

## Pest animal issues confronting agriculture

### Overview

- 2.1 The committee's terms of reference for this inquiry refer to the identification of 'nationally significant pest issues'. The committee received a wide range of submissions dealing with a number of different pest animals. These include exotic vertebrate species, exotic invertebrate species and native species that are considered to pose a threat to agriculture.
- 2.2 The pest animal issues that were identified in evidence presented to the committee are outlined below. Of these issues, some are of national significance in the sense that they pose a problem across most states and territories of Australia. Wild dogs, feral pigs, rabbits and foxes are four examples of pest animals that have a significant impact across much of Australia.
- 2.3 Other pest animal issues are of national significance in the sense that they seriously impact on Australian agriculture, which has adverse implications for the national economy. Although these animals may constitute a problem only in certain areas, the impact that they have on productivity in the agricultural sector justifies their identification as pest animals of national significance. This is also the case with pest animals that impact on the environment.

- 2.4 While defining the term 'pest animals of national significance' broadly, the committee considers that the worst pest animal issues facing Australian farmers relate to wild dogs, feral pigs, rabbits and foxes. The committee has, accordingly, placed emphasis on issues relating to control of these animals in preparing its report.
- 2.5 The committee's terms of reference refer to pest animals that have an impact on agriculture. The committee notes, however, that many of the pest animal species that impact on agriculture also cause serious damage to the environment and, indeed, many submissions referred to environmental impacts. The committee has therefore made reference to these environmental impacts in its outline of pest species below.

### Definition of 'pest animal'

- 2.6 It is important to identify at the outset of this report what is meant by the term 'pest animal'. Making recommendations in relation to pest animal problems is complicated by the fact that there is no uniform national view in relation to the pest status of particular animals. A useful example is the feral horse, or 'brumby' as it is commonly known, which is variously considered to be a pest, a valuable resource and a national icon.<sup>1</sup>
- 2.7 The evidence received by the committee identified a range of species categorised by various individuals and organisations as pest animals. A consideration of this evidence naturally must commence with a definition of the term 'pest'.
- 2.8 The Bureau of Rural Sciences (BRS), in an appendix to its submission, included the following definition of a pest:

The word 'pest' is generally used to describe an animal that conflicts with human interests. Such a pest may be destructive, a nuisance, smelly, noisy, out of place or simply not wanted. A more precise and workable definition includes only those animals that cause serious damage to a valued resource. A pest may be an animal that was originally spread by humans to new lands - this is particularly the case in Australia. Or, it might be a native animal such as a kangaroo, possum or parrot.<sup>2</sup>

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1 Associate Professor AW English, *Report on the Management of Feral Horses in National Parks in New South Wales*, NSW NPWS, 2001, viewed 21 September 2005, <[http://www.nationalparks.nsw.gov.au/PDFs/english\\_report\\_final.pdf](http://www.nationalparks.nsw.gov.au/PDFs/english_report_final.pdf)>, p. 13.

2 BRS, *Submission 76, Attachment E, P Olsen, Australia's Pest Animals: New Solutions to Old Problems*, BRS, Canberra, 1998, p. 13.

- 2.9 The committee considers this definition to be a useful one for the purposes of this inquiry. In accordance with the terms of reference for the inquiry, a pest animal is any animal which causes serious damage to resources valued by those involved in the agricultural industry. It includes animals which harm or destroy livestock, eat pasture or crops, pollute water holes, damage fences and farming property, and otherwise hinder farmers and pastoralists in pursuit of their livelihoods.
- 2.10 Animals that adversely impact on the environment can also be characterised as pest animals under this definition, because they adversely impact on native flora and fauna and biodiversity. Some pest animals, such as wild dogs, have an impact on both agriculture and the environment, while others, such as cane toads, primarily affect the environment. Native species can also have a detrimental effect on both agriculture and the environment, for example by browsing crops and native vegetation and causing damage to fences.
- 2.11 The committee received a number of submissions indicating that native species can constitute pest animals or have pest impacts.<sup>3</sup> Some submissions pointed to the fact that native species can alter their behaviour due to changes in their environment, which may be caused by drought and other factors; this sometimes leads to localised explosions in the populations of those animals.<sup>4</sup>
- 2.12 The committee acknowledges that native species are considered by some to be pest animals. Throughout this report, therefore, references to 'pest animals' may include native species that have pest impacts. The committee agrees, however, with the submission of Animal Control Technologies, that native species that have pest impacts in certain areas are better characterised as 'local pest problems' rather than 'pest animals' generally.<sup>5</sup> The committee emphasises that native species such as kangaroos and possums should not be characterised as pest animals generally, however they may be considered as pests in local areas where they have an impact on rural enterprises.

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3 *Submissions 1, 8, 9, 15, p. 1, 18, 31, p. 7, 44, p. 3, 46, 59, p. 10, 66, 67, 70, p. 6, 71, 77, pp. 2-3, 78, p. 3, 80, p. 5, 84, p. 17, 92, p. 2, 100, p. 3, Mr Graham Hillyer, Bombala RLPB, Transcript of evidence, 9 September 2005, p. 1, Mr Jack Jones, Ovens Landcare Network, Transcript of evidence, 18 June 2004, p. 2, Mr Christopher Gibson, VFF Wangaratta Branch, Transcript of evidence, 18 June 2004, p. 14.*

4 *Submissions 5, pp. 4-5, 52, p. 3, 84, pp. 17-18, 90, 100, Dr Tony Peacock, PAC CRC, Transcript of evidence, 11 May 2005, pp. 4-5.*

5 *Submission 84, p. 18.*

- 2.13 The committee acknowledges that classification of native species as 'pests' is a controversial issue. The Conservation Council of Western Australia (CCWA) and the federal Department of Environment and Heritage (DEH) both gave evidence that they preferred the term 'resources' rather than 'pests' for over-abundant native species.<sup>6</sup>
- 2.14 The committee agrees that, where the potential exists for native species to be utilised for benefit, they are indeed a valuable resource. The term 'resource' is therefore appropriate when referring to over-abundant populations of kangaroos, possums and other native species that can be commercially harvested. Although in a general way, it is appropriate to refer to all native species as 'resources', because of their inherent value as Australia's native species, this report uses the word 'pest' to refer to both exotic and native species that have pest impacts.
- 2.15 While acknowledging that native species can be considered as pest animals in some circumstances, the committee notes that the focus with a native pest species will be to manage impacts while conserving the population generally. The ultimate goal with exotic pest species will be the elimination or removal of the species.
- 2.16 Set out below are descriptions of the major pest species impacting on agriculture in Australia. Some species are specific to a particular region, while others have an impact across several states and territories. For each pest species, known information about population density and distribution, the nature of the damage caused and methods used to control populations are included. Although most evidence received focused on the impact of vertebrate pest species, invertebrate pests also have a serious impact on Australian agriculture.

