAGEMENT OF INVASIVE SPECIES AND THE ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION AMENDMENT (INVASIVE SPECIES) BILL 2002

SEPTEMBER 2003

Attachment 1: Introduced Marine Pests

Profound changes are occurring in Australia's coastal waters due to exotic marine organisms, introduced by shipping. Global shipping routes are "international biotic conveyer belts"[1] with about 10,000 marine species being transported by ship at any given time[2]. But introduced marine pests (IMPs) have received little attention.

Only recently, with the discovery of the Northern Pacific seastar in Tasmania and the Black-striped mussel in Darwin Harbour, has there been a significant focus in Australia on IMP problems. Yet these species and others such as the Japanese kelp, Giant fanworm, and European clam are becoming the cane toads, rabbits and prickly pears of our seas.

The Invasive Species Council urges the Senate Committee to fully document the extent of the problems and develop recommendations consistent with the scale of threats.

Major impacts of marine pests

Australian waters contain at least 140 known introduced species of 'concern'[3]. As most of the Australian coastline has not been surveyed, the real number of IMPs is undoubtedly much higher. Port Phillip Bay alone is estimated by the CSIRO to contain 300-400 IMPs. And each year another four to six new species establish in Australian waters.

There are two main routes of introduction: the hulls and other below-water parts of boats and ships, and ballast water. Both are discussed below. A few case studies are provided in the Appendix to exemplify impacts.

Major problems caused or potentially caused by IMPs include:

- ***Ecological*** - Loss of biodiversity. In 1993, in the journal *Science*, scientists warned: "Transport of entire coastal planktonic assemblages across oceanic barriers to similar habitats renders bays, estuaries and inland waters among the most threatened ecosystems in the world"[4].

- ***Health*** – Diseases and toxic algae travel in ballast water, for example cholera and toxic dinoflagellates. According to AQIS there are 148 pathogens that could be transported in ballast. Thousands of people have already died due to the spread of cholera by ballast water (see case study in Appendix).

- ***Economic*** – IMPs have seriously damaged oyster farms and scallop beds in Australia. The eradication of the Black striped mussel in Darwin Harbour cost

[1] Carlton, J.T. (1985) Transoceanic and interoceanic dispersal of coastal marine organisms: the biology of ballast water. *Oceanography and Marine Biology Annual Review* 23: 313-71.
[2] Williamson, A.T., Bax, N.J., Gonzalez, E. & Geeves, W. (Eds.) (2002) *Development of a Regional Risk Management Framework for APEC Economies for Use in the Control and Prevention of Introduced Marine Pests.* At URL http://crimp.marine.csiro.au//reports/apec_summary.htm.
[3] Furlani, D. (1997) *A Bibliography of the Introduced Marine Species in Australian Waters*. CRIMP Technical Report Number 12. At http://crimp.marine.csiro.au/reports/TechReport12.html.
[4] Carlton, J.T. & Geller, J.B. (1993) Ecological roulette: the global transport of nonindigenous marine organisms. *Science*. 261: 78-82.

more than $2million. They pose a threat to shellfish beds, aquaculture enterprises and tourism. Steve Raaymakers, an Australian member of the International Maritime Organisation (IMO) stated recently: "The global economic impacts of invasive marine species have not been quantified but are likely to be in the order of tens of billions of US dollars a year"[5].

Ballast water

The IMO estimates that 10 billion tonnes of water are moved around as ballast each year. An American survey of plankton in the ballast water of 159 cargo ships with ballast water pumped from Japanese ports found 367 distinctly identifiable species[6].

The current approach to the ballast problem is reballasting - exchange of ballast water in deep waters at sea. The assumption is that organisms found in the deep open ocean are not adapted to live close to shore and that greater levels of salinity may kill ballast organisms. However, reballasting is not highly effective. Recent studies have found that organisms from ports remain inside and that there is often large amounts of sediment. A survey of 343 ships entering Australia found that two-thirds carried sediment, and half of these contained dangerous dinoflagellate cysts in the mud[7]. Also, an organic film grows on the sides of ballast tanks, and this biofilm can contain cholera and other disease organisms such as salmonella.

