Chapter 4

Recent environmental biosecurity performance

4.1 This chapter addresses paragraph (a) of the committee's terms of reference, which specifically concern 'recent biosecurity performance with respect to exotic organisms with the potential to harm the natural environment detected since 2000 and resulting from accidental or illegal introductions from overseas'. The chapter is divided into the following sections:

- considerations when assessing biosecurity performance;
- national statistics and information on recent incursions;
- regional statistics and information on recent incursions;
- myrtle rust incursion; and
- tramp ant incursions.

Considerations when assessing biosecurity performance

4.2 As discussed in chapter 2, the World Trade Organisation *Agreement on the Application of Sanitary and Phytosanitary Measures* (SPS Agreement) requires each signatory to define what it deems to be an 'appropriate level of protection' (ALOP) to 'protect human, animal or plant life or health within its territory'. Australia's ALOP, which was agreed in 2002, is defined as 'providing a high level of sanitary and phytosanitary protection aimed at reducing risk to a very low level, but not zero'.[1]

4.3 The departments of agriculture and the environment submitted that the reduction of biosecurity risk to zero is not realistic as it would require a complete halt to international trade and travel. It is on this basis that the 'Australian Government contributes, in collaboration with state and territory governments and industry to the preparation for, and response to, exotic pests and diseases should they be detected within Australia'.[2] As such, Australia aims not to completely eliminate biosecurity risks but to reduce them to an acceptable level.

4.4 The committee heard evidence that Australia's definition of an acceptable level of risk was not clear enough to guide Australia's biosecurity activities. Mr Richard Stoklosa commented with regard to Australia's ALOP:

> It does not really say what the policy is. It says 'low but not zero', but what does that mean operationally? I do not think many people can really operationalise that into saying: 'Right, I know what that means. I know that, if there are 10 trees infected with something that doesn't look right, that's what triggers an eradication, a big investigation and a response.' That is the

1 Department of Agriculture and Department of the Environment, *Submission 59*, p. 9.

2 Department of Agriculture and Department of the Environment, *Submission 59*, p. 12.

> world I come from, where there are very clear objectives and very clear criteria for when to act. I think that is missing, frankly.[3]

4.5 A similar situation exists with Australia's commitment under the *Australia's Biodiversity Conservation Strategy 2010–2030*, target 7 of which is:

> By 2015, reduce by at least 10% the impacts of invasive species on threatened species and ecological communities in terrestrial, aquatic and marine environments.[4]

4.6 There is no accompanying detail provided regarding how the impacts of invasive species should be quantitatively measured. Dr Booth, Invasive Species Council, argued that although this target appears precise, there is no way of determining whether it has been achieved:

> It is a target. It is a very quantitative target. The trouble is that we do not have a baseline, so we cannot measure that target. It is basically a pointless target. How can you judge a 10 per cent reduction in impacts when you do not have the baseline.[5]

4.7 The committee sought further information from the departments of agriculture and the environment on what progress had been made against this target and how that progress is being measured. In response, the Department of Agriculture cited a series of ongoing actions and investments made by the Commonwealth Government as evidence of progress towards this target and made reference to the Australia's fifth report to the Biodiversity Convention, which summarises progress made towards the Aichi targets in the period 2009–2013.[6] The report states that target 7:

> …is proving more challenging, due to the absence of baseline data and suitable monitoring and measurement methodologies. Australia is due to review its progress towards ABCS [Australian Biodiversity Conservation Strategy] targets and other biodiversity-relevant national targets in 2015.[7]

4.8 Beyond the difficulty of determining what level of incursions and of what type might be deemed to be acceptable when managing risk to a 'low level, but not zero', the committee received evidence that environmental biosecurity surveillance is not sufficiently developed to establish with confidence the extent of incursions. The

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3 Mr Richard Stoklosa, *Committee Hansard*, 10 November 2014, p. 17.

4 Natural Resource Management Ministerial Council 2010, *Australia's Biodiversity Conservation Strategy 2010–2030*, pp 10, 46. http://www.environment.gov.au/biodiversity/conservation/strategy (accessed 11 December 2014).

5 Dr Carol Booth, Invasive Species Council, *Committee Hansard*, 11 November 2014, p. 28.

6 Department of Agriculture, *Answer to written question on notice No. 8* (received 18 November 2014).

7 Department of the Environment, *Australia's Fifth National Report to the Convention on Biological Diversity: Draft for Public Consultation*, March 2014, p. 26, (accessed 9 January 2015) http://www.environment.gov.au/biodiversity/international/draft-fifth-national-biological-diversity-report

issue of surveillance is discussed further in chapter 5, but it should be noted that the figures presented below are not precise for this reason.

4.9 An alternative method of evaluating Australia's recent environmental biosecurity performance is to examine how the biosecurity system has responded to specific incursions to determine whether these responses might be improved in future. This is the aim of the discussions of the myrtle rust incursion and the tramp ants incursions in the latter part of this chapter.

National statistics and information on recent incursions

4.10 The departments of agriculture and the environment submitted a table detailing detected incursions of exotic pests and diseases and their potential environmental impact since 1 January 2009, including location, likely entry pathways, responses, dates of eradication if applicable, and outcomes of responses. The bulk of this list is made up plant pests and weeds, but also includes one aquatic animal disease, two marine pests and two ant species.[8]

4.11 With regard to this data, the departments cautioned that detection of pests and diseases depends upon surveillance activities, among other factors, which means that detection does not necessarily indicate an incursion occurred recently. The departments also commented on the rate of plant pest incursions and the state of scientific knowledge in this field:

> For plant pests, on average there are two new pests reported to the Department of Agriculture by the state or territory governments each week, many relating to extensions of geographical or host range or new variants detected through improved diagnostic techniques. Exotic plant pests and other invertebrates are considered in accordance with the EPPRD or NEBRA, and following initial investigations, are often found to be widespread or found to be a previously undescribed native or introduced species. It is estimated that only 30 per cent of Australia's and 20 per cent of the world's insects have been described; and only 5 per cent of the world's viruses (Chapman, 2009). Given the large number of species associated with plants, there is also often a lack of available scientific information available to inform a decision on potential impact to the environment or production.[9]

4.12 The committee notes that in a significant number of cases listed in this table, it has been determined that it is not technically feasible to eradicate the pest or disease.[10]

4.13 The CSIRO reported that incursions of invasive species with the known potential to have a high impact on the environment are regularly detected in Australia. As noted above, accurate estimates of detection rates are difficult to produce as consistent monitoring and reporting is not currently undertaken across the states;

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8 Department of Agriculture and Department of the Environment, *Submission 59*, pp 46–49.

9 Department of Agriculture and Department of the Environment, *Submission 59*, p. 45.

10 Department of Agriculture and Department of the Environment, *Submission 59*, pp 46–49.

however, the CSIRO provided the following estimates of current rates of incursion for different groups of organisms:

- Plant naturalisations 10–20 per annum
- Invertebrate pests 2–4 per annum
- Plant pathogens 10–14 per annum
- Animal diseases no data—but new strains likely to arrive in wildlife and pet trade
- Vertebrate pests <1 per annum (most recently as pet fish).[11]

4.14 The CSIRO also stated that there are no detailed analyses of how these incursion rates are changing over time.[12]

4.15 In its evidence, the CSIRO elaborated on this estimated incursion rate by stating that scientists consider that, as a rule of thumb, one in ten of the species that make it across the border become established and that, of these established species, one in ten go on to have a high impact. As only one in 100 incursions go on to have a high impact, it can be very difficult to pick out which species are of concern:

> It is the 10 per cent rule. It is what we call the base rate. The number of new species that come in that actually establish and become highly impactful is very small, and that is why it is always hard, in a risk assessment process, to effectively pick out those individual species from other species that would not have those impacts.[13]

4.16 The Invasive Species Council submitted a list of incursions of organisms with the potential to harm the environment since 2000, including locations, likely pathways, potential impacts and actions taken.[14]

4.17 The Invasive Species Council also provided the committee with a list of 24 organisms that are not permitted in Australia but have nonetheless made incursions since 2000 and have become naturalised, each with harmful environmental consequences.[15]

4.18 The Invasive Species Council also provided a list of 12 organisms that are permitted for private keeping in Australia but which have escaped or been released into the wild and have, or may have, established breeding populations. The majority of these organisms are fish thought to have been released from aquariums.[16]

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11 CSIRO, *Submission 48*, p. 5.