## **Pest animals in Australia**

- 2.17 Currently there are more than 70 introduced animal species that have established wild populations on mainland Australia, including 25 mammal, 20 bird, four reptile, one amphibian and at least 23 freshwater fish species.<sup>7</sup>

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6 Mr Chris Tallentire, CCWA, *Transcript of evidence*, 11 April 2005, p. 2, Mr Mick Trimmer, Wildlife Trade and Sustainable Fisheries Branch, DEH, *Transcript of evidence*, 1 June 2005, p. 1.

7 Q Hart, 'Managing Pest Animals in Australia', *Science for Decision Makers*, DAFF, Canberra, November 2002, viewed 28 September 2005, <<http://www.affa.gov.au/content/output.cfm?ObjectID=E23D076B-FF78-43B6-BFAAC1E07FB3EAD7>>, p. 2.

- 2.18 Various species have been introduced to Australia for a number of reasons including for the provision of transport (horses, camels), food (cows, pigs, goats), wool (sheep, llamas), leather (cows), sport (deer, rabbits) or pets (cats, dogs). Foxes, rabbits and trout were legally released to provide sport. Some species, such as the Indian myna, have been released illegally.<sup>8</sup> While animals such as cows and sheep provide the basis for important agricultural industries, other species such as foxes and rabbits have become serious pests, while still others are both valuable domestic animals and pests, for example pigs, horses, deer and goats.

## Vertebrate Pests

### Wild dogs

- 2.19 Wild dogs and dingoes are distributed across most of the Australian mainland, with the exception of sheep and cereal growing areas of south-eastern Australia.<sup>9</sup> Wild dogs commonly attack sheep, but also prey on cattle and goats.<sup>10</sup> Sheep that are killed are often left uneaten, meaning that even relatively low dog populations can result in high stock losses. The committee heard evidence that a single dog can cause between \$50,000 and \$120,000 damage to a farmer's livestock production in one year.<sup>11</sup>
- 2.20 A complicating factor associated with wild dog control is their inter-breeding with dingoes, which were introduced to Australia approximately 4,000 years ago and are considered by many to be a native species. Frequent inter-breeding between wild dogs and dingoes is a threat to the survival of the pure-bred dingo. Accordingly, some groups in the community have concerns about the impact of wild dog control on dingoes.

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8 Hart, p. 2.

9 Except where otherwise indicated, information about wild dogs taken from BRS, *Submission 76, Attachment G*, P Fleming, L Corbett, R Harden and P Thomson, *Managing the Impacts of Dingoes and Other Wild Dogs*, BRS, Canberra, 2001, pp. 1-3, 23, 72.

10 *Submissions 3, 4, 5*, pp. 2-3, 7, 10, 11, 18, 19, p. 2, 26, 27, pp. 1-3, 39, 51, 53, p. 1, 65, 74, 83, 102, 103.

11 Ms Noeline Franklin, Victorian and NSW Wild Dog Coordinating Committee, *Transcript of evidence*, 11 August 2004, p. 16.

- 2.21 The committee received some evidence indicating that the dilution of the dingo gene pool is such that the pure-bred dingo may no longer exist in the wild.<sup>12</sup> In Western Australia, however, the committee was told it is likely that populations of pure-bred dingoes still exist in the north Kimberley region.<sup>13</sup>
- 2.22 In the New South Wales Kosciusko region, skin samples are taken from all dogs trapped or shot within the Tumbarumba Working Group area and analysed at the University of New South Wales. This is intended to provide some indication of the level of cross-breeding in the wild dog population.<sup>14</sup>
- 2.23 The principal control techniques used for wild dogs are exclusion fencing, shooting, trapping and poisoning (usually with 1080 poison). While bounties have also been used as a means of control since 1836, studies have found them to be largely ineffective.
- 2.24 Wild dogs are increasingly becoming a problem in urban areas as populations move into rural areas due to urban sprawl, and people make lifestyle choices to move from the city to the country. Limited control methods are available in these areas due to restrictions on the use of poisons, traps and firearms in heavily populated regions.<sup>15</sup>
- 2.25 Some of the evidence received by the committee relating to wild dogs indicated that the problem has increased significantly over the last decade or so and is continuing to increase.<sup>16</sup> Evidence points to both an increase in the numbers of dogs in many areas, and also the fact that dogs are exhibiting bolder behaviour in terms of their attacks on sheep and cattle, and menacing humans.<sup>17</sup>

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12 N Ward, 'Summation', in *Exhibit 3, Proceedings of the National Wild Dog Summit*, Wodonga, 22 February 2002.

13 Mr Michael Everett, DAWA, *Transcript of evidence*, 22 July 2005, p. 19.

14 *Exhibit 7, TFAWG, Co-operative Wild Dog/Fox Management Program*, Draft no. 5, March 2002, p. 6.

15 C McGaw, 'Wild Dogs: a Queensland Agency Perspective', in *Exhibit 3, Proceedings of the National Wild Dog Summit*, Wodonga, 22 February 2002.

16 *Submissions 11, 35, 40, 42, 65, 73, 83, 85, 86*, p. 3, 93, Mr Russell Murdoch, New South Wales Upper Murray Graziers, *Transcript of evidence*, 18 June 2004, p. 42, Mrs Alison Burston, *Transcript of evidence*, 18 June 2004, p. 59.

17 J Thistleton, 'Fatal dog attacks certain: farmers', *The Canberra Times*, 22 June 2005, p. 9.

2.26 Mr Rodger Connley, a farmer near Omeo in Victoria, stated:

[Y]ou would hardly see a dog during the daytime before. You can just about go out to the bush at any time of the day now and you will see dogs, whether you are driving along the road or you are riding your horse through the bush.<sup>18</sup>

2.27 Mr Edgar Richardson, of the Western Australian Pastoralists and Graziers Association (PGA), told the committee that when dogs are seen in the daytime, this indicates that they are present in large numbers.<sup>19</sup>

2.28 The seriousness of the wild dog problem is illustrated by the fact that, even where major efforts have been made to control the dog population, sheep farmers are still having their stock destroyed by attacks. Mrs Alison Burston, a farmer from Benambra in Victoria, gave evidence that despite more than 730 dogs being destroyed between April 2003 and 2004, there was no corresponding decrease in sheep attacks or dog sightings.<sup>20</sup>

2.29 In Cooma, the committee received the following evidence from Mrs Marion Kennedy, Chairperson of the Adaminaby Yaouk Wild Dog Committee:

Over the years [the wild dog problem] has cost us thousands of dollars through sheep losses, wool losses and lamb losses. Future breeders have been killed and ewes have been killed through not joining up and the dogs chasing them. We have cut our sheep numbers by over half. You can stand only so much loss from your income. It is very depressing going into your paddocks when the dogs are killing. It becomes very emotional. We should be able to make a living from our properties, and we should not be handicapped because we live next door to national parks. I think that some compensation should be paid for stock losses.<sup>21</sup>

2.30 The committee also heard evidence of people who are being forced out of sheep due to the wild dog problem, and how this in itself can hide the true extent of the problem:

Further to Harley [Hedger]'s comments, the stock losses are not necessarily increasing. The authorities can say, 'The losses are not all that great,' but they are not so big because of what Harley has just indicated: people are going out of sheep. There are huge areas

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18 *Transcript of evidence*, 18 June 2004, p. 60.