Investment in research is low – currently about $10 million globally to solve a problem costing tens of billions. Investors have, in part, been discouraged by a lack of international standards of performance. Many small organisms such as dinoflagellates produce tiny protected cysts or other dormant stages that are very difficult to kill by heat or poison, and which are too small to be easily removed by filters. This means that any treatment will be a compromise between practicality and effectiveness. International standards have to be set which spell out the extent of this compromise.

Biofouling

The challenge of ballast water may be minor compared to the challenge presented by biofouling of boats and ships. Biofouling is the 'fouling' or occupation of submerged surfaces, such as hulls, intake pipes, propeller systems, sea chests, anchor wells, and fishing gear, by organisms such as barnacles and worms. Unlike ballast water, biofouling is not restricted to a certain class of vessel – it is an issue for not only international and domestic cargo ships, but fishing boats and recreational yachts moving between harbours.

Perhaps because of the complexity of the biofouling issue, it has been virtually ignored by governments and the IMO. Yet it may be the source of half or more of IMPs. Major invaders in Australia such as the North Pacific seastar, the Brown seaweed, and the European fan worm may have arrived as hull hitchhikers.

Until recently ship owners protected their hulls from invasive species by coating them in paints containing the very toxic tri-butyl-tin (TBT). However, the IMO has adopted the International Convention on the Control of Harmful Anti-fouling Systems on Ships, which will end use of TBT. There is already evidence of more organisms now travelling on hulls. Hull travel was probably always substantial, as anti-fouling paints are often poorly applied and maintained, especially on smaller vessels.

[5] Raaymakers, S. (2002) IMO ballast water update. *Aliens* (newsletter of the Invasive Species Specialist Group of the IUCN) 15: 6-11

[6] Carlton & Geller (1993) *ibid.*

[7] Hallegraeff, G.M. & Bolch, C.J. (1992) Transport of diatom and dinoflagellate resting spores in ships' ballast water: implications for plankton biogeography and aquaculture. *Journal of Plankton Research* 14(8): 1067-84.

Analysis of government action to date on IMPs

The Invasive Species Council commends the Australian government on its international efforts within the IMO to deal with ballast problems. We also commend the government on developing the National Management System for the Prevention and Management of Marine Pest Incursions, in collaboration with the state and territory governments.

However, in general, the focus and scale of resourcing by the government on the IMP problem has not been commensurate with the scale of the threats. In particular, the government has failed to address the problems posed by biofouling of vessels. In addition, although the government established a marine pest centre, it is not adequately funding it or requiring that the industry primarily responsible for IMPs contribute to research to resolve or manage the problems.

Thus far, no biological control methods have been developed for any IMPs in Australia and research effort is declining due to lack of funds. Australia does not have sufficient baseline data or monitoring data to properly assess either the state of our native biota or the existence and impacts of introduced species.

Funding for management of IMPs is obviously a major issue for the Australian government and taxpayers. In this, the government has failed to develop instruments to make those who deliver IMPs to contribute to resolving the problems, i.e. the government has not implemented a 'polluter pays' principle for IMPs. By not implementing this principle, the government is unfairly burdening Australian taxpayers with the costs of the current inadequate responses and massive future costs.

Although Australia has played a vital role internationally in raising the problems of IMPs within the IMO and participating in an international approach to reballasting, there needs to be a much greater effort internationally. In particular, there needs to be a focus on (a) biofouling as a likely major source of IMPs, (b) investing in research to prevent ballast transport of IMPs, (c) developing standards for ballast water, (d) mechanisms for funding adequate responses to and management of IMPs, and (e) regular monitoring of ports to detect new pests.

Recommendations – domestic

(1) Conduct a risk assessment of the threats posed by biofouling of different types of vessels to distinguish high-risk from low-risk vessels. Develop mandatory anti-fouling standards for different types of vessels. Develop a risk characterisation model to guide Quarantine staff in regular inspections of hulls and other vessel surfaces on higher-risk vessels.

(2) Institute a polluter pays system for IMPs, by imposing a ballast levy on vessels, the amount of which is based on level of assessed risk. The money collected should be used on research and management of IMPs, as listed below under a similar recommendation for the IMO. (Note that California already imposes such a tax.)

