Safeguarding Australia's Natural Assets

Controlling the Growing Invasive Plant and Animal Threat

Federal Election Policy Proposal

WWF Australia

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Outcome and Objectives

Outcome

The number of invasive plant and animal species legally imported into Australia and subsequently traded will be greatly reduced, high priority invasive plants and animals will be eradicated, and more effective control of widespread invasive plants and animals of national importance will be achieved.

Objectives

- To demonstrate national leadership through the development of a comprehensive and strategic national policy framework.
- To prevent the import of new invasive plants and fish species.
- To prevent the trade and wide distribution of nationally-important invasive species.
- To develop national early warning and response systems for weeds, pest animals and marine pests.
- To eradicate high priority invasive plant and animal species from the mainland, coastal waters and selected off-shore islands.
- To strengthen measures to control of Weeds of National Significance and other nationally-important invasive plant species, and invasive animals of national significance.
- To increase the capacity of interested South Pacific island countries to implement world class border control systems.

The strategy is based on the fact that prevention and early control is the cheapest and most effective approach to manage invasive species.

Issues

Invasive weeds, pest animals, and diseases are the second biggest threat to Australia's rich biodiversity, after land clearing and other forms of habitat destruction.[i]

To date, they have driven four native plant species to extinction and endanger another 12 rare or threatened native plant species.[1] They were also the major driver leading to the extinction of over 15 native bird and mammal species. Additionally, they threaten more than 9 out of 14 World Heritage areas, including Kakadu and the Wet Tropics.[2] Foxes alone are estimated to kill 190 million birds a year.[3]

The major weakness in the national response to invasive species is how Australia deals with those weed and pest animal species that have penetrated border controls, but are yet to become widespread. For example, over 300 'sleeper weeds' are waiting for the right conditions to take off. *Tomorrow's weeds are already here.*

[i] Measured in terms of species extinctions caused by the threat

Australia has traditionally taken a reactive approach to weed and pest animal problems, waiting until they became widespread and a huge and costly problem before acting – too little too late. An example is the North Pacific seastar, which arrived in Hobart in the 1980s, and following the lack of management action spread to the major shipping hub of Melbourne's Port Phillip Bay in the mid-1990s, from where it now threatens marine ecosystems adjacent to southern mainland Australia.

A new approach is needed that prevents weeds and pest animals from entering Australia, restricts the spread of those already here, and enables early detection and eradication of high risk emerging and 'sleeper' invasive species, where this is feasible. Prevention rather than cure is the most effective and cheapest way to control the growing threat posed by weeds and pest animals.

Action is needed to ensure that Australia has strong nationally-coordinated measures that unify Commonwealth and State efforts, close glaring gaps, and enable new weed and pest animal problems to be detected early and eradicated before they become widespread and costly.

Economic Benefits

Invasive species have traditionally been considered to be a 'funding black hole'. This myth has been truly debunked by recent studies on the cost-effectiveness of new strategic investments.

The general economic benefits of implementing this policy package have been calculated in a report to the Prime Minister's Science, Engineering and Innovation Council (PMSEIC). It concluded that limiting the spread of pests, weeds and imported diseases was "one of four areas of investment above all others that are likely to return greatest impact in heading off the diminishing value of Australia's natural systems and biodiversity."[4]

The report also estimated that:

- Eradication of new outbreaks of naturalised plant species with weedy potential would save 6,000 native species and result in a collateral benefit of $100m/yr
- Biological control of weeds of national significance (WONS) would save 1,600 native species and result in a collateral benefit of $1,000m
- Biological control of vertebrate pests would save 18,900 native species and result in a collateral benefit of $3,000m.[5]

A specific example is that the real cost to Queensland of rubbervine (a WONS) in 1995 was estimated at $27m.[6] Yet the research program that delivered the solution cost a mere $0.73m.[7] This is the equivalent to just 10 days expenditure on conventional control.[8]

The cost of not implementing this policy package is the continuing increase in the cost of weeds and pest animals to the Australian economy, which is currently estimated to be over $4.7 billion a year. The breakdown of this cost is presented below.

Weeds have major economic, environmental and social costs. The direct financial costs of weeds to the agriculture industry alone is estimated to average $4 billion a year – covering loss of production, contamination of agricultural product, and control costs.[9] The costs to grain cropping alone is estimated to be about $1.2 billion a year, and at least twice that for the rest of agriculture.[10] The cost of weeds to the environment and biodiversity is incalculable.

Invasive animals also have major economic impacts. A major study of 11 major introduced vertebrate pests calculated their economic impact at $720 million each year.[11] This includes $227.5m/yr from foxes, $146.0m/yr from feral cats, and $113.1m/yr from rabbits.[12]

The potential economic impact of introduced marine pests is high. Introduced marine pests physically displace, compete with, and consume native marine species, and threaten the tourism, recreation, fisheries, aquaculture and shipping industries. For example, had a $2.2+ million eradication project been unsuccessful, the 1999 outbreak of the black-striped mussel in Darwin had the potential to destroy the pearling industry (which in 1998 was valued at $225 million) and would require on-going mitigation costs.[13]

The cost of the package - $130.95m over 3 years or an average of $43.65m per year – enables a highly strategic and cost effective intervention compared to the risk and cost from invasive species.