19 *Transcript of evidence*, 20 July 2005, p. 5.

20 *Transcript of evidence*, 18 June 2004, p. 59.

21 *Transcript of evidence*, 9 September 2005, pp. 40-41.

where this is happening ... and people have had to give up running sheep there because the dogs caused too big a loss.<sup>22</sup>

- 2.31 Wild dogs are carriers of hydatids, which are a risk to human health and cause production losses in cattle and sheep. Feral dogs also carry the virus *Neospora caninum* which induces abortion in cattle. The committee received evidence that *Neospora* is having a serious impact on cattle farmers throughout Australia.<sup>23</sup> For example, Mr Geoff Burston, a farmer at Benambra, told the committee:

Our main concerns at Camerons are the loss of calves, two dogs and the introduction of *Neospora*. In areas of Queensland and northern New South Wales and in the Bega area, it is mainly seen in dairy herds where the farmers are handling the cattle all the time. The calving percentage is on average down between 15 and 35 per cent, with the other cattle aborting, and in some instances they have had up to 80 per cent abortions.<sup>24</sup>

- 2.32 AgForce, the peak rural lobby group in Queensland, stated in its submission that feral dogs are estimated to cost the cattle industry at least \$9 million per annum through the spread of these diseases.

*Neospora caninum*, a microscopic parasite ... has been shown to be a significant cause of bovine abortion, lower milk production and reduced weight gain in cattle throughout the world.

In some areas such as the north coast of NSW, *neosporea caninum* is thought to be responsible for over 30% of abortions in cattle and initial investigations in northern Queensland dairy herds estimated that over 25% of these cattle are infected with this parasite. The extent of the impact of *neosporea caninum* on the Queensland beef industry is yet to be fully investigated.<sup>25</sup>

- 2.33 Although some sheep farmers have switched to cattle due to problems experienced with wild dogs, this is not necessarily a solution because dogs also attack cattle. Dogs will eat most of the cow or calf that they attack, so there is often no evidence once a kill has taken place, however farmers have witnessed dogs attacking cattle and so know that it occurs.<sup>26</sup>

22 Mr John Alcock, Monaro Merino Association, *Transcript of evidence*, 9 September 2005, p. 21.

23 *Submissions 4, 11, 22, 27*, p. 2, 35, 39, Mrs Ellen Green, NSW FACDC, *Transcript of evidence*, 9 September 2005, p. 25, Mr Michael Hartmann, CCA, *Transcript of evidence*, 15 June 2005, p. 9.

24 *Transcript of evidence*, 18 June 2004, p. 58.

25 *Submission 27*, p. 2.

26 *Submissions 10, 35, 86*, p. 3, Mr Phillip Coysh, *Transcript of evidence*, 18 June 2004, p. 48, Discussions at Warrawagine Station, Western Australia, 21 July 2005, Roundtable with Leonora pastoralists, 12 April 2005.



Proceedings from the Wodonga Wild Dog Summit, held in February 2002, indicate that wild dogs can cause up to 30 percent predation loss of calves.<sup>27</sup>

- 2.34 An additional problem with wild dogs is that, because they only take certain parts of sheep that they have killed, the rest of the carcass is left behind and provides food for a number of other pest animals, including pigs, foxes and eagles.<sup>28</sup>
- 2.35 Feral dogs also have a serious environmental impact because they prey on native fauna.<sup>29</sup> This is not only a problem in itself; the reduction in the native browsing population also increases the amount of vegetation on forest floors, which is dangerous because it creates increased fuel loads for bushfires.<sup>30</sup>
- 2.36 The committee considers that feral dogs are the most serious pest animal currently facing Australian sheep and cattle farmers. They are also one of the most significant pest animal problems for Australian agriculture generally.

## Feral pigs

- 2.37 Feral pigs are widely distributed throughout Queensland, the Northern Territory, New South Wales and the Australian Capital Territory, with isolated populations in Victoria, Kangaroo Island, in Western Australia and on Flinders Island.<sup>31</sup> Estimations of the feral pig population range from 3.5 million to 23.5 million, however the population varies each year according to environmental conditions.

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27 L Allen, 'Managing wild Dog Impacts', in *Exhibit 3, Proceedings of the National Wild Dog Summit*, Wodonga, 22 February 2002.

28 Ms Noeline Franklin, Victorian and NSW Wild Dog Coordinating Committee, *Transcript of evidence*, 11 August 2004, p. 4.

29 Mr John Alcock, Monaro Merino Association, *Transcript of evidence*, 9 September 2005, p. 14, Mrs Betty Murtagh, VFF Barnawartha Branch, *Transcript of evidence*, 18 June 2004, p. 23, Mr John Sinclair, *Transcript of evidence*, 18 June 2004, p. 73.

30 Victorian and NSW Wild Dog Coordinating Committee, *Submission 66*, Mrs Alison Burston, *Transcript of evidence*, 18 June 2004, p. 59.

31 Except where otherwise indicated, information about feral pigs taken from BRS, *Submission 76*, Attachment F, D Choquenot, J McIlroy and T Korn, *Managing Vertebrate Pests: Feral Pigs*, Bureau of Resource Sciences, Australian Government Publishing Services, Canberra, 1996, pp. 1-3, 13, 43.

- 2.38 Feral pigs attack lambs, trample and feed on crops, damage fences and water sources, reduce crop yields for sugarcane and some tropical fruits, and cause land degradation.<sup>32</sup> They also consume native plants and animals, including frogs, lizards, snakes, turtles and ground nesting birds.
- 2.39 There is potential for feral pigs to spread exotic diseases, particularly foot-and-mouth disease, which could have disastrous consequences for the Australian meat export market in the event of a break-out. Feral pigs are also vectors of diseases and parasites that can affect livestock and humans, the main ones being leptospirosis, brucellosis, melioidosis, tuberculosis and sparganosis.
- 2.40 A number of submissions received by the committee expressed concern about the issue of foot-and-mouth disease.<sup>33</sup> The Hume Rural Lands Protection Board (RLPB) stated:
- The large Feral Pig population in Australia will prove to be a National Disaster in the event that an Exotic Disease such as Foot and Mouth Disease is introduced. The Feral Pig population will act as a reservoir of infection and make it almost impossible for Australia to achieve a free status in the eyes of the International Community, especially in those countries that would benefit from the agricultural trading restrictions that would be placed on Australia. The loss of export income to Australia combined with the huge expense required to implement a nation wide eradication for pest animals including Feral Pigs, Deer and Goats would be catastrophic.<sup>34</sup>
- 2.41 Poisoning is a widely-used control method for wild pigs, particularly using 1080. Aerial and on-ground shooting are also common, however populations recover quickly following shooting programs. Trapping is also practised, however the results are variable.
- 2.42 There is significant export of wild pig meat to Europe and there is also a strong pig-hunting industry in Australia.

