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Invasive Animals CRC Submission to the 2008 Federal Independent Quarantine and Biosecurity Review

1. Introduction

The Invasive Animals Cooperative Research Centre (IA CRC) welcomes this important review into the appropriateness, effectiveness and efficiency of Australia's quarantine and biosecurity system.

The IA CRC's aim is to counteract the impact of invasive animals through the application of new technologies and by integrating approaches across agencies and jurisdictions. We bring together 41 partner organisations, comprising universities, state government bodies, regional management organisations, end-users and small-medium enterprises. We focus on solving invasive animal pest problems through the development of commercial outputs. The CRC structure enables national and international skills in management, science, commerce and industry to be applied to this task. Our goals embrace the development of new tools and strategies to assist land managers in their job. We also encourage high levels of uptake by meeting people and agencies using/needling pest animal control and involving them throughout the development process. A total investment of close to \$100 million will be made over seven years starting FY04/05.

The scope of this submission is limited to issues that relate to invasive vertebrate animals.

The IA CRC has an interest in efforts to develop and implement stronger biosecurity and quarantine arrangements in Australia for the prevention and early detection of new invasive animals. A summary of the CRC Detection and Prevention Program is below.

About the IA CRC Detection and Prevention Program

The role of the Detection and Prevention Program is to improve our capacity to prevent or detect invasive animal incursions and their impacts. The program also aims to help prevent damage from newly established or emerging pest vertebrates. With this in mind, we are focusing on building up an information base on the whereabouts, impacts and risks of invasive animals in Australia.

We are currently working on a national information system to describe the distribution and densities of key invasive animals in a standardised way. We are also conducting research to get an accurate picture of the economic, social and environmental impacts of vertebrate pests and their costs. Current risk assessment models for invasive species are being refined and tested to ensure they are robust. We are also developing cutting-edge genetic techniques for identifying invasive species from trace samples. The Detection and Prevention program also recently reviewed Australia's preparedness for a wildlife or exotic disease outbreak, particularly a disease associated with invasive animals. We held a national workshop reviewing the Wildlife and Exotic Disease Preparedness Program of the Department of Agriculture, Fisheries and Forestry.

These efforts will provide important information to the CRC and other pest management agencies, at a national and regional level. The information will build the capacity of these agencies to prioritise resource allocation and to measure the success of pest control measures.

More information is available at:

http://www.invasiveanimals.com/research/detection_and_prevention/index.html

In 2005, the Australian Biosecurity Group (ABG) — convened by the IA CRC, the CRC for Australian Weed Management and the World Wildlife Fund— released its report *Invasive Weeds, Pests and Diseases: Solutions to Secure Australia* (ABG 2005). We encourage the review panel to consider this report and its findings, noting that it was prepared as an input to early deliberations on the emerging AusBIOSEC system. While now three years old, many of the issues raised and actions proposed in the report remain relevant to this review.

In the succeeding three years there has been significant institutional, policy and operational reform. The Australian Government can be commended on these achievements, including:

- playing a leading role in the ongoing development of AusBIOSEC and the *National System for the Prevention and Management of Marine Pest Incursions*, and the adoption of the *Australian Weeds Strategy*, the *Australian Pest Animal Strategy* (APAS), and *A Strategic Approach to the Management of Ornamental Fish in Australia*
- closing the biosecurity loophole that previously permitted the legal import of nearly half of all plant species on Earth into Australia with no risk assessment, including about 4,000 known weeds not yet present in Australia (by replacing genera with permitted species on the Schedule 5, Permitted Seeds List, *Quarantine Proclamation 1998*. Passed by parliament in December 2006)
- amending the *Australian Postal Corporation Act* to enable state quarantine agencies to inspect incoming interstate mail for quarantine pests (the *Australian Postal Corporations Amendment [Quarantine and Other Measures] Bill 2007* was passed by the parliament on 9 August 2007 and received Royal Assent on 24 September 2007).