Stakeholder Analysis

The package would receive strong support from the general agricultural industry, conservation NGOs, and the general community, particularly in rural Australia.

Farmers have identified weeds as *the* biggest land degradation problem they face,[14] while 78% and 72% of urban and regional citizens considered 'weeds invading bushland' and 'weeds invading farmlands' respectively to be an environmental problem over the next 25 years. This level of concern was in the same order as urban sprawl (76%) and global warming (78%).[15]

Seed importers may have initial concerns about the changes to the quarantine permitted list, but as the proposed change is merely procedural it will not restrict the import of any plant species previously imported into Australia and once consultations are complete they should accept the changes. Additionally, weed risk assessment for importation of new plant species has been government policy since 1997 so this proposed change is entirely consistent with policy in place for over 6 years.

The ornamental fish industry would need to be consulted in relation to the proposed tightening of import protocols.

The Nursery Industry Association would have concerns about EPBC Act amendments to control the trade in nationally-important invasive species, but this initiative is strongly supported by leading invasive species scientists, and State governments such as Western Australia[16] and Queensland.[17] Additionally, all States and the Northern Territory have agreed in principle to support the Australian Government in progressing the EPBC Act regulations on control of non-native species.[18] The control of a such a small number of nationally-important plant invasive species compared to overall number of species in trade would have minimal impact on the industry.

Efforts to manage marine pests would be strongly supported by the fishing, aquaculture and tourism industries, and the general community, since they impact on that part of Australia where most Australians live and/or go for holidays.

Finally, the impact of invasive plant and animal species is generating increasing levels of community concern and media interest. This forward looking package is a strategic response to this concern.

The Package at a Glance

1. National Leadership

- Develop and implement a *National Invasive Species Policy*
- Undertake a *National Invasive Species Audit*
- Develop a *National Action Plan on Weeds*
- Develop a *National Action Plan on Invasive Animals*
- Establish a *National Invasive Species Program*

2. Prevention

Strengthen Border Controls to Prevent Import of New Invasive Plants

- Close a major loophole in the Quarantine laws to ensure that only new plant species assessed as low risk are permitted for import

Strengthen Border Controls to Prevent Import of New Invasive Fish

- Strengthen import protocols for ornamental freshwater fish

Ensure the Effectiveness of Recent Border Controls to Prevent the Import of New Invasive Marine Pests

- Review the effectiveness of the mandatory ballast water management program

Prevent Wide Distribution of Invasive Species of National Importance

- Amend the EPBC Act or make regulations under s301A to prohibit the trade in nationally-important invasive species, and stipulate that a warning label be included with the sale of other invasive species
- Cooperate with the States and Territories to develop complementary model State/Territory legislation
- Develop a Mandatory Invasive Species Labelling Scheme for Australia

3. Early Detection and Rapid Response

Build a National Early Warning and Rapid Response Capability

- Establish a national early warning and rapid response system for weeds
- Establish a national early warning and rapid response system for invasive animals
- Fund the full implementation of the *National System for the Prevention and Control of Introduced Marine Pests*

4. Eradication

Eradicate Invasive Species

- Fund the eradication of at least 30 high priority invasive plants recommended by scientists as targets for national eradication

- Undertake a national audit of botanic gardens, genetic resource centres and research stations to identify and eradicate plant species that pose an invasive risk
- Fund the eradication of invasive animals on the proposed new national Alert List for Invasive Animals

Eradicate Invasive Species on Off-Shore Islands
- Fund measures to eradicate further priority invasive species from off-shore islands where native endemic animals and plants are threatened, or where threatened species can be given a safe haven, where this is feasible and cost effective

5. Control of Widespread Invasive Species

Control Weeds of National Significance
- Provide adequate funding to fully implement WONS Action Plans

Control Invasive Animals of National Significance
- Provide adequate funding to fully implement invasive animal threat abatement plans

Control Invasive Marine Pests of National Significance
- Provide adequate long term funding to fully implement the Marine Species Control Plans as they are developed

Develop a Northern Australia Invasive Species Initiative
- Undertake further applied research to develop and promote rangeland management systems that reduce weed invasion
- Implement integrated landscape based invasive species control

Develop New Control Measures
- Establish a new *National Invasive Plants Biocontrol Program* to develop biocontrol solutions for 50 of the nation's worst weeds, including outstanding WONS species, where this is technically feasible
- Fund the proposed new *Australasian Invasive Animals Cooperative Research Centre*
- Develop new biocontrol and biotechnological solutions for invasive marine pests

6. International Assistance

- Provide assistance to interested South Pacific Island countries to implement world class border control systems
- Assess the risk of changed ballast water procedures to South Pacific Island environments