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32 *Submissions 4, 5, p. 4, 19, p. 2, 27, p. 3, 49, p. 2, 78, p. 2, 82.*

33 *Submissions 19, p. 2, 58, pp. 1-2, 77, p. 2, 78, p. 2, 81, p. 3.*

34 *Submission 77, p. 2.*

## European rabbit

- 2.43 Rabbits are one of the most widely distributed mammal populations in Australia and are found in most land types south of the Tropic of Capricorn. North of the Tropic of Capricorn they are generally restricted to deep or shaded warrens in fertile soil areas or areas with a shallow watertable.<sup>35</sup> Because rabbit abundance varies greatly with seasonal conditions, it is difficult to provide a reliable population estimate.
- 2.44 Mr Terry Hore submitted that the rabbit population in the area of Glastonbury in the Shire of Cooloola, Queensland, has markedly increased in the last four years.<sup>36</sup>
- 2.45 As well as constituting a serious threat to the survival of some native plant species, rabbits compete with sheep for pasture, especially during and immediately after drought. This results in fewer livestock, lower wool clip per sheep, lower lambing percentages, lower weight gain, breaks in wool and earlier stock deaths in time of drought. Rabbits also cause significant crop losses.<sup>37</sup> Environmental problems caused by rabbits include soil erosion resulting from burrowing, and threats to the survival of native species due to competition for food and shelter.
- 2.46 Foxes and feral cats are major predators of rabbits, and populations of both may rapidly decrease following a decline in the rabbit population. In some areas, there is also a correlation between the rabbit population and the wild dog population.
- 2.47 Rabbit numbers dropped significantly following the introduction of myxomatosis in 1950. It is estimated that current densities are about five percent of pre-myxomatosis densities in higher rainfall areas and about 25 percent in rangelands areas.
- 2.48 Rabbit Calicivirus, also known as Rabbit Haemorrhagic Disease (RHD) has also had a tremendous impact on the rabbit population in Australia. RHD escaped from off-shore quarantine in late 1995 and rapidly established itself throughout mainland Australia. It has had most impact in drier regions where in some areas it initially reduced rabbit populations by up to 90 percent and populations have remained at 15-20 percent of pre-RHD

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35 Except where otherwise indicated, information about rabbits taken from BRS, *Submission 76*, Attachment H, K Williams, I Parer, BJ Coman, J Burley and ML Braysher, *Managing Vertebrate Pests: Rabbits*, Bureau of Resource Sciences/CSIRO Division of Wildlife and Ecology, Australian Government Publishing Service, Canberra, 1995, pp. 21-23, 40-1, 43, 57-59, 60, 83, 114.

36 *Submission 93*. See also Carboor/Bobinawarrah Landcare Group, *Submission 54*, p. 2.

37 AgForce, *Submission 27*, p. 4, Cobar RLPB, *Submission 78*, p. 2.

densities. RHD has had less impact in more temperate areas, with populations in some areas largely unaffected by the virus.<sup>38</sup>

- 2.49 Rabbits are most effectively controlled by clearing of harbour vegetation and warren ripping, combined with regular maintenance. Poisoning may be effectively applied as an initial 'knock-down' technique, but must be used in combination with the other two methods.
- 2.50 Rabbit harvesting is worth approximately \$10 million per annum (1995 figures) however commercial harvesting does not contribute significantly to pest control because it is mainly opportunistic and does not reduce rabbit densities to manageable levels. The industry is also subject to fluctuations in supply and demand.

### European red fox

- 2.51 The European red fox is distributed throughout southern Australia and can be found in most habitats.<sup>39</sup> Foxes are often found in agricultural areas, which offer a range of cover, food and den sites. Due to the nocturnal and elusive nature of the fox, population density is difficult to determine.
- 2.52 As well as preying on a number of native species, foxes feed on lambs and other livestock. It has been suggested that foxes may take between 10 and 30 percent of lambs in some areas. They also pose a threat as potential vectors of rabies, and diseases such as mange and hydatids.<sup>40</sup>
- 2.53 Fox control has traditionally involved a combination of bounty schemes, shooting, poisoning and trapping. Although hunters may assist individual landholders in dealing with fox problems, it is considered unlikely that hunting can play a major role in controlling fox population levels.
- 2.54 Foxes can be harvested for their fur. Australia had a flourishing fox pelt industry during the early 1980s, however prices have subsequently dropped and demand fluctuates from time to time.

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38 G Saunders and B Kay, *Rabbit Calicivirus Disease Program Report 5: Implications for Agricultural Production in Australia*, Commonwealth of Australia, Canberra, 1999, p. 2, HM Neave, *Rabbit Calicivirus Disease Program Report 1: Overview of Effects on Australian Wild Rabbit Populations and Implications for Agriculture and Biodiversity*, Commonwealth of Australia, Canberra, 1999, p. 43.

39 Except where otherwise indicated, information about European red fox taken from BRS, *Submission 76, Attachment I*, G Saunders, B Coman, J Kinnear and M Braysher, *Managing Vertebrate Pests: Foxes*, Australian Government Publishing Service, Canberra, 1995, pp. 1, 2, 11, 16-17, 27, 41, 43, 48, 56.

40 *Submissions 5, 11, 14, 17, 19*, p. 2, 27, p. 3, 41, 54, p. 1, 78, p. 2, 83.

## Mouse and rat

- 2.55 There are several different rodent species that constitute a problem for agricultural industries. They are the house mouse (*Mus domesticus*) (an introduced species), and two native species, the canefield rat (*R. sordidus*) and the grassland melomys (*Melomys burtoni*). House mice occur throughout Australia and build up in agricultural regions when conditions are favourable. The other two species occur naturally in tall coastal grasslands in tropical and subtropical areas. The black rat (introduced), the pale field-rat (native) and the long-haired rat (native) also cause damage to agriculture.<sup>41</sup>
- 2.56 In agricultural terms, the most significant impact of rodents is on grain crops in eastern Australia. As well as feeding on crops, mice damage farm machinery and electrical equipment, and damage insulation in ceilings and walls. During plagues, mice also consume and spoil feed and attack livestock in piggeries and poultry sheds. They also cause damage to orchards and vegetable crops by feeding on and fouling crops. The canefield rat and the grassland melomys feed on sugarcane stalks, allowing bacteria, fungi and insects to set in. Black rats impact mainly on macadamia, banana and avocado plantations by eating maturing fruits.
- 2.57 Rodents are vectors of a number of diseases that affect livestock and humans. These include leptospirosis, salmonellosis and toxoplasmosis (affect humans) and swine encephalomyocarditis (livestock). The banana industry in Queensland currently experiences health issues associated with leptospirosis carried by introduced and native rats. In grain growing regions of Queensland, predominantly the Darling Downs, mice are capable of transmitting salmonella, which poses risks to crops and stored produce and is also a risk to human health.<sup>42</sup>
- 2.58 Poison is the traditional method for dealing with rodents, although few rodenticides are registered for in-crop use. Other control measures involve reducing habitat favourable to rodents by grazing, spraying and slashing. Cropping techniques, such as not sowing grain until soil is moist enough to allow rapid germination and planting seeds deeper, can also minimise

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41 Except where otherwise indicated, information about mice and rats taken from BRS, *Submission 76*, Attachment K, J Caughley, M Bomford, B Parker, R Sinclair, J Griffiths and D Kelly, *Managing Vertebrate Pests: Rodents*, Bureau of Resource Sciences and Grains RDC, Canberra, 1998, pp. 1-5, 12, 49.