(3) Take seriously the truism that it is much more cost-effective to prevent the problems of IMPs than to pay the costs of dealing with established problems. Focus on preventing the establishment of IMPs by:

- *Regularly monitoring ports for IMPs and changes in biota*
- *Adequately resourcing the rapid response approach*
- *Providing strong incentives for researchers to develop alternatives to toxic anti-fouling hull paints such as TBT*

Recommendations – international

(4) Advocate a polluter pays system in the IMO. That is, a ballast levy for all international shipping. A levy could be incorporated into the Draft International Convention for the Control and Management of Ships' Ballast Water and Sediments before it is ratified in February next year. The money collected should be spent on:

- *research into better methods of treating ballast water;*
- *to assist developing nations to upgrade their port inspection policies and to train biologists to conduct port surveys and test ballast water;*
- *better biological information gathering;*
- *research into biological control and other methods of controlling ballast invaders;*
- *funding of rapid response teams to eradicate new invaders when they first establish;*
- *research on hull invaders to determine the scale of the problem and the best solutions; and*
- *compensation payments for those who suffer from ballast invasions.*

(5) Advocate that the IMO develop a major strategy on biofouling.

(6) Advocate within the IMO for a much greater international investment into ballast research and for the development of international standards of an acceptable level of treatment of ballast water. An investment budget of up to $1 billion is commensurate with the scale of the problem and the value of trade involved.

(7) Advocate for improved opportunities under WTO agreements to manage trade and shipping to prevent IMP (and other pest) problems.

Appendix – Case studies

Northern Pacific Seastar in Tasmania[8,9,10]

The Northern Pacific Seastar (*Asterias amurensis*) is a starfish with diameter of 40 cm. It is currently the dominant macro-invertebrate in the Derwent estuary, after arriving in Tasmanian waters sometime in the 1980s. It has also spread to Port Phillip Bay, probably via fishing gear or hulls. Surveys have found densities up to 24 individuals per square metre.

This seastar is a 'voracious' predator of mussels, snails, fish, crabs, barnacles, worms, sea urchins, sea cucumbers, brittle-stars, ascidians, other seastars, even drowned dogs. It is a threat to endemic bottom dwelling species, by competing for food and through predation. In the northern hemisphere it is a serious predator of commercial scallops. As a consequence of the seastar, bivalve shellfish have almost vanished from the Derwent. The Spotted handfish (*Brachionichthys hirsutus*) - listed as endangered under the EPBC Act - is threatened with extinction. The seastar is starting to cause problems in oyster production on some marine farms in southeast Tasmania.

Japanese kelp in Tasmania[11,12]

Japanese kelp or seaweed (*Undaria* pinnatifida) is one of Australia's worst weeds. It was first discovered in 1988 near Triabunna, a woodchip port in Tasmania, probably arriving in ballast water or on hulls of woodchipping vessels. Just four years after its discovery, the kelp zone stretched 50 km and carried 400 tonnes of weed, and 10 years after discovery the zone stretched 100 km. It is being spread by currents and fishing boats. In 1996 it appeared in Port Phillip Bay.

The Japanese kelp will have severe long-term environmental impacts. It displaces native seaweeds, rock lobster, abalone and oyster. It is likely to cause significant economic losses in the abalone and sea urchin industries. As it spreads, it may have an even greater economic impact on oyster and mussel farms, as it will clog drains and water pipes.

Toxic dinoflagellates[13]

Dinoflagellates are microscopic algae, an important part of the plankton diet of fish and shellfish. Some dinoflagellates produce toxins, which are accumulated by filter feeding organisms such as oysters, scallops and mussels. Humans and other creatures eating them can then be poisoned. World-wide, up to 2000 cases of human poisoning by shellfish or fish poisoning are reported each year (many would not be reported). The effects on other animals which eat fish or shellfish, including birds and mammals, are