Some of the issues raised by the ABG that are relevant to this review include:

- The risk exposure to Australia of the legal importation of new alien invasive freshwater fish species with no risk assessment, due to the inclusion of genera (rather than only specific species) on the *List of Specimens Taken to be Suitable for Live Import* under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- Less than optimal harmonisation between Commonwealth, state and territory legislation related to biosecurity and invasive species, including mismatched classes and lists of pest animals and weeds.
- Inadequate contingency plans for environmental weeds, pests and diseases. Australia has effective contingency plans in place to repel incursions by agricultural pests and is developing a system to combat marine pests. To complete the biosecurity system, a similar set of defences needs to be developed for other environmental pests, weeds and diseases.
- Inadequate protocols for and agreement on priority high-risk quarantine pests to decide priorities for rapid response eradication, and who should pay for control measures. When a new pest is found, vital action is often delayed by uncertainty about which agency should accept the responsibility and cost, particularly for pests with a mainly social or environmental impact.

The ABG highlighted the need “to shift our thinking from the traditional focus on border control, to a biosecurity continuum that extends from our trading partners right down to the level of the farm, [plant] nursery, household, and even yacht” (ABG 2005, pg.17). It is pertinent that this review affirms the need for Australia to apply a biosecurity continuum spanning pre-border to post-border interventions.

There remains a significant risk of new alien invasive vertebrate species naturalising and invading Australia. The box below highlights some of these species of concern.

Australia at continued risk from new alien invasive vertebrates

- In late December 2007, an incursion of four Canada geese (*Branta canadensis*) into coastal southern New South Wales occurred; probably vagrants from New Zealand. By the end of January the birds had disappeared (Dawes 2008). After some government uncertainty about the appropriate response, their new location was identified and they were eradicated. Canada geese have been determined to be an extreme risk for Australia, and are a pest in New Zealand, the United Kingdom and northern America.

- Climbing perch (*Anabas testudineus*) have been recently found on Saibai Island in Torres Strait (Stafford and Willan 2007). They are native to south-east Asia and their use in commercial aquaculture and subsistence fisheries has resulted in them being intentionally moved into Papua New Guinea, where they are now widespread in the south Fly River system and impacting on native fish species (Swales nd). This species is listed on Australia's national noxious fish list (NRMMC 2006, pg.27).
 - Walking catfish (*Clarias batrachus*), is a voracious predatory fish that is native to south-east Asia, where it is used in commercial aquaculture fisheries. It was first recorded in catches in the southern Fly River system of Papua New Guinea in the early 1990s, where it is now widespread. It is listed on our national noxious fish list (NRMMC 2006, pg.28) and has been nominated by the World Conservation Union (IUCN) as one of the world's 100 worst alien invasive species.
 - In recent years, black-spined toads (*Bufo melanostictus*) have spread south on ships through the islands of Indonesia to Papua New Guinea. One toad was found on a ship in Cairns in 2002 (AQIS 2002).
 - Monkeys (long-tailed macaques) (*Macaca fascicularis*) escaped into the environment in Irian Jaya about 50 years ago (Anon. 2000) and are now progressively spreading across the island towards Papua New Guinea, from where they could be carried as pets to Cape York. Monkeys would outcompete some Australian marsupials, such as tree kangaroos and gliders.
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2. Comments on Terms of Reference

The comments by the Federal Minister for Agriculture in the press release launching the review state that the Minister has asked the independent review to consider the functions of AQIS and Biosecurity Australia. As the Terms of Reference are not agency specific, we urge the review panel to take a whole-of-government approach, and also consider the functions of the Department of the Environment, Water, Heritage and the Arts (DEWHA) and how its administration of Part 13 of the EPBC Act contributes to Australia's biosecurity response.

3. Comments against the review's Terms of Reference

3.1 Appropriateness, effectiveness and efficiency of current arrangements to achieve Australia's Appropriate Level of Protection (ALOP)

Need to mitigate risk associated with high risk invasion pathways for new alien vertebrate animals, such as importation of aquarium fish

Aquarium fish account for the largest number of new naturalised vertebrate animals over the past two decades. Since 1990, the number of new naturalised alien fish has increased from 22 to 34 species. Of the 12 new fish species, 11 originate from the aquarium trade (Lintermans 2004).