42 QFF, *Submission 59*, p. 8.

crop damage. Rodent-proofing buildings and storage facilities during construction also helps to protect stocks and equipment. As rodents are highly mobile, it is necessary for control programs to be cooperative arrangements covering large areas.

## Feral goat

- 2.59 A number of submissions made reference to the impacts feral goats have on agriculture.<sup>43</sup> There are estimated to be about 2.6 million feral goats spread across all states and territories except the Northern Territory and mainly concentrated in western New South Wales, southern Queensland, central eastern South Australia and Western Australia.<sup>44</sup>
- 2.60 Goats compete with livestock for feed and water and damage fences. They cause land degradation through soil damage, overgrazing and browsing established trees and shrubs. They are also potential carriers of diseases such as foot-and-mouth.
- 2.61 Feral goats are a commercial resource and approximately one million goats are mustered or shot each year. Mustering and shooting, along with trapping and the use of radio-telemetered Judas goats are the main control techniques.<sup>45</sup>

## Feral deer

- 2.62 Feral deer appear to constitute an emerging pest animal problem in several regions of Australia.<sup>46</sup> The committee was provided with evidence that they cause problems for farmers by eating pasture and damaging fences.<sup>47</sup> In environmental terms, deer trample and graze native vegetation, accelerate erosion and foul waterholes. Deer are also susceptible to diseases such as footrot and Johnes disease, which are a significant threat to Australia's meat export industry.<sup>48</sup>

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43 *Submissions 71, 77, p. 3, 78, p. 3, Mr David Saxton, TFAWG, Transcript of evidence, 18 June 2004, p. 68.*

44 Except where otherwise indicated, information about feral goats taken from BRS, *Submission 76, Attachment J, J Parkes, R Henzell and G Pickles, Managing Vertebrate Pests: Feral Goats, Australian Government Publishing Service, Canberra, 1996, pp. iii, 1-3.*

45 The use of radio-telemetry and Judas animals is explained in more detail in Chapter 6.

46 *Submissions 23, 27, p. 4, 34, 38, 44, p. 5, 62, 72, p. 2, 77, p. 3, Mr Graham Hillyer, Bombala RLPB, Transcript of evidence, 9 September 2005, p. 2, Mr David Saxton, TFAWG, Transcript of evidence, 18 June 2004, p. 68, Inspection at Connorville Station, Tasmania, 29 March 2005.*

47 *Submissions 23, 25, 27, 62.*

48 Hume RLPB, *Submission 77, p. 3.*

- 2.63 David and Penny Shaw, from Malanda in Queensland, made a submission in relation to the emerging problem of deer infestations in northern Queensland. They attributed this to a series of escapes from deer farms established in the region.<sup>49</sup>

## Feral horse

- 2.64 The feral horse is considered by the BRS to constitute a main introduced pest species of concern.<sup>50</sup> There are an estimated 300,000 feral horses in Australia, concentrated in the Northern Territory, Queensland, parts of Western Australia and South Australia and small scattered populations in New South Wales and Victoria.<sup>51</sup> Australia has the largest population of feral horses in the world.<sup>52</sup>
- 2.65 Feral horses cause both environmental and agricultural damage. They foul waterholes, accelerate erosion, trample and consume native vegetation, spread weeds through dung and mane, and compete with cattle for food and water, particularly during times of drought. Feral horses are also vectors of exotic diseases such as equine influenza and African horse sickness, and disturb cattle musters and damage fences and troughs.
- 2.66 Major control techniques for feral horses include trapping, helicopter mustering and aerial and ground shooting. High levels of feral horse populations during times of drought can result in animal welfare issues, as horses may suffer from thirst, starvation and consumption of toxic plants. Fertility control has also been used for feral horses, but there is no reliable data as to its effectiveness.<sup>53</sup>
- 2.67 Feral horses also constitute a valuable resource with products including meat for human consumption, pet meat, pharmaceutical products and hair for musical instruments, brushes and car upholstery. Feral horse populations maintained in the wild also have potential tourism value.

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49 David and Penny Shaw, *Submission 34*.

50 NRM, *Selected Ecologically Significant Invasive Species Extent and Impact: Vertebrate Pests (indicator status: for advice)*, NRM, Canberra, viewed 21 September 2005, <<http://www.nrm.gov.au/monitoring/indicators/pubs/vertebrate.pdf>>, p. 2.

51 Except where otherwise indicated, information about feral horses taken from BRS, *Submission 76*, Attachment M, WR Dobbie, D McK Berman and ML Braysher, *Managing Vertebrate Pests: Feral Horses*, Australian Government Publishing Service, Canberra, 1992, pp. xiii-xvi, 23, 26.

52 English, p. 12.

53 English, p. 9.

- 2.68 In New South Wales, a management program has been adopted for feral horse populations in national parks. This initially involved aerial culling, but this method was banned due to adverse public perceptions about its humaneness. A Code of Practice exists for the capture and transport of feral horses.<sup>54</sup>

### Feral camel

- 2.69 The feral camel is considered by the BRS to be a main introduced pest species of concern.<sup>55</sup> The Northern Territory Government submitted that the feral camel, once largely confined to outback areas, is now encroaching on pastoral areas.<sup>56</sup> The population of camels in mainland Australia is estimated to be at least 300,000, with the population approximately doubling in size every eight years.<sup>57</sup>
- 2.70 Camels have a number of impacts on agriculture and the environment, particularly the desert environment. As well as browsing several native shrub and tree species, feral camels foul waterholes, contribute to erosion and damage stock fences and infrastructure at cattle watering points. They compete with stock for water, particularly in summer months, making it sometimes necessary to pump water for stock.<sup>58</sup> There is the potential for adverse effects on the tourism industry as pristine areas of native wildlife are damaged or destroyed by camel browsing.
- 2.71 The committee received evidence that camels also cause economic loss to Aboriginal communities in Western Australia through destruction of toilets, water troughs and other infrastructure.<sup>59</sup>
- 2.72 Current methods of camel management are largely *ad hoc* and include fencing off key areas, live harvest for commercial sale and ground-based and aerial shooting.<sup>60</sup>

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54 English, pp. 3, 5.