12 CSIRO, *Submission 48*, p. 5.

13 Dr Andy Sheppard, Research Director, CSIRO, *Committee Hansard*, 11 November 2014, p. 19.

14 Invasive Species Council, 'Incursions detected since 2000', tabled document, 11 November 2014.

15 Invasive Species Council, *Submission 74*, p. 9; pp 11–13.

16 Invasive Species Council, *Submission 74*, pp 13–14.

4.19 Finally, the Invasive Species Council provided a list of 21 species that have been detected in the wild from 1999-2010 but which are not known to have established themselves in Australia. The Invasive Species Council notes that this category of detections represents both a biosecurity failure, in that the entry of these organisms was not prevented, and a biosecurity success in that the organisms were eventually detected and in some cases removed or eradicated before becoming established.[17]

4.20 With regard to incursions of exotic vertebrates, Henderson and Bomford's *Detecting and preventing new incursions of exotic animals in Australia*, which 'presents data on incursion and interceptions of exotic vertebrates in Australia that have occurred within the country and at the national border' between 2001 and 2011, came to the following conclusions:

> This study has demonstrated there is a wide variety of exotic species intercepted entering Australia, and being kept or released illegally within our borders. Novel exotic species (that have not widely established) have also been detected at large, as individuals or small populations. Many of these species have potential to significantly impact the environment, economy or society. Some of the documented seizures from private keeping involved dozens of animals from a single residence (such as corn snakes, boas, red-eared sliders and squirrels), showing immediate potential for high propagule pressure. The data we have presented is unlikely to be the whole picture, due to technical issues (eg database interrogation) or incomplete reporting systems. However, it is indicative of the range of exotic vertebrate species turning up in Australia and at the border.[18]

4.21 The Nursery and Garden Industry Australia (NGIA) submitted that Australia experiences approximately 40 exotic pest incursions each year, although it did not provide details of how this figure was derived. The NGIA further noted that it expected a combination of increased global trade and more frequent international travel by both tourists and residents would put more pressure on biosecurity measures.[19]

4.22 The NGIA provided a list of emergency plant pests that it has responded to over the past 15 years, some of which were eradicated, some dealt with under management plans and others recognised as endemic pests and treated as such. The list does not distinguish between pests that are primarily of concern due to their impact on agriculture and those that primarily affect the environment.[20]

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17 Invasive Species Council, *Submission 74*, p. 9.

18 Wendy Henderson and Mary Bomford, *Detecting and preventing new incursions of exotic animals in Australia*, Invasive Animals CRC, 2011, pp 39–40.

19 Nursery and Garden Industry Australia, *Submission 55*, p. 3.

20 Nursery and Garden Industry Australia, *Submission 55*, p. 3.

4.23 With respect to the red imported fire ant, the NGIA stated that its members were facing over $18 million per year in movement protocol compliance costs, totalling over $210 million over the past 14 years.[21]

4.24 As noted above, given that it is not possible to entirely eliminate biosecurity risk whilst maintaining international travel and trade, there are no absolute markers for success or failure with regard to environmental biosecurity in Australia. The figures provided above demonstrate that incursions by invasive species that may adversely affect the environment are a regular occurrence. However, submitters and witnesses presented differing evaluations of this situation.

4.25 The Invasive Species Council submitted that, while Australia does enjoy trade advantages due to the state of agricultural biosecurity, its record on environmental biosecurity has been poor:

> Australia is a world leader in the extent of invasive species threats to the environment. Invasive species have already caused the extinction of more than 40 Australian mammals, birds and frogs, and are second only to habitat loss in the numbers of Australian species and ecological communities they threaten. We lead the world in mammal extinctions due to invasive predators, and many more mammals are on the brink. More than 70% of 1700 species listed as nationally threatened and more than 80% of listed ecological communities are imperilled by introduced animals, plants or diseases…Invasive species such as fire-promoting weeds and hard-hoofed herbivores cause extensive damage, and have altered the ecological character of many landscapes – for example, weeds account for 43% of the 120 most widely distributed plant species in New South Wales. Australia's most recent State of the Environment report (2011) gave the worst possible ratings for invasive species impacts on biodiversity: 'very high' and 'deteriorating', and found that management outcomes and outputs are 'ineffective'.[22]

4.26 The Invasive Species Council conceded that 'the damage already done is mostly due to species that came into the country long ago when biosecurity systems were rudimentary and focused primarily on agriculture and health risks', but argued that 'new invaders are still arriving at a rapid rate, and many are likely to cause great harm to the natural environment in the future.'[23]

4.27 Dr David Guest submitted that Australia's recent performance has been poor:

> Australia's recent biosecurity performance has been poor, resulting in significant risks to environments and industries. In 2010 alone, 26 exotic pests and pathogens escaped into Queensland, and since then incursions of myrtle rust, chestnut blight, cocoa pod borer, the Asian Honeybee and forestry pests in wooden pallets from China have been reported in

21 Nursery and Garden Industry Australia, *Submission 55*, p. 3.

22 Invasive Species Council, *Submission 74*, p. 4.

23 Invasive Species Council, *Submission 74*, pp 4–5.

> Queensland, NSW and Victoria, each with potentially devastating consequences.[24]

4.28 The WWF submitted that the 'numerous new incursions of serious pests detected since 2000, and repeated incursions of existing eradicated pests, suggest systemic flaws in biosecurity'.[25]

4.29 However, the departments of agriculture and the environment submitted that it is not possible to achieve zero risk in any sector of biosecurity and that biosecurity threats 'are effectively managed using a risk-based approach'.[26]

Regional statistics and information on recent incursions

4.30 The following statistics relating to distinct regional areas were provided to the committee during its inquiry. They provide a partial picture of recent invasive species incursions in each area.

New South Wales

4.31 At the time of providing its submission, the New South Wales Natural Resources Commission (NRC) had recently completed a review of weed management in NSW—*Weeds – time to get serious*.[27] As such, its submission focused on communicating relevant findings of this review.

4.32 The NSW NRC reported that approximately 2,300 weed species are considered a problem for natural ecosystems in Australia and about 10 species are added to the list of invasive weed species each year.[28] With regard to biosecurity performance since 2000 in New South Wales, the NRC reported that an average naturalisation rate of 18.7 taxa per year for the period 2000–12.[29] Finally, the NRC reported that weeds threaten around 40 per cent of vulnerable and endangered species in New South Wales and 89 per cent of endangered ecological communities.

4.33 Recent notable weed incursions in New South Wales include the orange hawkweed in Kosciusko National Park and the tropical soda apple in the upper Macleay Valley, which has since also been discovered in the Namoi and Border Rivers-Gwydir catchments.[30]

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24 Dr David Guest, *Submission 43*, p. 1.

25 WWF-Australia, *Submission 56*, p. 2.

26 Department of Agriculture and Department of the Environment, *Submission 59*, p. 1.

27 NSW Natural Resources Commission, *Submission 70*, Attachment 1.

28 NSW Natural Resources Commission, *Submission 70*, p. 1.

29 NSW Natural Resources Commission, *Submission 70*, p. 1, quoting Johnson paper here: http://nswweedsoc.org.au/items/839/17NSWWC%20Proceedings%202013.pdf

30 NSW Natural Resources Commission, *Submission 70*, p. 1.

4.34 A new incursion of red imported fire ants was detected at Port Botany in Sydney in December 2014.[31] Red imported fire ants had not previously been detected in New South Wales. The New South Wales Minister for Primary Industries stated that this outbreak was not related to red imported fire ant incursions in Queensland and that eradication efforts had commenced, including the use of baits and pesticide. The minister also stated that eradication efforts are being informed by protocols adopted under the National Red Imported Fire Ant Eradication Program, which is a program managed under the NEBRA.[32]

Queensland

4.35 The Queensland Government noted that new biosecurity legislation, the *Biosecurity Act 2014*, had recently been passed by the Queensland Parliament, which 'considers impacts of pests and diseases on human health, social amenity, the economy and the environment'.[33] The Queensland Government also emphasised its 'high risk status for the entry of pests and diseases across Torres Strait' and stated that it 'will be consulting with key stakeholders on our intent to maintain Cape York Peninsula as a special zone to prevent southward movement of pests and diseases of concern to Queensland'.[34]

4.36 The Queensland Government also provided information on both yellow crazy ant and red imported fire ant incursions, which are discussed in more detail below.