[8] McLoughlin, R. & Thresher, R. (1994) The North Pacific Seastar. *Search* 25(3): 69-71.
[9] Buttermore, R.E., Turner, E. & Morrice, M.G. (1994) The introduced Northern Pacific Seastar *Asterias amurensis* in Tasmania. *Memoirs of the Queensland Museum* 36(1): 21-25.
[10] NIMPIS (2002). *Asterias amurensis* impact details. *National Introduced Marine Pest Information System* (Eds: Hewitt C.L., Martin R.B., Sliwa C., McEnnulty, F.R., Murphy, N.E., Jones T. & Cooper, S.). At URL http://crimp.marine.csiro.au/nimpis.
[11] Tsernjavski, N. (1994) Ballast water: Hitch-hikers in Australian waters. *Bulletin of the A.L.S.* 17(2): 3-5.
[12] IMPIS (2002) *Undaria pinnatifida* species summary. *National Introduced Marine Pest Information System* (Eds: Hewitt C.L., Martin R.B., Sliwa C., McEnnulty, F.R., Murphy, N.E., Jones T. & Cooper, S.). At URL http://crimp.marine.csiro.au/nimpis.
[13] NIMPIS (2002) *Gymnodinium catenatum* species summary. *National Introduced Marine Pest Information System* (Eds: Hewitt C.L., Martin R.B., Sliwa C., McEnnulty, F.R., Murphy, N.E., Jones T. & Cooper, S.). At URL http://crimp.marine.csiro.au/nimpis.

largely unknown. One study reported on 14 Humpback whales fatally poisoned over a 5-week period by dinoflagellate toxin[14].

The dinoflagellate *Gymnodiniuym catenatum* is well established in the Port of Hobart and has been responsible for periodic closures of shellfish farms in this area. There have been closures of shellfish farms in other states for similar reasons. Toxins produced by G. catenatum can cause Paralytic Shellfish Poisoning, which causes muscular paralysis, respiratory difficulties, and can causes death.

Cholera epidemic in Peru[15]

In 1991 a cholera epidemic struck Peru, the first in Latin America for more than a century. Several million people were infected and more than 10,000 died. Over the next four years Latin American governments poured more than US $200 billion into emergency repairs to sewage and drinking water systems. Peru lost $1 billion in seafood exports and tourist income. This type of cholera was traced back to ballast water carried from Bangladesh. During the 1990s ships going from Latin America to other countries were found with this cholera in their ballast water.

Despite these events and other disease outbreaks attributed to ballast water, and growing concerns about new diseases, Gloria Casale of the US Health Resources and Services Administration has noted that “the importance of ballast water as a source for the transportation and introduction of disease is largely ignored… Ballast water is a biological time bomb liable to engender significant disease in vulnerable populations anywhere in the world.”

[14] Geraci, J.R., Anderson, D.M. *et al.* (1989) Humpback Whales (*Megaptera novaeangliae*) fatally poisoned by Dinoflagellate toxin. *Canadian Journal of Fisheries and Aquatic Science* 46: 1895-98.
[15] Casale, G.A. (2002) Ballast water – a public health issue. *Ballast Water News*. 8: 4-5.

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SEPTEMBER 2003

Attachment 2: Review of Commonwealth Weed Risk Assessment (WRA)

(Reprinted from *Feral Herald*, Vol. 1 No. 3 (April 2003), Newsletter of the Invasive Species Council)

Gaping Holes in the Weed Screen

By Tim Low

In 1997 Australia introduced Weed Risk Assessment (WRA), a process for assessing the weed risk posed by new plants. WRA is a series of 49 questions asked of any new plant proposed for import. Questions include is it toxic, is it aquatic, is it a grass? If a plant scores 'yes' too many times it is forbidden entry. WRA is applied to any new plants that nurseries, pasture scientists or anyone else wants to bring into the country. Because it is more stringent than the systems most countries use, WRA has won much praise here and overseas.

But WRA is not operating as it should. Hundreds of weeds may be imported legally into Australia without any assessment whatever. The system is so flawed it raises serious questions about the competence and commitment of our quarantine service.

WRA is applied only to new plants, not to species already in Australia. Most foreign plants already in the country (cultivated plants and weeds) appear either on a permitted (white) list or a prohibited (black) list. Regrettably, these lists are not available for public scrutiny. However, anyone can find out if they may import a specific plant merely by visiting the appropriate AQIS web page (www.aqis.gov.au/icon32/asp/ex_querycontent.asp) and typing the plant's name into their import conditions (ICON) database. The database lists the import conditions for more than 18,000 foreign plant, animal, mineral and human commodities.