Safeguarding Australia's Natural Assets Package

<table>
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▪ Provides overarching institutional, policy, legislative, and program framework to enable comprehensive and coordinated approach to invasive species issues
▪ Sets out general goals, principles and policy targets (elaborating on those in the National Objectives and Targets for Biodiversity Conservation, 2001-2005)
▪ Provides overarching policy context for Biosecurity Australia, DAFF and DEH administrative arrangements
▪ Provides overarching policy context for EPBC Act regulations/amendments on control of non-native species and Quarantine laws
▪ Enables coordinated response to Article 8(h) of the Convention on Biological Diversity

National Invasive Species Audit

National Invasive Species Program</td></tr>
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Commonwealth Statutory Framework</td><td colspan="3">Quarantine Act, 1908
Quarantine Proclamation, 1998
▪ Change Schedule 5 to exclude all known invasive plant species not yet in Australia</td></tr>
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Environment Protection and Biodiversity Conservation Act amendments/regulations, which provide for:
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Early Warning Community Information System</td><td>National System for the Prevention and Management of Introduced Marine Pests</td><td>National early warning and rapid response system for invasive animals, including Northern Australia Quarantine Strategy</td><td>National early warning and rapid response system for weeds, including Northern Australia Quarantine Strategy</td></tr>
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Botanic garden and research station audit to identify and eradicate significant invasive plants</td></tr>
<tr><td>Control of Widespread Invasive Species</td><td>National Control Plan for Northern Pacific Seastar (existing)

National control plans for other invasive marine pests of national importance

National Centre for Marine Pest Research</td><td>Threat Abatement Plans (existing)

New Australasian Invasive Animal CRC</td><td>Control plans for 20 Weeds of National Significance (WONs) (existing)

Invasive Plants Biocontrol Program

CRC for Australian Weed Management (existing)</td></tr>
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1. National Leadership

Australia needs strong national leadership to transform the current policies and action plans into a coherent framework that comprehensively prevents new invasive species problems from getting out of control.

Too often, invasive species problems have been dealt with in an *ad hoc* way. An example is the approach to pest animals, which have been dealt with by the Commonwealth on a species by species basis indirectly through the threatened species provisions of the EPBC Act. What is needed is a strategic and over-arching national framework for invasive species, that subsumes national action plans for weeds, invasive animals and marine pests.

Develop a National Invasive Species Policy or Framework

WWF believes that a *National Framework for the Prevention and Control of Invasive Species* is needed to provide an over-arching mechanism to foster coordination between policies on weeds, pest animals and marine pests. The Framework, like the *National Objectives and Targets for Biodiversity Conservation*, would include objectives and targets to prevent, detect and eradicate, and control weed, pest animal and marine pest problems. It would also provide the policy context for over-arching instruments, such as quarantine laws and the *Environment Protection and Biodiversity Conservation Act*, and institutional and administrative arrangements. This approach recognises that invasive species are a multi-sectoral problem, and would seek to adapt and apply knowledge gained in addressing agricultural invasive species to environment invasive species (an approach that is already improving the management of Weeds of National Significance for example).

Fundamental to the National Framework is the *Environment Protection and Biodiversity Conservation Act*, which needs to be used with quarantine laws to provide the basis for a national statutory framework.

Action Required: Australian Government, in cooperation with the States and Territories, develop and adopt a *National Framework for the Prevention and Control of Invasive Species*

Investment: $200,000 over 3 years (New)

Undertake a National Invasive Species Audit

Far better information is needed to enable high level policy and strategic planning on invasive species problems. At present, this vital information is scattered around various governments and institutions. This information needs to be consolidated and made publicly available through a *National Invasive Species Audit*, which includes a national master list of invasive species and inventory of non-native species. The Audit is urgently needed to provide a full and true picture of the invasive species threat. It could be undertaken as a specific National Land and Water Resources Audit project.

Action Required: Develop a *National Invasive Species Audit,* which includes a full national inventory of non-native species present in Australia, and national list of invasive species

Investment: $200,000 one off (New for NLWRA)

Develop a *National Action Plan on Weeds*

A new *National Action Plan on Weeds* needs to be developed to replace the 1997 National Weeds Strategy. The proposed Action Plan will need to focus on the large pool of not yet widely established invasive plants already in Australia that will be the source of new weeds. Key features should include clear national time-bound targets, a national early warning and rapid response system for weeds (including a weed information system), an Alert List of weeds targeted for national eradication combined with an eradication program, and clear mechanisms to coordinate national and regional NRM efforts on weeds. The Plan should combine both species and site-based approaches, and include a focus on areas and regions of national significance.

Action Required: Australian Government, in cooperation with the States and Territories, to review the National Weeds Strategy and develop and adopt a new *National Action Plan on Weeds*.

Investment: $250,000 over 2 years (New or from NHT)

Develop a *National Action Plan on Invasive Animals*

The proposed National Action Plan should be modelled on the National Weeds Strategy and include an Alert List of Invasive Animals targeted for national eradication, and a list of Invasive Animals of National Significance targeted for national control. This would enable a more strategic and systematic approach to be developed nationally, and would overcome the more *ad hoc* situation, for example, where Commonwealth involvement in widespread pest animal problems is currently achieved indirectly by the listing of pest animals as key threatening processes under the threatened species section of the EPBC Act. The Plan should combine both species and site-based approaches, and include a focus on areas and regions of national significance.