Wet Tropics Heritage Area

4.37 The Wet Tropics Management Authority (WTMA), which protects and conserves the Wet Tropics World Heritage Area in Queensland, submitted that the area under its care faces particular challenges with regard to invasive species due to its proximity to Papua New Guinea, the close proximity of an international port and airport, its exposure to tropical cyclones and its favourable growing conditions.[35]

4.38 The WTMA reported that over 500 weeds have become naturalised in the area and that the 'numbers of new weed species have increased more rapidly in recent times.'[36] Further, many of the species on the Northern Australia Quarantine Strategy target list are becoming established in the wet tropics region.[37]

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31 Josh Dye, 'Red fire ant outbreak in Sydney could cost economy billions', *Sydney Morning Herald*, 8 December 2014, http://www.smh.com.au/environment/red-fire-ant-outbreak-in-sydney-could-cost-economy-billions-20141208-1212nb.html (accessed 12 December 2014)

32 The Hon Katrina Hodgkinson, 'Eradication of red imported fire ant underway', *Media release*, 5 December 2014, http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0011/537167/media_release_141205_eradication_red_fire_ants_underway.pdf (accessed 12 December 2014).

33 The Hon Dr John McVeigh, *Submission 29*, p. 1.

34 The Hon Dr John McVeigh, *Submission 29*, p. 3.

35 Wet Tropics Management Authority, *Submission 23*, p. 2.

36 Wet Tropics Management Authority, *Submission 23*, p. 2.

37 Wet Tropics Management Authority, *Submission 23*, p. 2.

4.39 Since 2000, the yellow crazy ant, the electric ant and the Asian honey bee have been discovered in the wet tropics area. Although tilapia, a group of exotic freshwater fish species, were introduced in 1989 and subsequently spread to the wet tropics area, the WTMA reports they continue to be deliberately spread to additional waterways.[38]

Great Barrier Reef

4.40 The Great Barrier Reef Marine Park Authority (GBRMPA) highlighted recent incursions by the Asian green mussel as an issue of concern as it can lead to environmental impacts such as 'declines in species richness and abundance of native species and in some cases total exclusion of species', along with economic damage resulting from fouling of vessels and coastal infrastructure.[39]

4.41 The Asian green mussel was detected in the waters of the Great Barrier Reef at Cairns in 2002 and in 2007–8, at Gladstone in 2009 and at Hay Point in 2013. [40]

4.42 GBRMPA also submitted the following list of recent examples of invasive species detected on the islands of the Great Barrier Reef that have required a response to minimise environmental harm:

- African big head ant—Tyron Island;
- Black rat—Boydong Island;
- Fire ants—Curtis Island;
- Ants—Low Isles;
- Goats/deer—High Peak Island;
- Goats/lantana—St Bees Island;
- Rubber vine—Magnetic and Gloucester Islands;
- Guinea grass—Lizard Island; and
- Introduced flora and fauna—Lady Eliot Island.[41]

4.43 Environmental Biosecurity on Australia's islands is discussed further in chapter 6.

Western Australia

4.44 The Western Australian Department of Agriculture and Food submitted that Western Australia remains 'relatively free of invasive species that adversely affect our agricultural industries and environment' and remains free of some invasive plants and animals that are present in other states and territories.[42]

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38 Wet Tropics Management Authority, *Submission 23*, p. 2.

39 Great Barrier Reef Marine Park Authority, *Submission 19*, p. 2.

40 Great Barrier Reef Marine Park Authority, *Submission 19*, p. 2.

41 Great Barrier Reef Marine Park Authority, *Submission 19*, p. 2.

42 Department of Agriculture and Food (WA), *Submission 80*, p. 2.

4.45 The Department of Agriculture and Food also supplied a list of weeds with both environmental and agricultural impacts or primarily environmental impacts that it had responded to since 2000, along with the most likely pathway by which each weed arrived:

- Prickly acacia (*Acacia nifotica*) in the East Kimberley (2006). Most likely pathway: seeds in cattle.
- Mimosa (*Mimosa pigra*) in the East Kimberley, specifically: Ivanhoe, near Kununurra (Nov. 2009); south-east margins of Lake Argyle (Aug. 2012); Parry's Lagoon, near Wyndham (Nov. 2012). Most likely pathway: not known.
- Rubber vine (*Cryptostegia grandiflora*): West Kimberley, Willare Bridge near Derby (2005); East Kimberley, Lissadell Station (mid-2008). Most likely pathway: Possibly a garden escape from Lissadell Station.
- Opuntioid cacti (various species) in the Eastern Goldfields and the southwest (since 2013). Most likely pathway: escapes from cultivation, or old persistent plantings; also, some natural spread i.e. birds, floodwaters.
- Scotch broom (*Cytisus scoparius*): Collie (2012). Most likely pathway: escape from cultivation.
- Bitou bush (*Chrysanthemoides monilifera* subsp. *rotundata*): Perth Metropolitan Area, Kwinana (Found in July 2012 but had been there for some years). Most likely pathway: seed contaminant of industrial machinery or equipment shipped from interstate.
- Amazon frogbit (*Limnobium laevigatum*): Perth Metropolitan Area (2012/13). Most likely pathway: deliberate release from aquarium or ornamental pond.
- Spanish heath (*Erica lusitanica*): Denmark (May 2013). Most likely pathway: escape from cultivation, or dumping of garden waste.
- Praxelis (*Praxelis clematidea*): East Kimberley, near Broome (early 2008). Most likely pathway: seed contaminant of agricultural produce or seed-for-sowing.[43]

4.46 The Department of Agriculture and Food also submitted that it had responded to the following vertebrate pest incursions in 2013–14:

1. Prohibited species from overseas detected at warehouse facilities post import

- Rough-tailed Gecko
- Common Wall Gecko, Moorish Gecko
- Asian house gecko

2. Prohibited animals intercepted at border checkpoints by Quarantine WA

- 7 birds
- 5 reptiles

43 Department of Agriculture and Food (WA), *Submission 80*, p. 2.

- 2 amphibians

3. Animals removed from the wild (pathways unknown)

- 39 prohibited birds
- 197 declared pest birds
- 17 northern palm squirrels
- 3 red-eared slider turtles[44]

Tasmania

4.47 The Tasmanian Farmers and Graziers Association (TGFA) stated that Tasmania has 'fewer pests, diseases and weeds when compared to mainland Australia and internationally'.[45] However, TGFA nominated a number of species that are of environmental biosecurity concern, including serrated tussock, foxes and myrtle rust.

4.48 Although serrated tussock was first detected in Tasmania in 1956, it was the subject of an eradication program in the 1970s and 1980s and came close to complete eradication. However, it has now spread to most parts of Tasmania, including King Island. The TGFA described the impact of serrated tussock on industry and the environment:

> Not only is serrated tussock indigestible to livestock, it is threatening the biodiversity values of Tasmania's native grasslands, displacing native species and often going undetected until infestations reach a large size. Serrated tussock will also invade other vegetation types such as grassy woodlands, and coastal communities.[46]

4.49 The Tasmanian Department of Primary Industries, Parks, Water and Environment (DPIPWE) has conducted a fox eradication program since 2006. This program was begun in response to 'an accumulation of evidence that indicated fox activity in Tasmania'. The program aims to 'eradicate foxes from Tasmania, reduce the risk of future fox incursions and develop community awareness of the serious threat foxes pose' and is currently in its final phase.[47]

4.50 DPIPWE summarises the expected impact of foxes on the Tasmanian environment, should they become established, as follows:

> Should foxes become established in Tasmania, over 70 native vertebrate species would be at risk. Of these, 34 species have locally restricted ranges, 16 are suspected to be already declining in distribution and 12 species are threatened according to Commonwealth or State threatened species

44 Department of Agriculture and Food (WA), *Submission 80*, p. 2.

45 Tasmanian Farmers and Graziers Association, *Submission 67*, p. 6.

46 Tasmanian Farmers and Graziers Association, *Submission 67*, p. 6.

47 Department of Primary Industries, Parks, Water and Environment (Tas), 'Fox Eradication Program', http://dpipwe.tas.gov.au/invasive-species/current-programs/fox-eradication-program (accessed 12 December 2014).