The government response to this high-risk industry pathway is *A Strategic Approach to the Management of Ornamental Fish in Australia* adopted by the Natural Resource Management Ministerial Council (NRMMC) in November 2006. It is an early stage of implementation.

The Strategic Approach notes one of the inherent risks faced by quarantine agencies:

A further difficulty in controlling smuggling at borders and enforcing existing prohibitions is the difficulty in identifying species permitted for import among the wide diversity of the world's freshwater fish species. The identification of exotic ornamental fish species on sight, particularly at all life stages, is a relatively specialised skill not always readily available in regulatory agencies. The permitted import system relies heavily on accurate records being provided with imported stock. However, it is suspected that individuals seeking to bypass regulations may simply mix cryptic juvenile forms of prohibited species together with legitimate species (NRMMC 2006, pp.8-9).

To mitigate the risk of this behaviour, further size restrictions may need to be implemented on a broader set of ornamental fish, such as already imposed on some permitted ornamental fish species (e.g. *Neolamprologus meeli*, or African cichlid, of length 5 cm and over).

One of the policy innovations in the Strategic Approach is the National Noxious Fish List and a related grey literature list that includes species requiring further scientific/technical consideration and risk assessment. Risk assessment of species on the grey list and determination on whether these species should be added to the National Noxious Fish List needs to be given a high priority. The current grey list contains well over 100 fish species. Ongoing implementation of the Strategic Approach will require strong support and resourcing from the Australian Government.

Recommendation 1

That the Australian Government adequately resource implementation of the A Strategic Approach to the Management of Ornamental Fish in Australia, and give high priority to:

- **completing risk assessments of fish species on the grey list**
- **facilitating NRM processes to place species on the National Noxious Fish List if they are determined to present a high risk to Australia.**

An outstanding biosecurity issue is the inclusion of permitted freshwater fish genera on the *List of Specimens Taken to be Suitable for Live Import – Part 1: Freshwater fish*. The list is the statutory instrument under Part 13 of the EPBC Act to regulate the import of live animals. DEWHA has been progressively reviewing the freshwater fish genera on the list and replacing them with permitted species, but as of 17 March 2008 it still contained 29 genera.

It should be noted that Biosecurity Australia undertook an analogous review of genera that were included on the permitted seeds list (Schedule 5, *Quarantine Proclamation 1998*). As a result, parliament passed amended regulations in December 2006 that removed all these genera and replaced them with permitted plant species.

Recommendation 2

That the Department of the Environment, Water, Heritage and the Arts be adequately resourced to continue its review of genera on the *List of Specimens Taken to be Suitable for Live Import – Part 1: Freshwater fish*, to replace them with permitted species.

3.2 Appropriateness, effectiveness and efficiency of public communication, consultation and research and review processes

The draft *National Framework for Biosecurity Research* identifies four research priorities and a non-exhaustive set of potential research and development areas to address these priorities. The IA CRC Detection and Prevention Program is aligned to these priorities, and four examples of relevant projects are described below:

- **Mapping invasive animals of Australia** — This project is a national-scale initiative that aims to improve monitoring and reporting of invasive animals, and develop a national system for up-to-date information on the distribution, abundance and impacts of invasive animals throughout Australia. It is jointly funded by the IA CRC, the National Land and Water Resources Audit and NSW Department of Primary Industries.
- **Validating and refining risk assessment models for invasive species** — This project is developing and refining risk assessment models to help protect Australia and New Zealand from new exotic species establishing. Risk models for the import and keeping of exotic animals in Australia have been developed, but need to be rigorously tested. The research is assessing the risks of exotic species establishing in Australia and other countries. The team is looking at different species' establishment success, their preferred habitat and climate, and actual distribution to assess risk models.
- **Invasive fish scoping study** — Information on the current and emerging threats posed by invasive pest fish to agriculture and the environment is currently unclear. There are many species that have been identified as having a negative impact. Many more species are emerging as pests, or may pose a threat as climate conditions change. This project aimed to scope current methods, research and management programs involved in monitoring and reporting on invasive fish and their impacts. It was jointly funded by the IA CRC and the National Land and Water Resources Audit.
- **Review of preparedness for wildlife and exotic disease** — A literature review was conducted of research related to wildlife health and preparedness for a disease outbreak in Australia, particularly with respect to disease involving invasive animals as carriers or hosts. A national workshop was held to examine the status of this research and the infrastructure of the Wildlife and Exotic Disease