Action Required: Australian Government, in cooperation with the States and Territories, develop and adopt a *National Action Plan on Invasive Animals* that identifies a national Alert List of newly established invasive animals targeted for eradication and a list of Invasive Animals of National Significance.

Investment: $250,000 over 2 years (New or from NHT)

Establish a National Invasive Species Program

The *Safeguarding Australia's Natural Assets* proposal includes new initiatives for the prevention, early detection of new invasive species incursions, and eradication of high risk infestations. These should be delivered through a new National Invasive Species Program.

Action Required: Establish a nationally coordinated *National Invasive Species Program*

Investment: See costs section for cost of total package

2. Prevent Invasive Species Problems

Strengthen Border Controls to Prevent the Import of New Weeds into Australia

A major loophole in Australia's quarantine laws currently permits the import of over 125,000 new plant species with no weed risk assessment, including over 4,000 known weeds. Many of these, if imported, could become serious environmental and agricultural weeds and impose large economic costs.[19] The source of the loophole is Schedule 5 of the *Quarantine Proclamation, 1998*, which needs to be amended to only list specific species that are already in Australia but not being controlled as weeds.

This serious hole in Australia's border controls undermines the effectiveness of Australia's quarantine system, and poses a large and unwarranted risk to Australian agriculture and the environment.

Action Required: Close a major loophole in the Quarantine laws to ensure that only new plant species assessed as low risk are permitted for import

Investment: $100,000 / year for 3 years (New)

Strengthen Border Controls to Prevent Import of New Invasive Fish

A review of Australia's approach to the management of the aquarium trade by the Bureau of Rural Sciences highlighted a range of short-comings. The review identified 1,184 exotic freshwater species in Australia; of these only just over a third (481 species) are on the current permitted imported list. It also identified the need to better address the potential environmental risk posed by importing exotic fish species, particularly in regard to inadvertently bringing in diseases that could threaten Australia's aquaculture industry and susceptible native fish species. Most of the 19 past fish species now established in Australian waterways have been the result of aquaria releases, indicating an urgent need for reform.

Stronger border control is needed to ensure only permitted freshwater species are imported. According to the Pet Industry Joint Advisory Committee, between 5-10% of fish imported into Australia are smuggled in an effort to bypass the species restrictions imposed by the EPBC Act 1999.

Amend import protocols for ornamental freshwater fish and develop new diagnostic tools for quarantine officers

Investment: $300,000 over 3 years (New) in addition to Australian Government funding for the new Australasian Invasive Animal CRC

Ensure Effectiveness of Recent Border Controls to Prevent the Import of New Invasive Marine Pests

Australia led the world in introducing a mandatory ballast water management program in July 2001. It is now time to comprehensively evaluate its effectiveness and revise the program where necessary, especially given its proposed extension to prevent the spread of invasive marine pests.

Action Required: Australian Government undertake a review of the effectiveness of its mandatory ballast water management program

Investment: $100,000 one off

Action Required: Australian Government develop an on-going scheme to monitor the effectiveness of the mandatory ballast water management program.

Investment: $200,000 / year for 5 years

Prevent Spread of Nationally Important Invasive Species

After import controls, the most cost-effective option to manage threats to biodiversity from invasive species is to restrict trade and keeping of high-threat species. National controls on the trade of nationally important invasive species are needed to ensure government investments in their eradication or control are not undermined by their continued trade and mass distribution. Invasive plant species of national importance should at a minimum include Weeds of National Significance (WONS), weeds on the environmental and agricultural Alert Lists, species undergoing national eradication, species on the Northern Australian Quarantine Strategy target list and species being managed under the proposed National System for the Prevention and Management of Introduced Marine Pests.

These statutory controls are a last resort to overcome the failure of national voluntary efforts (eg. Garden Thugs) and tardy State government efforts to restrict the sale of invasive species of national importance. For example, despite a national commitment several years ago, a mere 3 of the 20 WONS have been declared in all States. Even when a WONS is prohibited for sale in some Australian States and Territories, this does not preclude its sale and transportation to other States. As of 2002-4, 5 of the WONS weeds, 6 of the national Alert List environmental weed species, and 1 Northern Australian Quarantine Strategy target weed species are still available for sale in nurseries in one or more States.[20] These gaps in State controls are even more telling when it is realised that ACT law contains *no* provisions to enable the sale of invasive garden plants to be prohibited.

EPBC Act regulations provide an important national instrument to restrict the trade, inter-State movement and wide distribution of nationally important invasive species. However, to provide the appropriate financial disincentives, the EPBC Act will need to be amended at a later date to subsume the regulations and include penalties that provide a strong disincentive to act illegally.

Additionally, mandatory invasive species warning labelling needs to be included with the sale of any listed invasive species to increase community understanding of invasive species problems, enable informed consumer choice, and reduce the demand for invasive species. The EPBC Act should provide enabling legislation (see below).