> legislation. It is quite possible that at least 5 wildlife species will be driven to extinction. Numerous invertebrate species are also at risk.
>
> Locally widespread species like ducks, shorebirds, ground nesting birds, blue tongue lizards, mountain dragons, skinks, frogs, little penguin and platypus are also at risk and would decline in the Tasmanian landscape if foxes establish. The flow-on effects through food chains and ecosystem balance must also be considered an unknown factor.[48]

4.51 Of particular concern is the interaction of foxes and Tasmanian devils:

> In the past, devils have probably been playing a role as a 'buffer' species for any foxes that have entered the state, providing competition that may have prevented fox establishment. However, the population decline of the Tasmanian devil, as a result of the Devil Facial Tumour Disease, partly removes this barrier and makes the fox eradication effort all the more important.
>
> If foxes fill the void created by lower devil numbers, it could prevent the Tasmanian devil from re-establishing, should the disease be eliminated.[49]

4.52 Finally, although myrtle rust has not been detected in Tasmania, TGFA cautioned that, should it arrive, it would have a dramatic impact on the environment given the large proportion of land area taken up by eucalypt forests.[50]

South Australia

4.53 The Government of South Australia discussed three examples of recent incursions with environmental impacts. Mexican feather grass was imported and widely distributed under an incorrect scientific name and has the potential to 'invade and degrade large areas of native woodland and grassland, and pastures for livestock production.' The South Australian Government worked with the nursery industry and home gardeners to identify this weed and is conducting monitoring at sites where it has been detected and destroyed.[51]

4.54 Southern bent wing bat pups at Naracoote caves were the subject of mass mortalities 2008 and 2009, with over 10 per cent of the population affected in 2009. The deaths appear to be consistent with a pox virus, but the origin of this disease is unknown. The southern bent wing bat is already an endangered species.[52]

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48 Department of Primary Industries, Parks, Water and Environment (Tas), 'Threats posed by Foxes in Tasmania', http://dpipwe.tas.gov.au/invasive-species/current-programs/fox-eradication-program/fox-profile/threats-posed-by-foxes (accessed 12 December 2014).

49 Department of Primary Industries, Parks, Water and Environment (Tas), 'Threats posed by Foxes in Tasmania', http://dpipwe.tas.gov.au/invasive-species/current-programs/fox-eradication-program/fox-profile/threats-posed-by-foxes (accessed 12 December 2014).

50 Tasmanian Farmers and Graziers Association, *Submission 67*, p. 7.

51 Government of South Australia, *Submission 86*, p. 3.

52 Government of South Australia, *Submission 86*, p. 3.

4.55 The South Australian Government also reported that in 2013 more than 60 bottlenose and common dolphins were found dead on beaches at Gulf St Vincent. Their deaths were caused by the dolphin morbillivirus; however, it is unknown how the virus entered South Australian waters.[53]

4.56 Further incursions of note in South Australia since 2000, and their likely pathways, include:

> Red-eared slider turtle (Trachemys scripta elegans) – illegal keeping
>
> Corn snake (Pantherophis guttatus) – illegal keeping
>
> Cane toad (Bufo marinus) – stowaway from interstate
>
> Indian myna (Acridotheres tristris) – likely stowaway from interstate
>
> Caulerpa (Caulerpa taxifo/ia) – likely dumping of aquarium contents.[54]

4.57 The Nature Conservation Society of South Australia submitted the following information on plant incursions and their impact on species listed under the EPBC Act:

> More than 1400 exotic plant species have become naturalised in South Australia, of which several hundred impact significantly on agriculture, the natural environment (including freshwater systems) and communities. About 65 per cent of weeds are escaped garden plants, many of which are still traded. Garden escape plants continue to threaten or adversely affect at least 25 EPBC listed species and at least 3 EPBC listed ecological communities in South Australia and without further sustained effort these figures will only increase.[55]

Myrtle rust

4.58 Many submitters commented on the recent myrtle rust incursion and the committee also discussed the response to this matter with witnesses. Myrtle rust, a native of South America, is described by the Department of the Environment as follows:

> Myrtle rust, which is caused by the fungus *Uredo rangelii*, is a disease which affects trees and shrubs in the Myrtaceae family of plants. When severely infected, young plants and new growth may become stunted and in the worst case may die. The Myrtaceae family of plants includes Australian natives like bottle brush (*Callistemon spp*.), tea tree (*Melaleuca spp*.) and eucalypts (*Eucalyptus spp*.).
>
> Myrtle rust is not native to Australia. It is not known how myrtle rust entered Australia. Plant rusts are highly transportable. Their spores can be spread via contaminated clothing, infected plant material, on equipment and by insect/animal movement and wind dispersal. These characteristics make rust diseases extremely difficult to eradicate. At present, there is limited

53 Government of South Australia, *Submission 86*, p. 3.

54 Government of South Australia, *Submission 86*, p. 3.

55 Nature Conservation Society of South Australia, *Submission 33*, p. 2.

> knowledge of the impacts and behaviour of myrtle rust under Australian conditions.[56]

4.59 Myrtle rust was first detected in Australia on the Central Coast of New South Wales in April 2010 and was subsequently detected in south-east Queensland in December 2010.[57] Myrtle rust infections have now been detected as far north as the wet tropics area of Queensland, along the entire New South Wales coast and in Victoria, mainly at production nurseries and wholesale outlets in or near Melbourne.[58] Although myrtle rust is considered to be 'very well suited' to coastal areas of New South Wales and Queensland, areas in the south-west of Western Australia, southern South Australia, northern Tasmania and large parts of Victoria are considered to be either 'marginal' or 'well suited' to the disease.[59]

Impacts of myrtle rust

4.60 The Invasive Species Council submitted that Australia is in the very early stages of invasion by myrtle rust and that the 'impacts so far indicate it will have very serious ecological impacts.' The council further stated that:

> So far, more than 350 native species (more than 10% of native Myrtaceae) have proven to be susceptible (in the laboratory or in the wild). This number is expected to increase. About 20% of the >300 species susceptible in the wild so far are 'highly' or 'extremely' susceptible. In Queensland, 48 species have been rated as highly or extremely susceptible. The impact on flower and fruit production in some species is 'significant'. The pathogen is established in a wide variety of natural ecosystems—rainforests, heathlands, woodlands and wetlands—as well as in urban areas.[60]

4.61 Mr Anthony Cannon described the potential impacts of the incursion as follows:

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56 Department of the Environment, 'Myrtle Rust (Uredo rangelli)', http://www.environment.gov.au/biodiversity/invasive-species/diseases-fungi-and-parasites/myrtle-rust (accessed 15 December 2014).

57 Department of the Environment, 'Myrtle Rust (Uredo rangelli)', http://www.environment.gov.au/biodiversity/invasive-species/diseases-fungi-and-parasites/myrtle-rust (accessed 15 December 2014).

58 Department of Agriculture, Fisheries and Forestry (Qld), https://www.daff.qld.gov.au/plants/health-pests-diseases/a-z-significant/myrtle-rust/facts-photos-maps/maps (accessed 15 December 2014); Department of Primary Industries (NSW), 'Myrtle rust', http://www.dpi.nsw.gov.au/biosecurity/plant/myrtle-rust (Accessed 15 December 2014); Department of Environment and Primary Industries (Vic), 'Myrtle rust', http://www.depi.vic.gov.au/agriculture-and-food/pests-diseases-and-weeds/plant-diseases/shrubs-and-trees/myrtle-rust (accessed 15 December 2014).