55 NRM, p. 2.

56 *Submission 72*, p. 1, also Discussions at Warrawagine Station, Western Australia, 21 July 2005.

57 GP Edwards, K Saalfeld and B Clifford, *Population trend of feral camels in the Northern Territory, Australia*, paper forwarded by Robin Mills of Warrawagine Station.

58 Letter from Clyde Kenneth Hall, provided to Committee at Warrawagine Station, Western Australia, 21 July 2005, NHT, *The Feral Camel*, Fact Sheet, 2004, viewed 21 September 2005, <<http://www.deh.gov.au/biodiversity/invasive/publications/camel/pubs/camel.pdf>>.

59 Discussions at Warrawagine Station, Western Australia, 21 July 2005.

60 Edwards et al.



## Feral donkey

- 2.73 Field officers from the Western Australian Government gave evidence that feral donkeys constitute a pest in north-west Western Australia.<sup>61</sup> Feral donkeys, which are in significant numbers there, damage fences, compete with stock for water and pasture, contribute to erosion, and can impact on horses through their aggressive nature.<sup>62</sup>
- 2.74 In Western Australia, donkeys were controlled primarily through aerial culling between 1978 and 1994, followed by a radio telemetry program that still operates. Eighty-one thousand, four hundred and ninety-six donkeys have been eradicated in the eleven years that the Judas donkey program has been operating.<sup>63</sup> Donkeys have been locally eradicated on some 23 properties in the Kimberley, equating to 72,300 square kilometres.<sup>64</sup>

## Feral cat

- 2.75 The feral cat can survive in all climatic conditions and can be found throughout Australia. It is estimated that there could be as many as 12 million feral cats in Australia currently.<sup>65</sup>
- 2.76 The major impact of feral cats is on the environment rather than on agriculture. Feral cats prey on a number of native species and also carry a parasite called toxoplasmosis, which causes blindness, paralysis and other adverse effects in some native species.<sup>66</sup>
- 2.77 With regard to the impact on agriculture, the committee received evidence that cats prey on newly-born livestock and are potential carriers of exotic diseases such as rabies, toxoplasmosis and sarcosporidiosis.<sup>67</sup>
- 2.78 Although feral cats prey on rabbits, they act as a control on rabbit populations only at times of low rabbit densities. At other times, rabbits simply help to support an increased cat population.<sup>68</sup>

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61 Mr Richard Watkins, DAWA, *Transcript of evidence*, 22 July 2005, pp. 1-2.

62 Mr Richard Watkins, DAWA, *Transcript of evidence*, 22 July 2005, p. 8, BRS, *Submission 76*, Attachment B, M Bomford and Q Hart, 'Non-indigenous vertebrates in Australia' in Dr D Pimentel (ed), *Biological Invasions: Economic and Environmental Costs of Alien Plant, Animal, and Microbe Species*, CRC Press, New York, 2002, pp. 36-37.

63 Powerpoint presentation by Mick Everett at public hearing, 22 July 2005.

64 APB, *Annual Report 2002-2003*, APB, South Perth, p. 21.

65 NSW NPWS, *Feral Cats*, DEC, 16 December 2004, viewed 13 October 2005, <<http://www.nationalparks.nsw.gov.au/npws.nsf/Content/Feral+cats>>.

66 CWA NSW, *Submission 19*, p. 2, Land Protection, *NRM Facts: Feral cat ecology and control*, Queensland Government DNRM, June 2003, viewed 21 September 2005, <<http://www.nrm.qld.gov.au/factsheets/pdf/pest/PA26.pdf>>.

67 Cobar RLPB, *Submission 78*, p. 3.

- 2.79 Major control methods for feral cats are fencing, shooting, poisoning and trapping.<sup>69</sup>

### Cane toad

- 2.80 The committee is aware of the significant environmental threat posed by the cane toad,<sup>70</sup> and a number of submissions addressed this issue.<sup>71</sup> Although the impact of the cane toad is not completely known, cane toads may compete with native species for habitat and can poison native predators that attempt to eat them.<sup>72</sup>
- 2.81 The committee notes that funding is being injected into cane toad control. As an example, the Western Australian Government is providing \$600,000 towards mapping impacts of the cane toad on biodiversity in the Kimberley.<sup>73</sup>
- 2.82 Mr Gordon Wyre, from the Western Australian Department of Conservation and Land Management (CALM), gave the following evidence about cane toads:

A cane toad is a classic example of an almost perfect invasive species. It breeds phenomenally, it can travel anywhere, it can aestivate when conditions get dry and it kills everything that tries to eat it. You would be hard-pressed to design something that was better as an invasive species. Having said that, a lot of research has been done. I was involved in the early days in the eighties when the Commonwealth was funding research through CSIRO and James Cook University to look at stemming the tide of cane toads. You can never have enough research until you actually find whatever the key factor is that is going to be the weakness in cane toads, but unfortunately to date none of the research has found that key factor.<sup>74</sup>

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68 Land Protection Factsheet, p. 3.

69 Land Protection Factsheet, p. 3.

70 Mr Chris Tallentire, CCWA, *Transcript of evidence*, 11 April 2005, p. 1.

71 *Submissions 50, 55*, p. 5, 70, p. 11.

72 BRS, *Submission 76*, Attachment B, p. 37.

73 Mr Chris Tallentire, CCWA, *Transcript of evidence*, 11 April 2005, p. 10.

74 *Transcript of evidence*, 11 April 2005, p. 19.

## Native species having pest impacts

### Kangaroo

- 2.83 The committee received several submissions indicating that red and grey kangaroo populations are exploding in certain areas,<sup>75</sup> although this suggestion was refuted by Wildlife Advocate Incorporated.<sup>76</sup> In some circumstances, changes in land conditions such as increased food and water supply lead to over-abundance in kangaroo populations, which can result in damage to agriculture and the environment.<sup>77</sup>
- 2.84 The committee received a good deal of evidence regarding the problems posed by kangaroos for agriculturalists. Grey kangaroos eat pasture and crops, cause fence damage, and can be road hazards, often resulting in serious damage to vehicles.<sup>78</sup>
- 2.85 The primary form of control for kangaroos having a pest impact is shooting. A commercial industry for eastern grey kangaroos exists in some states.<sup>79</sup> The committee received evidence that there are some problems with the commercial harvest of kangaroos, including insufficient harvesting quotas, fickle export demand and the labour-intensive nature of ground-shooting programs.<sup>80</sup>

### Emu

- 2.86 Emus are responsible for grazing pressure on pastoral land, competing with sheep for feed, and damage to fences.<sup>81</sup> They are a particular problem in Western Australia, where the existing State Barrier Fence helps to protect crops from emus. The Western Australian Agriculture Protection Board (APB) Annual Report notes that 50,000 emus migrated to the Barrier