Action Required: Amend the EPBC Act or make regulations under s301A to prohibit the trade in nationally important invasive species, and stipulate a warning label be included with the sale of any species on a national invasive species list

Cooperate with the States and Territories to develop complementary model State/Territory legislation to create a strong, robust and consistent set of national laws to prevent and control invasive species

Investment: $250,000 one off for development and consultation, plus $100,000/year from year 2 for compliance and enforcement (in cooperation with States and community groups) (New)

Develop a Mandatory Invasive Species Labelling Scheme for Australia

The Australian public needs to know what they are buying and what environmental and agricultural problems their purchased invasive garden plants can cause.

The Australian, State and Territory Governments have already recognised the importance of mandatory labelling schemes to enable informed consumer choice and purchasing of ecologically sustainable goods in other sectors. A *Mandatory Energy Efficiency Labelling Scheme for Australia* is already in place, and governments are in the final stages of developing a *Mandatory Water Efficiency Labelling Scheme for Australia*. The final report for a Mandatory Water Efficiency Labelling Scheme for Australia highlighted the major limitations of national voluntary schemes.[21]

A similar national mandatory invasive species labelling scheme is also required to reduce the purchase and wide distribution of invasive species, particularly invasive garden and aquarium plants. This would enable informed consumer choice and result in reduced demand and trade in invasive species. A key element should be the mandatory inclusion of scientific names on labels to enable ready plant identification by informed consumers and public officials. The importance of this initiative is highlighted by noting the fact that deliberately introduced ornamental plants make up 65% of recent non-native plants that have established in the environment,[22] as well as at least 30% of Australia's noxious weed species,[23] and virtually all of Australia's major water weed species (which were originally used for use in garden ponds or as ornamental aquarium plants).[24]

Action Required: Work with the States and Territories to develop and implement a Mandatory Invasive Species Labelling Scheme for Australia, with a focus on invasive garden and aquarium plants.

Investment: $0.5m/yr over 3 years (New)

3. Early Detection and Rapid Response

Build a National Early Warning and Rapid Response System for Weeds

An Australia-wide early warning system for plant invasions is urgently required that complements the Northern Australia Quarantine Strategy, which covers northern Australia, and is of a similar standard to that in place for production pests and disease outbreaks. Early detection and eradication is the cheapest and most effective solution after preventing the import of weedy species into Australia.

Authorities and communities urgently need the capacity and resources to detect new problems early, to respond effectively, and the skills, capacity and commitment to monitor the infestation to ensure its long-term eradication. A single surviving plant may restart the invasion.

The scale of this task and the limited human and financial resources available means that in populated areas, communities will need to be involved.

The report, *Setting Biodiversity Priorities*, prepared for the PMSEIC estimated that the a national program that builds on the Northern Australia Quarantine Strategy would save 6,000 native species and result in collateral benefits of $100m.[25]

The CRC for Australian Weed Management have identified the elements for such a system:

- **Weed surveillance network** by professional botanists to identify new weed problems (Investment: $2m/yr over 10 years)
- **Weed coordinators** to train and equip community groups with the skills and resources to recognise new weed threats and contain them. They would work closely with local, regional and State weed officers (Investment: $10m/yr over 10 years)
- A **national weed web network** made up of community groups across Australia. Weed coordinators would give focal individuals in each group training in invasive species identification in their region, how to access primary information sources on weeds and control, procedures for reporting new finds, and developing local weed action plans. (Investment: $0.5m/yr over 10 years)[26]

An accessible one-stop-shop on-line weeds information system is needed to provide vital information and links to communities that integrates various national databases, and web sites.

Action Required: Australian Government, in cooperation with the States and Territories develop and implement a *National Early Warning System for Weeds*, that includes the *Northern Australia Quarantine Strategy*, and a national weeds information system

Investment: $13m over 10 years (New) + $3.6m / year on-going for NAQS (Existing)

Build a National Early Warning and Rapid Response System for Invasive Animals

An Australia-wide early warning and rapid response system is also needed for animal invasions that complements the Northern Australia Quarantine Strategy, and is of a similar standard to that in place for production pests and disease outbreaks. In particular, the national system should focus on; invasive invertebrates - the recent fire ant and crazy ant invasions highlight that Australia is at constant risk; and fish – as escaped ornamental fish are a source of new invasive pest animals.

Action Required: Australian Government, in cooperation with the States and Territories develop and implement a *National Early Warning and Rapid Response System for Invasive Animals*, that includes the *Northern Australia Quarantine Strategy*

Investment: $13m over 10 years (New) + $3.6m / year on-going for NAQS (Existing)

Build a National Early Warning and Rapid Response System for Introduced Marine Pests

The Commonwealth, States and the Northern Territory have developed the *National System for the Prevention and Management of Introduced Marine Pests*. The National System puts early warning and rapid response arrangements in place and defines clear Australian Government and State/Territory Government roles and responsibilities. Funding now needs to be committed to fully implement the National System.

Action Required: Australian Government, in cooperation with the States and the Northern Territory fund the implementation of the *National System for the Prevention and Control of Introduced Marine Pests*

Investment: $5.8m / year over 3 years (New) + $6m / year over 3 years for States/NT (New)

4. Eradication

Eradicate Invasive Plants Recommended for National Eradication

The cheapest and most effective approach to invasive plant problems is to eradicate emerging and sleeper weeds before they get out of control. Scientists have very recently recommended 42 invasive plant species for national eradication from natural ecosystems.[27] These weeds should be eradicated as a matter of urgency, where it is still feasible.