Preparedness Program (WEDPP) of Department of Agriculture, Fisheries and Forestry (DAFF). The project was jointly funded by the IA CRC and WEDPP.

Need to develop systems for pest animal risk assessment that account for climate change considerations

One of the objectives in the draft *National Framework for Biosecurity Research* is to develop the knowledge base to minimise the risk of entry, establishment, or spread of pests and diseases. One area of research to be addressed is the need to analyse the implications of various climate change scenarios on invasion risk, in order to improve climate-matching software (such as CLIMATE), and incorporate these findings in risk assessments of existing and new invasive animals. The IA CRC is currently establishing several projects with the Bureau of Rural Sciences (in DAFF), NSW Department of Primary Industries and NSW Department of Environment and Climate Change to help address this issue.

Need for a prioritisation system to identify high-risk wildlife diseases, and to determine and fund related research priorities

Another area to be addressed (recently identified at a national workshop organised by the CRC) is the need for a prioritisation system to identify high-risk diseases of wildlife in Australia. The focus to date has been predominately on diseases that impact humans and species of agricultural significance. There is a significant risk to our economy and biodiversity if wildlife health falls through the current systems. We need to be able to identify important wildlife diseases, the species involved and knowledge gaps (e.g. disease ecology, modelling parameters, implications of environmental change) that must be addressed by research to determine appropriate prevention/ response strategies. Wildlife in this context includes native fauna and introduced species. Funding of research related to wildlife diseases is currently surprisingly low, given the risk of environmental and economic repercussions from an emergency disease outbreak. Research in this area needs to be strongly supported and resourced by the Australian government.

Recommendation 3

That governments support the implementation and resourcing of the *National Framework for Biosecurity Research*, and the IA CRC be involved in processes to determine national biosecurity research priorities, particularly as they relate to invasive animals.

Need to review and update current policies for wildlife and exotic disease preparedness

Policies currently in place to protect Australia from disease outbreaks, such as the AUSVETPLAN, need to be regularly reviewed and updated in response to recent (and future) research outcomes. For example, the latest version of the Wild Animal Response Strategy in AUSVETPLAN was edited in 2000 (but published in 2003) and needs to be updated to be an effective tool against disease outbreaks in Australia's wildlife. It is imperative that research that provides valuable outcomes for policy development is adequately evaluated and incorporated into relevant preparedness policies.

Recommendation 4

That governments support and resource the evaluation and implementation of biosecurity research outcomes into national preparedness policies.

3.3 Appropriateness, effectiveness and efficiency of governance and institutional arrangements to deliver biosecurity, quarantine and export certification services

Need for uniform and national classes of invasive species for control, and for response and cost-sharing protocols, particularly for new and emerging invasive animal species

To improve the efficiency and effectiveness of the AusBIOSEC system, there is a pressing need for governments through the NRMCC and Primary Industries Ministerial Council to develop and adopt a comprehensive set of uniform and statutory national invasive species control classes covering all major phases of the invasion process. The Federal Senate Inquiry on Invasive Species report published as *Turning Back the Tide – the Invasive Species Challenge*, recommended that several national invasive species control classes be developed, with official lists under each, and agreed by the Australian and all state and territory governments. These lists include the:

- National Quarantine List of high-risk invasive species that may or may not have already invaded Australia, and whose early detection will enable cost-effective eradication.
- National Alert List of high-impact invasive species that are naturalised, have a restricted range, and whose eradication is feasible and cost-effective.