59 Anthony Cannon, *Myrtle Rust – Forest Industry Issues Paper*, Forest & Wood Products Australia, June 2011, p. 9, http://www.fwpa.com.au/images/resources/PRC218-1011_Myrtle_Rust_June_2011_0.pdf (accessed 15 December 2014); see also document tabled at 10 November 2014 hearing by Mr Robert Mackinson, Australian Network for Plant Conservation, 'Myrtle rust'.

60 Invasive Species Council, *Submission 74*, Attachment 1, p. 14.

> The full impact of myrtle rust on individual species of Myrtaceae in the Australian environment is not yet understood. Reports are that it has already impacted on growth, flowering, fruiting and seed viability of a number of species. Potentially the rust could impact on species diversity and also on fauna, as both habitat and food availability are impacted.
>
> Due to the presence of myrtle rust in Australia there is a risk that a new variant of the rust complex could enter Australia and be more difficult to detect. A more aggressive variant of the *Puccinia psidii* complex could have an increased impact. The incursion of the second variant also raises the risk of recombination and greater adaptation to the Australian environment. Biodiversity and economic losses could be much more increased.[61]

Response to myrtle rust incursion

4.62 Many aspects of the management of the myrtle rust incursion attracted comment during the inquiry, including the adequacy of surveillance and early detection, decision making in the initial response period (including the role funding may have played), confusion regarding the name of the disease, flaws in attempts to contain the spread of the disease, and a subsequent lack of transparency regarding the management of the incursion.

4.63 A detailed time line prepared by Mr Cannon of the decision-making process that followed the initial detection of myrtle rust on 23 April 2010 indicates that a decision that eradication was not feasible was reached extremely quickly. The incursion was detected on 23 April 2010 and by 30 April it had been deemed to be not technically feasible to eradicate by both the Consultative Committee on Emergency Plant Pests and the Myrtle Rust National Management Group. However, following requests by PHA and lobbying from other organisations, the National Management Group agreed on 2 July 2010 to an interim response plan, the aim of which was to suppress and ultimately eradicate myrtle rust. By late December 2010, following further detections of the rust, the Myrtle Rust National Management Group again decided that eradication was not technically feasible.[62]

4.64 The committee heard evidence that myrtle rust had been identified as a serious biosecurity risk to Australia well before it was detected in 2010. Mr Anthony Cannon recounted this history:

> The risk of a eucalyptus rust incursion was formally recognised by the Primary Industries Ministerial Council in 2006. This council endorsed development of contingency planning for eucalyptus-guava rust, including whole-of-government engagement across jurisdictions. However, there had been considerable recognition and research prior to this time, with

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61 Mr Anthony Cannon, Managing Director, ALIEMI Pty Ltd, *Committee Hansard*, 10 November 2014, pp 9–10.

62 Anthony Cannon, *Myrtle Rust – Forest Industry Issues Paper*, Forest & Wood Products Australia, June 2011, pp 24–30, http://www.fwpa.com.au/images/resources/PRC218-1011_Myrtle_Rust_June_2011_0.pdf (accessed 14 April 2015).

> international recognition of the potential of eucalypt-guava rust disease to threaten eucalypts and other Myrtaceae species from the 1990s. CSIRO scientists did considerable research in the early 2000s in Brazil, for example, and a lot of that was collaborative research and involved South African scientists as well as the Brazilian scientists and Australians.[63]

4.65 Mr Cannon further stated that, although *Puccinia sidii*, eucalyptus or guava rust, was listed as a key pest under the National Plantation Timber Industry Biosecurity Plan in 2007 and the threat-specific contingency plan for the nursery and garden industry developed in 2009, these resources did not appear to be fully considered during the initial response to the incursion.[64]

4.66 While the nursery and garden industry threat-specific plan for guava or eucalyptus rust included *Uredo rangelii* as one of 28 synonyms for *Puccinia psidii*, the use of the name 'myrtle rust' caused some initial confusion:

> There is little doubt that the use of the common name Myrtle rust to distinguish *Uredo rangellii* as a distinct taxon from the taxon described as *P. psidii* s.s. caused confusion. This was partly due to the then limited host range of *U. rangellii* and therefore increased uncertainty about its potential impact.[65]

4.67 Mr Cannon commented on the initial decisions to abandon eradication attempts as not technically feasible and then resume eradication attempts several months later:

> Six days after the myrtle rust was discovered in the cut-flower nursery, my understanding is that a decision was made that it would be impossible to eradicate. Because it was a rust there may be some reasons why you might take that attitude, but to subsequently come back two months later and then try to eradicate it means you have lost the momentum and probably lost the opportunity to do something.
>
> …there was already an infestation in native forest that was unknown. That is the benefit of hindsight. But at the time there was a very limited distribution known about and there may have been an opportunity to do something about it.[66]

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63 Mr Anthony Cannon, Managing Director, ALIEMI Pty Ltd, *Committee Hansard*, 10 November 2014, p. 9.

64 Mr Anthony Cannon, Managing Director, ALIEMI Pty Ltd, *Committee Hansard*, 10 November 2014, p. 9; Anthony Cannon, *Myrtle Rust – Forest Industry Issues Paper*, Forest & Wood Products Australia, June 2011, p. 26. http://www.fwpa.com.au/images/resources/PRC218-1011_Myrtle_Rust_June_2011_0.pdf (accessed 15 December 2014).

65 Anthony Cannon, *Myrtle Rust – Forest Industry Issues Paper*, Forest & Wood Products Australia, June 2011, p. 30, http://www.fwpa.com.au/images/resources/PRC218-1011_Myrtle_Rust_June_2011_0.pdf (accessed 15 December 2014); Mr Anthony Cannon, Managing Director, ALIEMI Pty Ltd, *Committee Hansard*, 10 November 2014, p. 9.

66 Mr Anthony Cannon, Managing Director, ALIEMI Pty Ltd, *Committee Hansard*, 10 November 2014, p. 10.

4.68 Several witnesses stated that the issue of funding may have influenced both the initial decision to abandon eradication attempts and the subsequent decision to restart them. Dr William Roberts, Plant Biosecurity CRC, stated that the early technical decision to abandon eradication efforts was not the right decision. He went on to comment on the role of funding in the decision-making process:

> I think the fundamental problem is that the people making those decisions were clearly influenced by the looming costs of some of those decisions and the fact that it is difficult to get funding through the state governments for incursion or eradication action. You have to make a very strong case to convince treasuries to release money for these sorts of projects. The costs start ticking over the moment you say, 'We're going to contain and do further survey work,' or, 'We are going to eradicate,' or whatever. In the face of concerns about finding resources, consciously or not, there is always pressure to say, 'Let's get out of this early and save money.' There is always a choice to be made. Generally, when you find those things, with our current fairly poor surveillance system, it is too late. You have to think about that. I think we really need to take a more cautious approach and, every time we find one, say, 'We will implement the best containment procedures we can and do a further investigation of what the true situation is and then make the decision.'[67]

4.69 On the subject of funding for the emergency response to myrtle rust, Mr Cannon stated:

> In the initial phase, like that first six days, where there may be an eradication attempt, the funding is underwritten, as I understand it. If they get to a stage where it is deemed not possible to eradicate, and it becomes a management issue, then the funding, as I understand it, is all up in the air. So it then becomes an issue of who picks up the can—whether it is going to be the state or some Commonwealth share. I got the impression—and this was brought up by the National Garden Industry Association in the other Senate inquiry I was talking about—that the $2 million that was made available to the New South Wales was at least a very large incentive to get things going again from an eradication point of view.[68]

Early detection

4.70 With regard to surveillance and early detection, Dr Roberts, put to the committee that the critical failure with regard to myrtle rust was the lack of early detection, given the extreme difficulties of detecting such a disease at the border:

> …the critical failure in hindsight was it turned out that it had probably been there for much longer than first thought. The critical failure was the early detection problem. The disease might have come into Australia on a passenger coming through the southern US or South America. The disease

67 Dr William Roberts, Principal Scientist, Plant Biosecurity Cooperative Research Centre, *Committee Hansard*, 31 October 2014, pp 13–14.