One anomaly of the system is that it does not prohibit weeds already in Australia, except under limited circumstances. Anyone may, for example, import the seeds of stinging nettles (*Urtica urens*), paspalum (*Paspalum dilatatum*), chickweed (*Stellaria media*), cobbler's pegs (*Bidens pilosa*) and blackberry nightshade (*Solanum nigrum*), not to mention madeira vine (*Anredera cordifolia*) and ivy (all *Hedera* species), provided the seeds are clean of impurities. If, for example, you type *Urtica urens* into the ICON website you are told:

"Non-commercial consignments of seed of this species may be permitted entry into Australia subject to inspection on arrival. Seed must be free from soil, live insects, plant material (eg fruit pulp, leaf or stem material, etc), contamination with prohibited seeds and packed in new containers that are clearly labelled with the botanical name.

This anomaly exists because Australia is a signatory to the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Standards (the 'SPS Agreement'). Under this agreement weeds already in a country may be banned only if their distribution is limited and they are subject to an 'official control program', or if an importer wants to introduce a new strain that differs genetically such that it poses a greater weed risk than existing strains. Unfortunately, the Australian quarantine service seldom uses even these limited provisions to ban existing weeds.

Secondly, and even more seriously, many thousands of foreign plants not yet found in Australia - including serious weeds – can bypass weed risk assessment because they have found their way onto the permitted list.

In the case of grasses (one of the most invasive of all plant groups) the ICON database shows that many genera are permitted entry without WRA. For example, for saltgrass (*Distichlis spicata*), the ICON database shows that one may bring in not only *Distichlis spicata* but every related grass in genus *Distichlis*, provided the proper protocols, such as ensuring the seeds are free of contaminants, are followed.

The same is true of many other weedy grass genera. Genus *Brachiaria* contains about a hundred different grasses, mostly native to Africa, and including several weeds in Australia such as para grass (*Brachiaria mutica*), a major invader of tropical wetlands. But according to the ICON database, only three species of *Brachiaria* are prohibited entry (and para grass is not one of them). All the rest may be legally imported, provided the seed is clean of impurities, without WRA, even if they are major weeds overseas.

This loophole has arisen for the following reasons. In the days before WRA was introduced, pasture researchers imported seeds of various grasses for research. At that time no-one considered whether the grasses would become weeds; the only concern was that imported seed might harbour impurities, such as fungal infections, insects and certain weed seeds. So AQIS devised a set of protocols, outlining the treatments and standards to be met by anyone importing the seeds. To save time and trouble for AQIS and their clients, AQIS declared that the protocols developed for one species of *Distichlis* or *Brachiaria* would apply to other plants in that genus. Because these protocols existed, these genera were placed on the permitted list. The same process was applied to garden plants. Once a protocol was developed for one species, the whole genus usually ended up on the white list.

So how many genera does the list contain? Rod Randall of the Western Australian Department of Agriculture says there are more than 3,000 – a number so vast it makes a nonsense of WRA. Included are most genera of garden plants and crop plants in Australia, many of which include weedy species, for example *Brassica* and *Portulaca*.

When Weed Risk Assessment was introduced in 1997 the federal government realised these genera required attention. A consultant was engaged to go through the white list and recommend species and genera for removal. But so far, almost no changes to the list have been made.

Another problem, says Randall, is that many plants in the ICON database are misspelt, or listed under antiquated names. The prickly pear genus, for example, appears as *Upuntia* as well as *Opuntia*.

Another weakness is that prohibited plants can gain entry when an importer lists them under outdated names. Mexican feather grass (*Nasella tenuissima*), a weedy relative of serrated tussock (*N. trichotoma*) - one of our 20 worst weeds - was allowed in because the importer unwittingly used an old name: *Stipa tenuissima. Stipa* is a permitted genus, *Nasella* is not.

Weed Risk Assessment needs an urgent overhaul. Whole groups of plants, including serious weeds, need not go through WRA for reasons that have nothing to do with their weed status. WRA was never meant to operate like this.

The ISC has written to the Chief of Biosecurity Australia, Mary Harwood, raising questions about the operation of WRA.