- National Control List of high-impact invasive species that are naturalised and generally widespread, and whose containment or control will help protect the values of areas of national environmental significance.

Further details of these lists are given in the table below.

Proposed uniform national classes for invasive species control

National noxious weed list classes	Description	Statutory requirement	Responsibility
National Quarantine List	Invasive species of national importance that are a high invasion risk for Australia and not known to be present in Australia, and whose early detection will enable cost-effective eradication. A starting point should be the Northern Australia Quarantine Strategy target weed list.	Prohibited import into Australia Listed for eradication under state/territory laws Prohibited for trade nationally Early warning surveillance programs Eradication program (where detected and feasible)	Australian Government State and territory governments Australian, state and territory governments Australian, state and territory governments Australian and appropriate state and territory governments
National Alert List	Invasive species of national importance that are naturalised, have a restricted range, are predicted to have a major impact on the environment, human welfare or industries, and which may be, is currently, or was, subject to a state or national eradication effort. It should also include introduced invasive plant species of national importance, which are garden plants that are yet to escape and are subject to national early warning surveillance and eradication/containment action.	Prohibited import into Australia Listed for eradication species under state/territory laws Prohibited for trade nationally Early warning surveillance programs Eradication programs (where appropriate)	Australian Government State and territory governments Australian, state and territory governments Australian, state and Territory governments Australian and appropriate state and territory governments
National Control List	Invasive plant species of national importance that are naturalised and generally widespread, are having a major impact on the environment or industry, and whose containment or control will assist protect the values of areas of national environmental significance. A starting point is the Weeds of National Significance list (SECITARC 2004:214).	Prohibited import into Australia Listed for containment (if appropriate) under state/territory laws Prohibited for trade nationally National Control Action Plan Containment programs (where appropriate)	Australian Government State and territory governments Australian, state and territory governments Australian, and appropriate state and territory governments Australian, state, territory and local governments

National Restricted List	High risk invasive plant species where a national ban in trade would reduce propagule pressure and naturalisation and/or pest/weed spread risk	Prohibited import into Australia Prohibited for trade nationally	Australian Government State and territory governments
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Source: Adapted from ABG (2005)

In relation to invasive vertebrate animals, there is NRMCC support for this general approach to creating control classes/lists. In its recently adopted *Australian Pest Animal Strategy* (NRMCC 2007, pg.14) the NRMCC has mirrored the approach with its:

- National Surveillance List — to be identified through pathway analysis of species at risk of arriving in Australia and assessment of the risk posed by potential establishment in the wild. This list will be a focus for national surveillance activities.
- National Alert List — to cover species already established in Australia with the potential for further spread. These species will be subject of assessments for eradication or containment.
- Established Pest Animals of National Significance — to be developed as the basis for nationally cooperative and ongoing management of established pest animals.

A Strategic Approach to the Management of Ornamental Fish in Australia (NRMCC 2006, pg. 21) also notes that:

...at the appropriate time, consideration should be given to categorising fish species placed on the noxious list in a manner consistent with the categories that may be developed under the National Weeds Strategy and the National Pest Animal Strategy. The Senate Inquiry on Invasive Species report, published as *Turning Back the Tide – the Invasive Species Challenge*, suggested three national invasive species control classes that could be established. Lists could be developed under these classes and agreed by the Australian and all state and territory governments. The three control classes [national quarantine list, national alert list, national control list] are included here. However, it is understood that no decision has yet been made on their official use.

Given the risk of incursions into Australia by a number of invasive vertebrate animals, there is a pressing need for NRMCC (through the Vertebrate Pests Committee) to develop and adopt an agreed National Surveillance List, and as per the *Australian Pest Animal Strategy* (Actions 2.2.4 and 2.2.5), to develop system of protocols and committed resources to detect and eradicate new incursions of species on this list. Candidate invasive vertebrate species that should be considered for assessment include Canada geese (*Branta canadensis*), walking catfish (*Clarias batrachus*), climbing perch (*Anabas testudineus*), black-spined toads (*Bufo melanostictus*), and long-tailed macaques (*Macaca fascicularis*).