68 Mr Anthony Cannon, Managing Director, ALIEMI Pty Ltd, *Committee Hansard*, 10 November 2014, p. 11.

> is now in Hawaii and in principle you could have been transiting, say, Honolulu International Airport and there might have been a spore-release event that got sucked into the air conditioning. You could have been quite innocently coming through and it could have been a one in a zillion chance that the spores were on your clothes and ended up on a host and the disease started. They are the sorts of odds we are talking about. When you think of what is coming across the border, I do not see it as a failure of finding it at the border because in my estimation it would have been impossible to find it at the borders. The spores are microscopic—you cannot see them with the naked eye. There is a small possibility that someone smuggled in an ornamental plant that had the disease and it started from there, I suppose. There are lots of other possibilities, but the critical failure was in early detection.[69]

4.71 Mr Makinson of the Australian Network for Plant Conservation, also emphasised that early detection could have led to more effective action in the case of myrtle rust, although perhaps still not successful eradication, and that greater involvement of the public in surveillance is a way to improve knowledge about how invasive species are behaving:

> About five months after the first detection, they found a big patch up in Olney State Forest behind Wyong, and my understanding, from the experts, is that they feel that that was so large at that stage that it had probably been there for a couple of years, sitting out the end of the drought and waiting for better conditions before it broke out down on the coast where it was first detected. So I think the likelihood is that, even with a better public network, we would have had to be very lucky to have succeeded in the eradication attempt, but there would have been better tracking and there certainly would have been better information now, after 4½ years, as to how it is operating in terms of the effect on native plants.[70]

4.72 Mr Andrew Maclean, Wet Tropics Management Authority, also noted that despite the 'arrangements that are in place through various agreements between the states and the Commonwealth, it does seem that it is possible for an organism to become established unnoticed until it becomes almost too late to eradicate it'.[71] Mr Maclean went on to argue that not enough was done to prevent the spread of myrtle rust within Australia once it was detected:

> We were concerned when decisions were made about the policy and strategy in response to myrtle rust. I will use that as an example: the decision was made: 'look, myrtle rust has escaped into the environment and can no longer be eradicated'. That decision was made when the nearest infestation of myrtle rust was well over 1,000 kilometres south of the Wet

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69 Dr William Roberts, Principal Scientist, Plant Biosecurity Cooperative Research Centre, *Committee Hansard*, 31 October 2014, p. 12.

70 Mr Robert Makinson, Australian Network for Plant Conservation, *Committee Hansard*, 10 November 2014, p. 6.

71 Mr Andrew Maclean, Wet Tropics Management Authority, *Committee Hansard*, 31 October 2014, p. 17.

> Tropics. We believe that more could have been done, by way of internal quarantine and internal controls over the movement of infectious plant material, which may have slowed the spread of myrtle rust into the tropics. We would like to see greater attention to that.[72]

4.73 Mr Rodney Turner, General Manager, Risk Management, Plant Health Australia, stated that, although myrtle rust is a serious pest, there was no real prospect of eradicating it once it had been discovered and noted that huge numbers of spores are produced and they are windborne. He also commented that the myrtle rust had been there for some time and was detected in trees that were 10 to 15 metres high. He went on to state:

> I think probably the issue was that that message was not communicated effectively enough. The agencies did put into place emergency measures. They did contain and they destroyed the material on the first nursery. They were managing the trees that were on the border, and then they started the trace forward, trace back processes which they do, and then they started finding it in nurseries around the place. Then they found it in the natural environment. Once it got to that stage it was then recognised that it was probably impossible to eradicate—particularly when you think that the response strategies that are available to you in a national environment are quite different from the response strategies available to you in a production area. So the nursery that was producing the flower material went in and destroyed all the material and burnt it. You cannot go in and destroy great tracts of national park, so those response strategies are quite different.[73]

4.74 Mr Turner commented that the strategy worked and the Australian government then funded PHA to undertake a transition to management program which undertook research, 'essentially, about how you manage it, whether there is resistant material, what is the host list for this material, and a lot of that information is coming through now—through research papers, et cetera, and material published on the 'transition to management' section on the PHA website'. Mr Turner concluded:

> But I think the question really is managing expectations. Because it was a serious pest, people expected people just to eradicate it, where the reality was that it was not eradicable.[74]

4.75 The departments of agriculture and environment commented on measures taken since the 2010 myrtle rust incursion. Their submission explained that, following the 2010 incursion, the Department of Agriculture had sought expert advice regarding the threat posed by myrtle rust to the environment and industry and on this basis has maintained restrictions and conditions for entry of products derived from myrtaceous species from countries where the fungus is present and imposed a requirement that all myrtaceous hosts be held and grown in post-entry quarantine for two years before

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72 Mr Andrew Maclean, Wet Tropics Management Authority *Committee Hansard*, 31 October 2014, p. 17.

73 Mr Rodney Turner, Plant Health Australia, *Committee Hansard*, 31 October 2014, p. 45.

74 Mr Rodney Turner, Plant Health Australia, *Committee Hansard*, 31 October 2014, pp 45–46.

release in order to allow time to detect infected material. A prohibition on importing myrtaceous timber was lifted in 2013 following a review of this pathway.[75]

4.76 The submission also noted that the pathway of the 2010 incursion has not been determined and that the not all possible entry pathways for exotic pathogens such as myrtle rust can be effectively regulated:

> …there may also be pathways of spread for some exotic pathogens which are not possible or difficult to regulate. For example, it is not practical to regulate spread by contamination on certain pathways such as clothing, and the spread of pathogens can occur through natural means such as movement of infective propagules through air currents.[76]

Tramp ants—red imported fire ants and yellow crazy ants

4.77 The committee received submissions on, and discussed with witnesses, the topic of tramp ant incursions. The term 'tramp ants' refers to a 'diverse group of invasive ant species which have become established widely across the globe'.[77]

4.78 As of 2012, the Department of the Environment listed the following species of tramp ants as significant in Australia: red imported fire ant; yellow crazy ant; African big-headed ant or coastal brown ant; Argentine ant; Electric ant or little fire ant; and tropical fire ant. The environmental impact of tramp ants can be severe:

> Tramp ants can reduce species diversity, modify habitat structure and alter ecosystem processes. They replace native small predators, and some can repel larger predators. Insect-feeding mammals, birds, reptiles and frogs decline as they have little to eat, are stung or eaten.
>
> Tramp ants displace native ants and eat the eggs and larvae of species such as butterflies. They disrupt invertebrate food webs and affect plant pollination and seed dispersal. They damage plants by eating fruit and seeds, tunnelling into stems and removing bark from seedlings, and can increase weed invasion.[78]

4.79 The impact of yellow crazy ants on the ecology of Christmas Island, a matter which is addressed further in chapter 6, clearly illustrates the severe impact tramp ants can have:

> Native land crabs, birds and reptiles are at risk from predation, habitat alteration or reduced resources. The yellow crazy ant have displaced or killed 15–20 million land crabs. This affects seedling recruitment, weed

75 Department of Agriculture and Department of the Environment, *Submission 59*, p. 37.

76 Department of Agriculture and Department of the Environment, *Submission 59*, p. 37.

77 Department of the Environment, 'Tramp ants', p. 1, http://www.environment.gov.au/system/files/resources/49574b42-7256-4e82-981e-644102b3ec16/files/fs-tramp-ants.pdf (accessed 16 December 2014).

78 Department of the Environment, 'Tramp ants', p. 3, http://www.environment.gov.au/system/files/resources/49574b42-7256-4e82-981e-644102b3ec16/files/fs-tramp-ants.pdf (accessed 16 December 2014).