Action Required: In concert with regional delivery mechanisms, fund the eradication of at least 30 high priority weeds recommended by scientists as targets for national eradication

Investment: $20m over 10 years (New)

Undertake a Botanic Gardens, Genetic Resource Centres and Research Station Audit and Eradication Scheme

Invasive plants growing in botanic gardens, and active or defunct pasture grass and forestry research plots pose a significant risk to the environment. *Mimosa pigra*, now a devastating weed threat to Kakadu National Park originally escaped from Darwin Botanic Gardens. It now costs the Australian Government $0.5m a year to keep it out of Kakadu National Park. Of the 30 invasive plant species recommended by scientists for eradication, 7 or 23% were identified to be growing in botanic gardens and research stations around Australia.[28]

Action Required: Undertake a national audit of botanic gardens, genetic resource centres and research stations or plots to identify and eradicate species that pose an invasive risk.

Investment: $100,000 one off (New and/or NHT)

Eradicate Species on the National Alert List for Invasive Animals

The proposed Alert List for Invasive Animals, part of the proposed National Action Plan for Invasive Animals, should be developed to identify and eradicate a number of high risk emerging or sleeper pest animals. Possible candidates include the newly naturalised colony of ferrets north of Perth (ferrets are a major problem in New Zealand), crazy ant infestation in Arnhem Land, the new fox population in Tasmania, and the oriental weatherloach (freshwater ornamental fish) infestation in some ACT waterways.

Action Required: Fund the eradication of invasive animals on a proposed new national Alert List for Invasive Animals

Investment: $10m over 10 years (New)

Eradicate Priority Off-shore Island Invasive Species

Australia includes a large number of islands of international and national conservation importance due in part to their large number of species found nowhere else, as well as retaining populations of animals that have become extinct on the mainland – Australia's already shocking record of 22 mammal extinctions would be even worse had not nine species survived on islands. Invasive

animals have had a devastating impact on these unique island animals and plants. The invasion of rats on Lord Howe Island, for example, has resulted in the extinction of 5 native bird species, and major declines in other bird, reptile and invertebrate species. Australian and overseas experience shows that the eradication of priority off-shore invasive species, such as goats, foxes, cats and rats is feasible and cost-effective. For example, eradication of cats and black rats in the Montebello Islands (WA) has allowed the introduction of highly threatened mala (extinct on the mainland) and djoongari (Shark Bay mouse), while eradication of feral cats on Faure Island in Shark Bay (WA) is enabling the establishment of several threatened mammals by the Australian Wildlife Conservancy. Additionally, a very recent benefit-cost analysis of rodent eradication on Lord Howe Island found that it would cost $813,000 to eradicate ship rats and mice, and that this expenditure would be offset within about 4 years by the reduced control costs and increased palm seed production (for the Kentia palm industry), providing a net benefit over the current sustained control of $5.7m over 30 years.[29]

Action Required: Fund measures to eradicate further priority invasive species from off-shore islands where native animals and plants are threatened, or where threatened species can be introduced, where is it feasible and cost effective.

Investment: $5m over 10 years (New)

5. Control Widespread Invasive Species

Control Weeds of National Significance

Funding to implement certain of the 20 WONS action plans has been grossly inadequate. For example, the agreed national management strategy to eradicate pond apple over 20 years, a serious weed rapidly invading swampy areas of far north Queensland, including the Wet Tropics, received virtually no Commonwealth funds during 2001 or 2002. As a result this invasive plant is continuing to spread. Additionally, implementation of these plans needs to be based on an ecosystem approach to ensure they are integrated with broader regional and NRM efforts.

Action Required: Provide adequate long term funding to fully implement WONS Action Plans

Investment: Additional $5m / year (New and/or NHT)

Control Invasive Animals of National Significance

Adequate funding is required to fully implement existing and future invasive animal threat abatement plans. These control plans should be nested under a National Action Plan on Invasive Animals rather than the threatened species section of the EPBC Act. New plans should be developed for cane toads, and off-shore non-native rodents.

Action Required: Provide adequate funding to fully implement pest animal threat abatement plans

Investment: Additional $2m / year (New and/or NHT)

Control Invasive Marine Pests of National Significance

Control plans need to be developed for all marine pest species listed for management under the *National System for Prevention and Management of Introduced Marine Pests.*

To date only one control plan has been developed - for the Northern Pacific seastar. Aspects of this control plan have been funded through NHT. Block funding is required to develop the necessary expertise and technological developments to control these selected high priority marine pests.

Action Required: Provide adequate long term funding to fully implement Marine Species Control Plans

Investment: Additional $1m / year (New and/or NHT)

Develop a Northern Australia Invasive Species Initiative

Major weeds and pests threaten key natural assets, such as Parkinsonia threatening thousands of hectares of nationally important wetlands. The invasion by weeds in particular can be sped up by unsustainable grazing and fire management systems.