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75 *Submissions 27, p. 3, 77, p. 2, 78, p. 3, 80, p. 5, 84, pp. 17-18, 100, p. 11, Dr Tony Peacock, PAC CRC, Transcript of evidence, 11 May 2005, pp. 4-5, Mr Ian Lobban, VFF Barnawartha Branch, Transcript of evidence, 18 June 2004, p. 27.*

76 *Submission 91, p. 1.*

77 *ACT Government, Submission 63, Appendix, Environment Act, ACT Vertebrate Pest Management Strategy, ACT Government, 2002, p. 20, Mr Ian Lobban, VFF Barnawartha Branch, Transcript of evidence, 18 June 2004, p. 27, Hart, p. 4.*

78 *Submissions 8, p. 1, 18, 19, p. 2, 27, p. 3, 36, 54, p. 1, 74, 77, p. 2, 78, p. 3, 80, p. 5, Mr Douglas Paton, VFF, Transcript of evidence, 18 June 2004, p. 47.*

79 *SSAA and FGA, Submission 90.*

80 *BRS, Submission 76, p. 8.*

81 *Submissions 19, p. 2, 36, 78, p. 3, Mr Ian Paton, VFF Corryong Branch, Transcript of evidence, 18 June 2004, p. 47.*

Fence between July and November 2002, with approximately 20,000 of these dying from exhaustion adjacent to the fence.<sup>82</sup>

- 2.87 Committee members were provided with information at an inspection conducted at Yuin Station in Western Australia that despite emus having at times reached plague proportions, pastoralists are limited in their control options as they are a protected species.<sup>83</sup>
- 2.88 Representatives of the Western Australian Government indicated that emus can be destroyed in areas where they are impacting on agriculture. Commercial use of emus, however, requires a commercial licence, the issuing of which was suspended when emus began to be farmed commercially in Western Australia.<sup>84</sup>

## Wallaby

- 2.89 A few submissions noted that wallabies are considered pest animals in some areas.<sup>85</sup> In Tasmania, Bennett's wallaby, along with the brushtail possum and the pademelon, is considered a pest for the damage that it causes to forestry plantations by browsing on leaves and shoots from newly planted seedlings.<sup>86</sup>
- 2.90 Bennett's wallabies in Tasmania are poisoned and culled under crop protection permits on agricultural and forestry lands.<sup>87</sup> Fencing is also used widely to protect forestry plantations.<sup>88</sup> Plastic tree guards to protect forestry plantations have been trialled but are not always effective in deterring browsing by wallabies.<sup>89</sup>
- 2.91 Wallabies are also harvested commercially. The committee received evidence regarding commercial use of wallabies in Tasmania for export meat products under Tasmanian Government-approved Wildlife Trade Management Plans. The potential also exists for export of skins and fur.<sup>90</sup>

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82 APB, p. 25.

83 Inspection at Yuin Station, Western Australia, 12 April 2005.

84 *Transcript of evidence*, 20 July 2005, pp. 13-14.

85 *Submissions 56, 71*, Mr Ian Whyte, TFGA, *Transcript of evidence*, 29 March 2005, pp. 15-16, Inspection at Elverton Pastoral Company, Tasmania, 30 March 2005.

86 *Exhibit 12*, Dr T Wardlaw, *Developing alternatives to 1080 for managing browsing*, unpublished, presented to committee 29 March 2005, p. 4.

87 DPIWE, *Tasmania's Nature Conservation Strategy 2002-2006*, Tasmanian Government, viewed 21 September 2005, <[http://www.dpiwe.tas.gov.au/inter.nsf/Attachments/JCOK-5L2664/\\$FILE/NCS%20Final%20Report%202003.pdf](http://www.dpiwe.tas.gov.au/inter.nsf/Attachments/JCOK-5L2664/$FILE/NCS%20Final%20Report%202003.pdf)>, p. 41.

88 Mr Rupert Gregg, TFGA, *Transcript of evidence*, 29 March 2005, p. 10.

89 TFGA, *Submission 56*.

90 Inspection at Lenah Game Meats, Tasmania, 30 March 2005.

- 2.92 The committee notes that it is important to distinguish Bennett's wallaby from other species of wallaby, such as the yellow-footed rock wallaby, black-striped wallaby, spectacled-hare wallaby and brush-tailed rock wallaby, which are not considered to be pest animals.

## Possum

- 2.93 Brushtail possums pose a serious problem for farmers and forestry in some areas, particularly in Tasmania. Possums have a severe impact on crops and forestry plantations, and faecal matter from possums reduces feed intake and can taint the milk produced by dairy cattle.<sup>91</sup>
- 2.94 Possums in high numbers may also constitute a pest in parts of Queensland.<sup>92</sup> Both brush and ring tail possums are in high abundance in some urban areas.<sup>93</sup> Possums are also responsible for defoliation of native forests in areas of Tasmania.<sup>94</sup>
- 2.95 In Tasmania, fencing (conventional and electric), shooting and poisoning with 1080 are the most common control methods.<sup>95</sup> Possums are culled and poisoned under crop protection permits, mainly on agricultural and forestry land.<sup>96</sup> Brush tail possums are also commercially harvested for export meat products.

## Wombat

- 2.96 Wombats cause problems for many farmers, particularly when population numbers increase. A significant number of submissions noted that wombats dig holes under rabbit-proof fences, cause land damage and degradation, undermine buildings and affect gateways and stockyards.<sup>97</sup>

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91 TFGA, *Submission 56*, Mr Rupert Gregg, TFGA, *Transcript of evidence*, 29 March 2005, p. 17, Inspection at Elverton Pastoral Company, Tasmania, 30 March 2005.

92 MS O'Keeffe and CS Walton, *Vertebrate pests of built-up areas in Queensland*, DNRM Queensland, June 2001, viewed 27 September 2005, <[http://www.nrm.qld.gov.au/pests/management\\_plans/pdf/vertebratepests\\_psa.pdf](http://www.nrm.qld.gov.au/pests/management_plans/pdf/vertebratepests_psa.pdf)>, p. 14.

93 Animal Control Technologies, *Submission 84*, p. 17.

94 Forestry Tasmania, *Submission 67*.

95 TFGA, *Submission 56*.

96 DPIWE, p. 41.

97 *Submissions 1, 5, p. 4, 8, p. 1, 15, 18, 19, p. 2, 24, p. 1, 30, 51, 53, 54, p. 1, 56, 71, 74, 80, p. 5*, Mr Brian Clifford, Cooma RLPB, *Transcript of evidence*, 9 September 2005, p. 2, Mr Anthony Griffiths, VFF Wangaratta Branch, *Transcript of evidence*, 18 June 2004, p. 15.