> spread and leaf litter breakdown in the forest. The resultant scale insect outbreaks have also led to forest canopy dieback.[79]

4.80 The Christmas Island Crazy Ant Scientific Advisory Committee (CASAP) reported that modelling using climate data indicated that the potential distribution of yellow crazy ants covers much of tropical Australia and that interceptions of yellow crazy ants at Australian ports rapidly increased at Australian ports between 1996 and 2002. Interception data beyond 2002 is not available.[80]

4.81 CASAP also reported, with respect to data covering the period 1996 to 2002:

> Sydney and Brisbane each accounted for 40% of all interceptions of YCA into Australia. Darwin, Cairns and Townsville made up another 10% of interceptions. We know that YCA is able to establish viable populations at all of these ports except Sydney.
>
> Southeast Asia and the Pacific Islands account for almost 80% of all interceptions (Fig. 7). Sri Lanka was also a significant contributor to the number of interceptions. The actual quantities of imports from these countries are not known, so it is not possible to estimate the 'per unit of import' rate of interceptions.[81]

Response to tramp ant incursions

4.82 Several elements of Australia's response to tramp ant incursions received particular attention during the inquiry, including: the frequency of tramp ant incursions and whether this points to weaknesses in biosecurity; the effectiveness of eradication and control efforts; the extent to which existing abatement plans have been implemented; and the adequacy of funding to control incursions.

4.83 The Invasive Species Council submitted that genetic studies have established that red imported fire ants have arrived on four separate occasions, and established twice in Brisbane and twice in Gladstone.[82] To this total must now be added the recently detected incursion at Port Botany in Sydney, which genetic tests have shown to be unrelated to previous incursions in Queensland.[83]

4.84 The Invasive Species Council submitted that repeated incursions by red imported fire ants, despite recognition of their serious impacts on society, agriculture and the environment and a strong quarantine focus, demonstrate that weaknesses still

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79 Department of the Environment, 'Tramp ants', p. 4, http://www.environment.gov.au/system/files/resources/49574b42-7256-4e82-981e-644102b3ec16/files/fs-tramp-ants.pdf (accessed 16 December 2014).

80 Christmas Island Crazy Ant Scientific Advisory Committee, *Submission 78*, p. 13.

81 Christmas Island Crazy Ant Scientific Advisory Committee, *Submission 78*, p. 13.

82 Invasive Species Council, *Submission 74*, Attachment 1, p. 3.

83 The Hon Katrina Hodgkinson, 'Eradication of red imported fire ant underway', *Media release*, 5 December 2014, http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0011/537167/media_release_141205_eradication_red_fire_ants_underway.pdf (accessed 12 December 2014).

exist in the biosecurity regime.[84] A similar situation exists with yellow crazy ant incursions, which have averaged two new outbreaks per year since 2000 and have been intercepted at Australian ports on average eight times per year since 2008.[85]

Surveillance measures and prevention

4.85 Beyond weaknesses in preventing the entry of red imported fire ants, witnesses stated that surveillance measures were not adequate, as evidenced by the significant periods between incursion and detection in several cases. For example, the Invasive Species Council stated:

> The incursions also highlight inadequate surveillance in Australia for high priority threats. The first incursions in Brisbane were not detected probably until 10 years after arrival, and the 2014 detection at Yarwun for probably 3 years after arrival.[86]

4.86 Dr Lori Lach also stated that Australia was not doing enough to prevent tramp ants from entering the country and cited as evidence recent red imported fire ant incursions in Queensland and incursions of another species at Perth Airport:

> There have been two recent incursions. One is another red imported fire ant incursion in Queensland in an area where they had previously been eradicated. They can pretty well pinpoint that the ants had been there for three years before they were detected. They might be intercepting a lot, but obviously some are getting through. These are just the ones we know about. Another recent incursion is *Lepisiota frauenfeldi* at Perth Airport. It was on airport grounds, which I believe are supposed to be surveyed annually. Our best guess is that they had been there at least six years and up to 10. Apparently, they were 'ankle deep'. These ants can get extremely abundant. Those are two examples. We obviously do not know what is getting in that we have not found yet.[87]

Abatement plan

4.87 Dr Lach also provided evidence on the incomplete implementation of the threat abatement plan for tramp ants and on issues of funding and lack of expertise that have hampered responses to incursions.

4.88 Red imported fire ants were listed as a key threatening process under the EPBC Act in 2003, as were yellow crazy ants on Christmas Island in 2005. Subsequently, a threat abatement plan was developed to address the following high-priority tramp ant species: red imported fire ant; little fire ant/electric ant; African big-headed ant; yellow crazy ant; and Argentine ant. The goal of this threat abatement plan is to minimise the impact of invasive tramp ants on biodiversity in Australia and

84 Invasive Species Council, *Submission 74*, Attachment 1, p. 4.

85 Invasive Species Council, *Submission 74*, Attachment 1, p. 8.

86 Invasive Species Council, *Submission 74*, Attachment 1, p. 4.

87 Dr Lori Lach, *Committee Hansard*, 11 November 2014, p. 61.

its territories by protecting threatened native species and ecological communities and preventing further species and ecological communities from becoming threatened.[88]

4.89 Beyond this overarching goal, the threat abatement plan contains six objectives:

> 1. Increase science-based knowledge and expertise, incorporate Indigenous traditional ecological knowledge, quantify impacts, and improve access to information for priority tramp ant species
> 2. Prevent entry and spread of tramp ants by increasing diagnostic capacity, offshore surveillance, inspection, treatment, and national and state and territory surveillance
> 3. Prepare for rapid response to tramp ant incursions and spread through risk assessment of tramp ant species and pathways of introduction, and development of contingency plans
> 4. Enhance emergency response to tramp ant incursions by improving reporting and response rates, and by developing tools for response and follow-up
> 5. Build stewardship by engaging, educating, and informing the Australian community about the impacts of invasive tramp ants and effective means of response
> 6. Coordinate Australian Government, state and territory government, and local management activities in Australia and the region.[89]

4.90 Both Dr Lach and the Invasive Species Council stated that, although this plan was developed in 2006, parts of it remain unimplemented. The Invasive Species Council stated that offshore surveillance, as identified in goal 2, had not been improved, with the 2012 review of the abatement plan noting that there had only been 'limited off-shore work' in this area.[90]

4.91 Dr Lach stated that this abatement plan had not been properly implemented and that, as a result, response efforts had been delayed, become more expensive and ultimately been less successful than they might otherwise have been:

> First: the threat abatement plan for tramp ants, which went into effect in June 2006, has not been fully implemented. Of the 15 action items in the plan, five were very high priority, short-term actions. None of these have been implemented to the intent of the plan. For example, there is still no central repository of information on tramp ants; diagnostic capacity and

88 Department of the Environment and Heritage, *Threat abatement plan to reduce the impacts of tramp ants on biodiversity in Australia and its territories*, 2006, p. 6, http://www.environment.gov.au/system/files/resources/f120c0f6-5bf4-4549-b087-8e53864b315b/files/tramp-ants.pdf (accessed 18 December 2014).

89 Department of the Environment and Heritage, *Threat abatement plan to reduce the impacts of tramp ants on biodiversity in Australia and its territories*, 2006, p. 6, http://www.environment.gov.au/system/files/resources/f120c0f6-5bf4-4549-b087-8e53864b315b/files/tramp-ants.pdf (accessed 18 December 2014).

90 Invasive Species Council, *Submission 74*, Attachment 1, pp 8–9.

> service are still limited; there are no comprehensive risk assessments for any of the six ant species of concern identified in the plan; and specific and context-dependent contingency plans have not been developed.
>
> Second: had the plan been implemented, tramp ant abatement programs would likely have been far more efficient and cost-effective. For example, poor access to diagnostic services resulted in hundreds of extra hectares being treated on Lord Howe Island for years due to inaccurate ant identification. The extra baiting was expensive, increased risks to non-target species and decreased staff morale. The lack of risk assessments and contingency plans meant that when the yellow crazy ant was found on the outskirts of the Wet Tropics World Heritage Area, political will and resources to address the invasion fell far short of what was required. In the time that it took the Wet Tropics Management Authority to obtain funding, the area of infestation had nearly doubled from 300 to 571 hectares. It is currently 733 hectares.[91]

4.92 With regard to objectives 4 and 5 of the tramp ant abatement plan, the committee notes the work undertaken by Dr Kirsti Abbott of the University of New England to establish an Australian module of the School for Ants project, which is a citizen science project that has operated in the US for four years. The project aims to 'document the diversity, distribution and diet preferences of ants around Australia' and 'could be used effectively as a citizen-driven passive surveillance scheme independently of government, while contributing to research on broader ecological aspects of diversity, distribution, diet preferences and functional morphology of Australian ants.'[92]