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SEPTEMBER 2003

Attachment 3: the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* and the *Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002*

With Lucy Vaughan

This attachment discusses the:
1) current *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act)
2) proposed *Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002.*

The *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act)

The EPBC Act essentially comprises two parts:
i) a process for the assessment of proposed 'actions';
ii) biodiversity conservation through the listing of endangered species and communities.

i) Assessment of proposed 'actions'
The EPBC Act establishes a process for the assessment of proposed 'actions'[1] by either private persons, corporations or government and its agencies, that have, will have or are likely to have a 'significant impact' on matters of national environmental significance. These matters are set out in Part 3 of the EPBC Act and include:

- World heritage properties;[2]
- Wetlands of national importance (i.e. declared Ramsar wetlands);[3]
- Listed threatened species and communities;[4]
- Listed migratory species;[5]
- Nuclear actions;[6]
- Commonwealth marine areas; and[7]
- any further matter prescribed by regulation.[8]

To date, there have been no further matters of environmental regulation prescribed by regulation. The EPBC Act also applies to all 'actions' taken on Commonwealth land[9] and by Commonwealth agencies.[10] Actions which would or would be likely to have a significant impact on matters of national significance or on Commonwealth land or which are undertaken

[1] An 'action' is widely defined by section 523 of the EPBC Act to include a project, a development, an undertaking, an activity or series of activities or any alteration to any of these so called actions.
[2] Part 3, Subdivision A
[3] Part 3, Subdivision B
[4] Part 3, Subdivision C
[5] Part 3, Subdivision D
[6] Part 3, Subdivision E ('nuclear action' is defined in section 22 of the EPBC Act and includes actions such as the establishment or modification of a nuclear installation, transporting spent nuclear fuel or radioactive waste products and mining or milling uranium ore etc)
[7] Part 3, Subdivision F
[8] Part 3, Subdivision G.
[9] ss 26 – 27A
[10] s 28

by a Commonwealth agency are deemed to be 'controlled actions' and are prohibited unless the relevant Commonwealth Minister approves the action.

In considering whether to approve an 'action' or not, the Minister determines what level of environmental impact assessment is required. These levels range from an accredited assessment process, an assessment on preliminary documentation, a public environment report, an environment impact statement through to a full public inquiry[11]. Further, the Minister has the power to approve an 'action' subject to conditions.[12]

ii) Biodiversity conservation through the listing of endangered species and communities

The second part of the EPBC Act deals with biodiversity conservation principally through the listing of endangered species and communities. Included in its arsenal of regulatory and management mechanisms for this part of the EPBC Act are 'recovery and threat abatement plans' and 'management plans' for those species which are listed as endangered. There also exist mechanisms for the management planning of Ramsar wetlands and World Heritage sites, the protection of cetaceans, conservation agreements over private lands and similar mechanisms.

Discussion

In its current form there are several provisions in the EPBC Act through which the Commonwealth could address the environmental harm caused by invasive species at a national level. However, these provisions could at best only tackle this issue indirectly.

In relation to the assessment of proposed 'actions', there is almost no scope to consider what impact the action will have on creating a situation where invasive species are either intentionally or accidentally introduced into an area.

In July 2000 Environment Australia issued a set of 'Administrative Guidelines[13]' to assist proponents of an action to determine whether an action should be referred to the Environment Minister for a decision on whether approval is required. It does this by providing a list of criteria to assist proponents determine whether an action has, will have, or is likely to have a significant impact on a matter of national environmental significance under the EPBC Act.

However, with the exception of the criteria listed for the Commonwealth Marine Environment[14] (an area for which the Commonwealth has exclusive jurisdiction), the criteria listed for each of those matters of national environmental significance does not require the proponent to consider and address the possible impact the action could have in facilitating the introduction and/or spread of one or more invasive species.

In relation to biodiversity conservation, section 301A gives the Commonwealth the potential to address the issue of species "other than native species" which do or may threaten biodiversity in Australia or which would be likely to threaten biodiversity in Australia if brought into Australia.[15] Section 301A provides that the Regulations may provide not only for the establishment and maintenance of a list of such non-native species, but that the Regulations could provide for the regulation or prohibition of the importation into Australia of such listed

[11] The requirements of each of these processes are set out in Part 8 of the EPBC Act.
[12] s 134.
[13] Environment Australia, July 2000, '*Administrative Guidelines for determining whether an action has, will have, or is likely to have a significant impact on a matter of national environmental significance under the Environment Protection and Biodiversity Conservation Act 1999*'.
[14] which provides that "an action has, will have or is likely to have a significant impact on the environment in a Commonwealth marine area if it does, will, or is likely to: result in a known or potential pest species becoming established in the Commonwealth marine area", Ibid. 12.
[15] Chapter 5, Part 13, Division 6A, s 301A

non-native species and even the regulation and prohibition of the trade in such species not only internationally but within and between the States and Territories.[16]

Section 301A also provides that the regulations may make and implement plans to reduce, eliminate or prevent the impacts of such listed non-native species on biodiversity in Australia. Although, to date, no such regulations have been made pursuant to section 301A.