The Cooperative Research Centre (CRC) for Tropical Savannas and the CRC for Australian Weed Management are undertaking vital applied research to develop sustainable management systems appropriate for the tropical savannas; this needs to be continued and strengthened.

Additionally, control programs for WONS and other invasive species need to implemented using an landscape or ecosystem based management approach that is integrated with sustainable fire and grazing management.

A more precautionary approach is also needed when new pasture plants are being assessed and tested, as many invasive plants in Northern Australia are pasture escapes. Of the 463 exotic grass and legume species introduced into Northern Australian between 1947 and 1985, 13% became listed as weeds, while less than 1% were found to be useful without causing weed problems.[30] There is also a need for improved management of major pasture species, particularly Buffel Grass, to reduce the significant and negative impacts on native species.[31]

Ongoing funding at least at current levels should be maintained to the highly effective AQIS Northern Australia Quarantine Strategy.

Actions Required: Undertake further applied research to develop and promote rangeland management systems that reduce weed invasion, and implement invasive species control measures as part of an integrated landscape based approach

Review the ecological implications of Buffel Grass in Northern Australia and develop management guidelines to reduce its impact on biodiversity, especially in protected areas

Investment: $10m/year in conjunction with above initiatives (New but could be partially off-set by above proposal for additional funding to WONS plans for Parkinsonia, prickly Acacia, rubbervine, Pond Apple and Hymenachne etc, and addition funding for development for development of biocontrol agents)

Maintain funding to the AQIS Northern Australian Quarantine Strategy
Investment: $7.4m / year (Existing)

Develop and implement new control measures for nationally important invasive plant species

The only cost effective solution to tackle widespread weeds is the development of host specific biocontrol agents. One of the most well known examples is the cactoblastis moth introduced for the biocontrol of prickly pear. Biocontrol costs about $3m to $7 million per weed species and lasts forever.[32]

The report, *Setting Biodiversity Priorities*, prepared for the PMSEIC estimated that the development of biocontrols for 20 weeds of national importance would save 1,600 native species and result in collateral benefits of $1,000m.[33]

Benefit-cost rates typically range between 4:1 to 30:1.[34] An example is rubbervine, a serious weed invading Queensland that has been recorded across 34.6 million hectares, or 20% of Queensland alone and has the potential to infest around 60 million hectares in northern Australia.[35] The annual cost to Queensland in 1995 in terms of control costs and agricultural losses was estimated to be $27m.[36] However, if a traditional herbicide approach was used to treat all infested areas, the cost would be an estimated $300-1300m. [37] In comparison, the research program that delivered the biocontrol solution cost a mere $0.73m.[38] This is the equivalent to just 10 days expenditure on conventional control.

Of major concern is that the research infrastructure needed to achieve these results is in decline. To boost current efforts, a new initiative is needed to provide at least $5 million/yr over 10 years targeting 50 of Australia's worst weeds.

Action Required: Establish a new *Invasive Plants Biocontrol Program* to develop biocontrol measures for 50 of the nation's worst weeds.

Investment: $5 million/year for 10 years (New)

Develop and implement new control measures for nationally important invasive animals

A strong, nationally coordinated research and development effort is needed to develop, apply and communicate technologies and methods that humanely controls targeted invasive animals. Sound ecological understanding needs to underpin the application of new technologies and systems.

The report, *Setting Biodiversity Priorities*, prepared for the PMSEIC estimated that the development of biocontrols for 6 feral grazing animals of national importance would save 18,900 native species and result in collateral benefits of $3,000m.[39]

The current Cooperative Research Centre (CRC) for Pest Animal Control is about to expire. Its proposed replacement, the Australasian Invasive Animal CRC is needed to continue critical research and development of new control measures and technologies that enables Australia to effectively tackle some of its most pressing pest animal management problems. It should focus on invasive vertebrates, including freshwater fish such as Carp.

Action Required: Fund the proposed new Australasian Invasive Animal Cooperative Research Centre

Investment: $30 million over 7 years (Existing - CRC Program in DEST)

Develop New Eradication and Control Measures for Invasive Marine Pests

Nationally coordinated research and development is required to capitalise on the expertise developing throughout Australia and internationally. Developing new areas, including risk assessment, early warning technologies, and biotechnological solutions to managing marine pests needs to be consolidated, supported and made available to Australian jurisdictions.
Sound ecological understanding needs to underpin the application of new technologies and systems.

The National Introduced Marine Pest Coordination Group estimated a budget of $3.5m/yr to provide the research necessary to support the new *National System for the Prevention and Management of Marine Pest Incursions.*

Action Required: Fund the new National Centre for Marine Pest Research as recommended.

Investment: $3.5m / year over 7 years (New and/or NHT)

6. International Assistance

Enable South Pacific Island Countries to Implement Measures to Prevent Import of New Invasive Plants

The biodiversity of many South Pacific countries has been heavily impacted by invasive species, including crazy ants and a range of weeds. To reduce the risk of importing new invasive species, Australia could assist interested South Pacific Island countries to strengthen their quarantine control capacity by implementing import risk assessment systems based on world class Australian systems.