Eradication programs

4.93 The Wet Tropics Management Authority (WTMA) also reported that, while it hopes its current $2 million yellow crazy ant eradication program will be successful, delays in attaining funding have meant that the problem has grown significantly. The WTMA explained that, because Queensland has determined that yellow crazy ants cannot be eradicated, it has moved to a management phase of its response under which land managers are each responsible for dealing with the ants. The WTMA therefore applied for funding under the Commonwealth Landcare program to manage the yellow crazy ant threat to the Wet Tropics World Heritage Area:

> There is an infestation against the boundary of the area and slightly moving into it at Edmonton, in the southern suburbs of Cairns. We took the view that it is important to tackle that infestation to protect the World Heritage area. So we are not pretending to eradicate yellow crazy ant from Queensland; we are trying to protect the World Heritage area from that particular infestation.
>
> So an application was made; between making the application and receiving the funding, sadly, a new infestation was detected at Kuranda, just to the

91 Dr Lori Lach, *Committee Hansard*, 11 December 2014, p. 61.

92 Dr Kirsti Abbott, *Submission 77*, p. 1.

> north of Cairns, and the area that we now need to treat has almost doubled. We have the same amount of dollars that we initially applied for, but the job has become much bigger.[93]

4.94 Dr Lach also noted that the need to gain funding through natural resource management programs such as Caring for Our Country or Landcare delays interventions. She stated that even small delays in receiving funding for eradication or management efforts can greatly affect the chances of success:

> What we do have are really dedicated individuals in some of these programs. The Caring for our Country program did fund Lord Howe Island, Norfolk Island and the yellow crazy ants in the wet tropics, but that is an annual funding mechanism that does not really fit with the urgency with which we need to respond to these incursions. Also, I would point out, as I did in my report, that both Lord Howe Island and Norfolk Island had delays in actually getting their funding once it was promised to them, which delayed treatment substantially, which threw the program out right from the start.[94]

4.95 The committee notes similar evidence provided during its recent inquiry into the history, effectiveness, performance and future of the National Landcare Program. For example, Tasmanian Land Conservancy submitted to that inquiry that the Caring for our Country Program had been 'unable to deliver on much-needed outcomes for threatened species recovery and threat abatement of invasive pests through a lack of strategic goal setting, inadequate funding and complicated delivery mechanisms at nation, state and local NRM regional levels.'[95]

4.96 The Tasmanian Land Conservancy commented that 'realistic and adequate funding for recovery and threat abatement plans is essential to ensure all actions identified can be carried through to fruition.' It also emphasised the importance of addressing environmental threats as quickly as possible:

> For many threatened species time is an imperative and priority conservation efforts should focus on securing and protecting existing habitat to stabilize small or declining populations, building community and cultural capacity to take ownership of this work into the future, and strengthening biosecurity investment to reduce the potential for further threats to take hold.[96]

4.97 Finally, the WTMA also submitted that the transition from attempted eradication to surveillance and management is made, and may be justifiable, at a state-wide level, as occurred with yellow crazy ants in Queensland. However, this

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93 Mr Andrew Maclean, Executive Director, Wet Tropics Management Authority, *Committee Hansard*, 31 October 2014, p. 17. See also discussion of funding for yellow crazy ant programs in the wet tropics at Dr Lori Lach, *Supplementary Submission 76.1*, pp 2–3.

94 Dr Lori Lach, *Committee Hansard*, 11 December 2014, p. 61.

95 Tasmanian Land Conservancy, *Submission 30* (Senate Environment and Communications References Committee, National Landcare Program inquiry), p. 2.

96 Tasmanian Land Conservancy, *Submission 30* (Senate Environment and Communications References Committee, National Landcare Program inquiry), p. 2.

governance arrangement does not include any mechanisms to continue efforts to protect particular regional assets, such as the Wet Tropics World Heritage Area:

> Transition to management across the state can also mean that local governments and landholders then bear the burden of costs and responsibilities for local infestations. This devolution of responsibility and costs does not offer any real incentive to succeed in managing biosecurity threats and, in fact, may be sometimes be seen to offer a temptation not to make the necessary and expensive efforts to succeed in preventing environmental impacts. The devolution of responsibility also means that there is no coordinated regional response beyond that now arranged by the Authority and individual landholders will typically be frustrated in their eradication and control efforts due to re-infestation from neighbouring properties.[97]

4.98 The Government of South Australia expressed its support for the ongoing eradication program for red imported fire ants in south east Queensland, stating that it believes the incursion was of national significance and therefore should be 'jointly funded by all jurisdictions until such time that it is shown that it is not technically feasible to pursue this strategy.' Should it become impossible to eradicate the red imported fire ant, it should be the subject of a national containment program. The South Australian Government cited containment costs in the USA of $6.4 billion for 2013 as evidence of the costs that may be incurred if this incursion is not eradicated or contained.[98]

4.99 The Western Australian Department of Agriculture and Food was less supportive of the continuation of the red fire ant eradication program in south-east Queensland. It submitted that Western Australia has so far contributed around $10 million to the eradication program in south-east Queensland, but noted that after 13 years and $250 million of total funding, the eradication program has not yet succeeded. The department's submission states:

> WA has raised concerns about the on-going governance and funding of the program and has not agreed to funding of the program in 2014/15, but agreed to fund half the amount on an orderly wind down and its share for any independent review of the governance and funding models of the program.[99]

4.100 The Department of Food and Agriculture did, however, express support for the response to the red imported fire ant incursions near Gladstone in Queensland, stating that the Western Australian Government had agreed to contribute approximately $180,000 over three years towards this response.[100]

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97 Wet Tropics Management Authority, *Submission 23*, p. 10.

98 Government of South Australia, *Submission 86*, p. 9.

99 Department of Agriculture and Food (WA), *Submission 80*, p. 4.

100 Department of Agriculture and Food (WA), *Submission 80*, p. 4.

4.101 Industry also incurs costs due to red imported fire ant incursions. The NGIA stated that its members were facing over $18 million per year in movement protocol compliance costs, totalling over $210 million over the past 14 years.[101]

4.102 CASAP noted that ant management in Australia is possibly most advanced for the yellow crazy ant, given the number of localised eradications that have been undertaken and the amount of research being undertaken to support management strategies. However, CASAP also noted that the 'long-term prospects of alleviating the spread of [yellow crazy ant] within Australia have been significantly reduced by the cessation of [yellow crazy ant] management by Biosecurity Queensland'.[102]

4.103 CASAP made the following two recommendations about future yellow crazy ant management in Australia:

1. Management of YCA [yellow crazy ant] in Australia needs to be focused on preventing further incursions in imported goods, coupled with eliminating or effectively containing the few currently restricted populations established on the mainland to prevent further spread.
2. Management would be greatly enhanced by the recognition that eradications largely take longer than typical funding timeframes, and therefore funding for such strategic investment needs to have better continuity when multiple grants are required.[103]

Conclusion

4.104 Information supplied to the committee indicates that incursions by pests and diseases that pose a threat to the environment have occurred regularly in recent years. Plant pests and diseases and weeds appear to make up the majority of detected incursions.

4.105 The committee notes that statistics on environmental biosecurity should not be considered comprehensive as they only report incursions that have been detected. Invasive organisms are often present in Australia for some period of time prior to their detection.

4.106 Eradication programs have produced mixed results and, as illustrated by the myrtle rust and tramp ant examples discussed above, response efforts appear to commonly be hampered by the following problems: delays in initial detection; delays in establishing reliable identification; delays in both attaining and maintaining funding; and incomplete implementation of existing abatement plans.

4.107 The tramp ant and myrtle rust examples also clearly illustrate that the nature of some invasive species is such that, once they become established in the environment, they are very expensive to either eradicate or manage.

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101 Nursery and Garden Industry Australia, *Submission 55*, p. 3.

102 Christmas Island Crazy Ant Scientific Advisory Committee, *Submission 78*, p. 16.

103 Christmas Island Crazy Ant Scientific Advisory Committee, *Submission 78*, p. 16.