Threat Abatement Plans

Arguably, the problem of invasive species could be addressed within the existing EPBC Act framework is using mechanisms such as Threat Abatement Plans. Section 183 of the EPBC Act allows the Minister to publish a list of "key threatening processes".

A process is a 'threatening process' if it "threatens, or may threaten, the survival, abundance or evolutionary development of a native species or ecological community."[17] A threatening process could be treated as a 'key threatening process' if it has an adverse impact on a native species or ecological community listed as a threatened species or ecological community[18].

In other words, it is only when the threatening process puts at risk the very existence of a threatened species or ecological community will the process be recognized as a 'key threatening process' warranting specific action. The Minister has listed the following 'key threatening processes' relating to invasive species:

- Competition and land degradation by feral Goats
- Competition and land degradation by feral Rabbits
- Dieback caused by the root-rot fungus (*Phytophthora cinnamomi*)
- Predation by feral Cats
- Predation by the European Red Fox (*Vulpes vulpes*)
- Predation, Habitat Degradation, Competition and disease Transmission by Feral Pigs;
- The reduction in biodiversity of Australian native fauna and flora due to the red imported fire ant (*Solenopsis invicta*).[19]

Within 90 days of the listing of a key threatening process, the Minister must decide whether a 'threat abatement plan' should be made in relation to that process[20]. A threat abatement plan could provide for the research, management and other actions considered necessary to reduce the impact of the key threatening process on the listed threatened species or community to an 'acceptable level[21]'.

Of the existing listed key threatening process relating to invasive species, all but two have approved threat abatement plans in place. However, the deference to the States given by the Commonwealth in relation to land use issues is clearly reflected in the fact that the Commonwealth is restricted from actively pursuing this mechanism outside Commonwealth areas.

Indeed, section 270B(6) provides that the Minister must not make a threat abatement plan for a key threatening process which occurs wholly or partly outside a Commonwealth area unless the Minister can be satisfied that it is reasonably practical to make the plan jointly with each of the States and self-governing Territories in which the process occurs within 3 years of deciding to develop such a plan!

The damage to biodiversity brought about by invasive species is not expressly acknowledged as a matter of national environmental significance within the EPBC Act. Under the current

[16] This provision clearly takes advantage of the exception to free trade between the states required by s92 of the Constitution if regulation or prohibition has a conservation purpose, established in Cole v Whitfield (1988) 165 CLR 360.
[17] s 188(3).
[18] s 528.
[19] <http://www.ea.gov.au/egi-bin/sprat/public/publicgetkeythreats/>
[20] s 270A.
[21] s 270B.

EPBC Act, the Commonwealth has restricted its own ability to assertively take on an effective regulatory role in the control and management of invasive species.

The *Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002*

The Proposed Regulatory Regime

The Bill proposes to introduce a national regulatory structure in order *"to prevent the introduction of further species in Australia and to eradicate or control those already here".*[22]

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

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

> "has been, or may be, introduced into Australia and either, directly or indirectly, threatens, will threaten or is likely to threaten, the survival, abundance or evolutionary development of a native species, ecological community, ecosystem or agricultural commodity or which is "a genetically modified species".[23]

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

(a) species determined by the relevant agency or Minister to be permitted for import;
(b) species determined by the relevant agency or Minister to be prohibited for import;
(c) invasive species of the following types currently present in Australia:
    (i) eradicable;
    (ii) substantially containable;
    (iii) beyond eradication;
    (iv) controlled;
    (v) disregarded as an invasive species;
    (vi) exempt from listing.[24]

<u>Prohibited imports</u>
In order to prevent the introduction of further species into Australia, the Bill proposes to immediately prohibit the import of the following categories of species:

(a) pasture grasses;
(b) ornamental plants;
(c) aquarium fish;
(d) any other species as determined by the Minister, if the Minister is satisfied, on the advice of the Invasive Species Advisory Committee, that a species should be deemed to be a prohibited import.[25]

It is within the discretion of the Minister to prohibit the import of a species under (d) above on advice from the Invasive Species Advisory Committee (also established by the Bill) if the species "is a threat, either directly or indirectly, to the survival, abundance or evolutionary development of a native species, ecological community, ecosystem or agricultural community".[26]

[22] The Parliament of the Commonwealth of Australia, Hansard, 19 November 2002 (Senator Bartlett, Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002, Second Reading Speech).
[23] s 266AB.
[24] s 266AA.
[25] s 266AC(2).
[26] s 266AC(3).