A useful model is the National System for the Prevention and Management of Marine Pest Incursions.

Recommendation 5

As a matter of priority, that the Vertebrate Pests Committee be adequately resourced to risk assess and rank candidate high-risk alien vertebrate species for potential inclusion on the National Surveillance List, and that the agreed list be adopted by the NRMCC.

Recommendation 6

As a matter of priority, that the Vertebrate Pests Committee and other relevant instruments develop agreed national protocols for rapid response and cost-sharing to enable quick and effective action to eradicate new incursions of alien invasive vertebrate species on the National Surveillance List, for adoption by NRMCC.

Recommendation 7

As a matter of priority, that the Vertebrate Pests Committee be adequately resourced to risk assess and rank candidate high-risk alien vertebrate species for potential inclusion on the National Alert List, and that the agreed list be adopted by the NRMCC.

Recommendation 8

As a matter of priority, that the Vertebrate Pests Committee and other relevant instruments develop agreed national protocols for eradication and cost-sharing to enable timely and effective action to eradicate alien invasive vertebrate species on the National Alert List, for adoption by NRMCC.

Need for Northern Australia Quarantine Strategy target pest lists to include invasive vertebrate species on the Australian Pest Animal Strategy National Surveillance List

The Northern Australia Quarantine Strategy (NAQS) is an innovative and commendable Australian Government program. However, currently it does not include invasive vertebrate animals as a focus. At present, the NAQS has target lists for plant pathogens, invertebrates, weeds and animal diseases and pests.¹ There is no target list for high-risk invasive animals where there is a strong likelihood of incursion into northern Australia. Examples outlined are in the introductory box above and include walking catfish and climbing perch.

Recommendation 9

That the NAQS target pest lists be expanded to include a high-risk invasive vertebrate animal species category, and it be harmonised with the National Surveillance List required under the *Australian Pest Animal Strategy*.

Need for a national body to coordinate wildlife health surveillance, information, and response training

A critical area to be addressed (recently identified at a national workshop organised by the CRC) is the need for a well-resourced national body to coordinate surveillance, information management, response development and training related to wildlife disease preparedness (including diseases of native, feral and wild exotic animals). This could operate through the current WEDPP program of DAFF, the Australian Wildlife Health Network (AWHN) or a similar national body. Presently the AWHN coordinates disease surveillance on a national level, but this agency is drastically underfunded. Projects to establish national information systems related to wildlife disease, and invasive animal distribution and abundance are being conducted by various agencies, including the IA CRC (with the National Land and Water Resources Audit) and through National Collaborative Research Infrastructure Strategy initiatives (as part of the Australian Biosecurity Information Network).

Recommendation 10

That a national body is adequately resourced to address preparedness issues related to wildlife health, including surveillance, information management, response development and training.

Need for stronger nationally coordinated island biosecurity and rapid responses

Australia comprises over 8,000 islands, many of which contain nationally significant wildlife or conservation values. Western Australia in particular has been a national leader in implementing a strategic approach to identifying, prioritising and eradicating pest animals from high conservation islands. The Australian Government is also playing an increasingly strategic role, most recently with the development of a draft *Rodents on Off-shore Islands Threat Abatement Plan* under the EPBC Act.

There have been notable breaches of island biosecurity and quarantine arrangements in the past decade, the most prominent and potentially costly being the fox incursion in Tasmania. There is a pressing need to foster a strong collaborative approach to protecting priority islands from invasive animal threats; an example being the opportunity for Tasmania to share its biosecurity lessons and innovations from its fox incursion experience with South Australia to protect Kangaroo Island from an accidental or intentional fox incursion.

Recommendation 11

That the Vertebrate Pests Committee (under NRMCC) foster a collaborative national approach to better protect Australia's priority islands from incursions by new pest animals.

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