Action Required: Offer assistance to interested South Pacific Island countries to implement world class border control systems

Investment: $200,000 + existing AusAid resources

Assess the Risk of Changed Ballast Water Procedures to South Pacific Island Environments

New ballast water management procedures will require vessels travelling from overseas to Australia (and New Zealand) to reballast enroute. For many ships coming from SE Asia, this is likely to entail reballasting in areas which could spread marine pest problems to South Pacific Islands. Research is required to estimate the risk involved and advise South Pacific Island governments accordingly.

Action Required: Estimate risk of reballasting close to South Pacific Islands. Communicate results to South Pacific governments

Investment: $200,000 + existing AusAid resources

Costs (estimated)

	National Leadership	New Funding
1	National Invasive Species Policy	$200,000 over 3 years
2	National Invasive Species Audit	$200,000 one off
3	National Action Plan on Weeds	$250,000 over 2 years
4	National Action Plan on Invasive Pest Animals	$250,000 over 2 years
5	National Invasive Species Program	See Total below
	Prevention	
6	Close quarantine law loophole	$100,000 / year for 3 years
7	Import protocols for ornamental freshwater fish	$300,000 over 3 years
8	Review of effectiveness of mandatory ballast water management program	$100,000 one off
9	Monitor the effectiveness of mandatory ballast water management program	$200,000 / year for 5 years
10	Amend the EPBC Act or make new regulations	$250,000 one off + $100,000 / year compliance costs from year 2
11	Mandatory Invasive Species Labelling Scheme	$0.5m / year over 3 years
	Early Detection and Rapid Response	
12	National early warning and rapid response system for weeds	$13m over 10 years
13	National early warning and rapid response system for invasive pest animals	$13m over 10 years
14	National system for the prevention and control of introduced marine pests	$5.8m / year over 3 years
	Eradication	
15	Eradicate at least 30 high priority invasive plants	$20m over 10 years
16	National audit of botanic gardens and research stations	$100,000 one off
17	Eradicate high priority invasive pest animals	$10m over 10 years
18	Eradicate invasive species from off-shore islands	$5m over 10 years
	Control of Widespread Invasive Species	
19	Adequate funding for WONS action plans	$5m / year
20	Adequate funding for pest animal threat abatement plans	$2m / year
21	Adequate funding to implement the Marine Species Control Plan	$1m/year
22	Northern Australia invasive species initiative	$10m / year
23	New biocontrol measures for 50 of the nation's worst weeds	$50m over 10 years
24	New Australasian Invasive Animals Cooperative Research Centre	$30m over 7 years (CRC Program)
25	New biocontrol and biotechnological solutions to marine pests	$3.5m / year over 7 years (includes $1m / year from Option 13)
	International Assistance	
26	Provide assistance to interested South Pacific countries	$200,000 + existing
27	Risk assessment of impact of new ballast water procedures on South Pacific countries	$200,000 + existing
	TOTAL	**$362.65m over 10 years**

* Total NAQS funds in 2002-03 was $7.34m. $7.4m proposed in option 18 subsumes $3.6m allocation in options 9. and 10.

Costs (annual new funding allocation (fy))

	04/05	05/06	06/07	07-13	Total (10 years)
1	50,000	100,000	50,000	-	**200,000**
2	50,000	150,000	-	-	**200,000**
3	-	100,000	150,000	-	**250,000**
4	100,000	150,000	-	-	**250,000**
5					**See Grand Total**
6	100,000	100,000	100,000	-	**300,000**
7	100,000	200,000	-	-	**300,000**
8	100,000	-	-	-	**100,000**
9	200,000	200,000	200,000	400,000	**1,000,000**
10	250,000	100,000	100,000	700,000	**1,150,000**
11	500,000	500,000	500,000	-	**1,500,000**
12	600,000	2,000,000	1,300,000	9,100,000	**13,000,000**
13	600,000	2,000,000	1,300,000	9,100,000	**13,000,000**
14	5,800,000	5,800,000	5,800,000	-	**17,400,000**
15	500,000	2,000,000	5,000,000	13,500,000	**20,000,000**
16	-	100,000	-	-	**100,000**
17	500,000	1,000,000	1,000,000	7,500,000	**10,000,000**
18	100,000	500,000	500,000	3,900,000	**5,000,000**
19	5,000,000	5,000,000	5,000,000	35,000,000	**50,000,000**
20	2,000,000	2,000,000	2,000,000	14,000,000	**20,000,000**
21	1,000,000	1,000,000	1,000,000	7,000,000	**10,000,000**
22	10,000,000	10,000,000	10,000,000	70,000,000	**100,000,000**
23	5,000,000	5,000,000	5,000,000	35,000,000	**50,000,000**
24	4,500,000	4,500,000	4,500,000	16,500,000	**30,000,000**
25	2,500,000	2,500,000	2,500,000	10,000,000	**17,500,000***
26	-	100,000	100,000	-	**200,000**
27	-	100,000	100,000	-	**200,000**
TOTAL	**$39,550,000**	**$45,200,000**	**$46,200,000**	**$231,700,000**	**$362,650,000**

* excludes $1m/yr provided by National System in Option 13

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