Ministerial permits

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

a) where there is a demonstrated need for the species to be used in food production in Australia;

b) where there is a low risk that the species will have an impact on listed threatened species or ecological communities; and

c) where the Minister has approved an invasive species threat abatement plan for the species.[27]

Offences

The Bill also creates a number of offences where a person imports or possesses species which are either prohibited or which are categorised as eradicable, substantially containable, or beyond eradication, without a permit.[28]

Managing existing invasive species

The Bill also proposes a number of practical management strategies for dealing with invasive species already in Australia, including establishing a process for the creation of an "invasive species threat abatement plan".[29] Invasive species threat abatement plans operate in a similar way to threat abatement plans under the existing EPBC Act, but with some significant differences.

Firstly, whilst the Minister may prepare an invasive species threat abatement plan for any species currently present in Australia, the Minister *must* make a written invasive species threat abatement plan for any species deemed eradicable within 2 years of its listing and any species deemed substantially containable within 5 years of its listing.[30]

Secondly, whilst the Minister must attempt to make a threat abatement plan jointly with the States and Territories in the event that the invasive species occurs or is likely to occur in those States and Territories, the Minister is not required by the Bill to develop and issue an invasive species threat abatement plan jointly with the States or Territories if the Minister is satisfied that it is not reasonably practicable to make the plan with each of the relevant States and Territories within 2 years after the species is listed.[31]

ISC response to the proposed regime

National list of invasive species

The establishment of a national list of invasive species is a constructive beginning to any attempt to provide a national regulatory framework for invasive species. The prohibition of imports with a very high potential for invasiveness, especially pasture grasses, is also a most effective means of reducing the invasive species threat.

Invasive Species Threat Abatement Plans

The Invasive Species Threat Abatement Plans improve on existing Threat Abatement Plans currently provided for under the EPBC Act, in two ways:

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

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

[27] s 266BE.
[28] s 266BA.
[29] s 266CA.
[30] ss 266CD(2) and (3).
[31] s 266CD97).

However, it should be noted that, as currently drafted, the Bill appears only to require Commonwealth agencies (i.e. not State agencies) to comply with the invasive species threat abatement plan.[32] The ultimate effectiveness of this management strategy must therefore be questioned.

Environmental Impact Assessments

A far more serious weakness in the proposal for a national regulatory structure for the control and management of invasive species put forward by the Bill, is that it does not propose to include 'invasive species' as a matter of national environmental significance.[33]

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

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

Given that the damage caused by invasive species has largely been attributed to human activity, it is a curious omission. There are plenty of examples where 'actions' have resulted in both native and exotic flora and fauna expanding its range and becoming an invasive species. Urban development is just one case in point. In *Feral Future*, Tim Low complains of the many times when he has served as an expert witness in the Planning and Environment Court "warning that a new housing estate would send waves of new weeds into nearby forests."[34]

Conclusion

If enacted, the regulatory regime proposed by the Bill would have a dramatic and beneficial impact on the environmental problems created by invasive species.

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

ISC notes that the Democrats have introduced the Bill "not as a final document but as the beginning of much needed discussion and debate about invasive species in Australia". Thus, in considering the proposals put forward by the Bill, there exists the opportunity to take on a more active role in relation to the actions of private persons. Many recommendations relating to these actions are put forward in the main body of this submission. ISC considers that these recommendations should be backed up by regulation.

We urge the Senate Committee to take advantage of the opportunity presented by the Bill to provide a strong statutory foundation for the management of invasive species, incorporating many of the recommendations contained in this submission.

[32] s 266CB.
[33] Which could be facilitated in the current EPBC Act by, say, listing the preservation of biological diversity as such a matter.
[34] Low, T., *Feral Future*, above n 11, 74.