## Grey-headed flying fox

- 2.97 A submission received from Mr Ed Biel of Oakdale in New South Wales discussed the impact of the grey-headed flying fox.<sup>98</sup> The grey-headed flying fox is a native species which attacks deciduous trees and tropical fruit plantations.
- 2.98 Mr Biel's submission indicates that where the region around Oakdale, Camden, Wedderburn and Thirlmere in New South Wales once supported in excess of 100 orchards, there are now only 10 or 11 orchards operating in the region, due largely to problems caused by the grey-headed flying fox. Levels of damage to crops in the vicinity of 20 to 40 percent are common.<sup>99</sup>
- 2.99 Mr Biel's evidence was supported by the New South Wales Farmers' Association (NSWFA), which reported that grey-headed flying foxes damaged between 10 and 60 percent of New South Wales' east coast fruit industry crops and caused an estimated \$32 million loss in 2002-03.<sup>100</sup> Other submissions supported the argument that grey-headed flying foxes are a pest to fruit growers and orchardists.<sup>101</sup>
- 2.100 Humane Society International emphasised that populations of grey-headed flying foxes are at low levels, and that culling of the species is therefore unacceptable.<sup>102</sup>

## Pest birds

### Wedge-tail eagle

- 2.101 A number of submissions drew attention to the problem of wedge-tail eagles preying on livestock, particularly lambs, but also sheep and goats.<sup>103</sup> Wedge-tail eagles are a protected species in some states and territories, making options for control limited. Prior to protection, control was effected using a combination of poison baits and shooting. Netting of farms is not a practical option due to the extensive area of farms for which eagles constitute a problem.<sup>104</sup>

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98 *Submission 21.*

99 Mr Ed Biel, *Submission 21*, p. 2.

100 NSWFA, *Submission 31*, p. 7.

101 *Submissions 59*, pp. 8-9, *84*, p. 37, 90.

102 *Submission 88*, pp. 3-4.

103 *Submissions 5*, p. 4, *31*, p. 19, 36, 78, Mr Bart Jones, PGA, *Transcript of evidence*, 20 July 2005, p. 11, Mr Geoffrey Burston, *Transcript of evidence*, 18 June 2004, p. 57.

104 NSWFA, *Submission 31*, pp. 7-8, 13.

- 2.102 It was also suggested that population numbers of wedge-tail eagles are not clearly known and that adequate population monitoring needs to be put in place.<sup>105</sup>

## Starling

- 2.103 The committee received evidence about the impact of starlings on agriculture. Mr Bernie Masters, formerly the member for the seat of Vasse in the Western Australian Parliament, described how starlings plague soft fruit and cereal crops, and destroy food crops by defecating on them.<sup>106</sup>
- 2.104 Dr Andrew Woolnough, from the Vertebrate Pest Research Section of the Department of Agriculture, Western Australia (DAWA), discussed starlings' impact on high-value crops, particularly in horticulture, grape and apple crops, contamination of sheep fleeces and consumption of stock feed in feedlots. Starlings also impact on structures such as silos by nesting in them.<sup>107</sup> Starlings carry diseases and parasites that pose health risks to people, poultry and possibly native bird species.<sup>108</sup>
- 2.105 A Judas starling program, which involves tagging a number of birds to locate starling populations and roosting areas, has been successfully conducted in South Australia.<sup>109</sup> In Western Australia, continual surveillance for starlings is carried out, and starlings are systematically trapped and shot. A total of 491 starlings were destroyed between 2002 and 2003.<sup>110</sup> Since 1976, an eradication program has been in place at Eucla and Esperance, which has so far prevented starlings from becoming established in Western Australia.<sup>111</sup>
- 2.106 There may also be means of diverting starlings away from grape-growing properties to non-grape growing areas or to adjoining non-viticultural properties.<sup>112</sup>

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105 NSWFA, *Submission 31*, p. 19.

106 Mr Bernie Masters MLA, *Submission 6*, Attachment, p. 2.

107 *Transcript of evidence*, 11 April 2005, pp. 21-22.

108 BRS, *Submission 76*, Attachment N, M Bomford, *Risk Assessment for the Import and Keeping of Exotic Vertebrates in Australia*, BRS, Canberra, 2003, p. 54.

109 APB, p. 18.

110 APB, p. 24.

111 BRS, *Submission 76*, p. 14.

112 APCCSA, *Operational Plan for 2001-2003*, South Australian Government, p. 23.

## Sulphur-crested cockatoo

- 2.107 A few submissions made reference to the sulphur-crested cockatoo as constituting a pest species during times of population abundance.<sup>113</sup> It was reported that cockatoos increase in number each year and damage horticultural crops, irrigation paddocks and trees.<sup>114</sup>
- 2.108 At Warrawagine Station in Western Australia, committee members witnessed hordes of cockatoos in hay sheds on the property. The committee was told that cockatoos accessing hay sheds and feeding on hay intended for livestock is a serious problem.<sup>115</sup>

## Long-billed corella

- 2.109 The committee received some evidence that long-billed corellas constitute a pest species in some areas of Australia.<sup>116</sup> The long-billed corella is found in a range of habitats, particularly in grassy woodland areas in southern Queensland, New South Wales, parts of Victoria and south-eastern South Australia. Long-billed corellas feed on cereal crops, particularly oat crops, harm seedlings, and also cause damage to coaxial cables, antennae and other communications equipment.<sup>117</sup>
- 2.110 Because long-billed corellas are a protected native species in many areas, methods used to control their populations are limited. Control methods include scaring, visual barriers, chemical deterrents, exclusion, shooting, poisoning, fertility control and trapping.

## Invertebrate pests

- 2.111 Although the committee did not receive a great deal of evidence about invertebrate pests, it is clear from the submissions received that they have the potential to impact seriously on Australian agriculture.

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113 *Submissions 18, 19*, p. 3, 54, p. 1, 80, p. 5, Mr Graham Hillyer, Bombala RLPB, *Transcript of evidence*, 9 September 2005, p. 1, Inspection at Elverton Pastoral Company, Tasmania, 30 March 2005.

114 Carboor/Bobinawarra Landcare Group, *Submission 54*, pp. 1-2.

115 Discussions at Warrawagine Station, Western Australia, 21 July 2005.

116 *Submission 19*, p. 3, Ms Noeline Franklin, *Transcript of evidence*, 11 August 2004, p. 15, Mr Antony Plowman, Member for Benambra, Victorian Parliament, *Transcript of evidence*, 18 June 2004, p. 37.

117 Information about corellas taken from Environment and Natural Resources Committee, *Problems in Victoria caused by Long-billed Corellas, Sulphur-Crested Cockatoos and Galahs*, Parliament of Victoria, November 1995, pp. xv, 15, 58, 66.



- 2.112 Mr Dick Bashford, of Forestry Tasmania, indicated to the committee that the absence of monitoring systems around port of entry sites in Australia provides the potential for exotic insect species to establish themselves near the port of entry sites.<sup>118</sup>
- 2.113 Since forestry plantations in many parts of Australia are located within or close to a five kilometre radius zone of entry ports, the potential for exotic invertebrate infestations of forestry plantations is significant.<sup>119</sup>
- 2.114 An example of exotic insect establishment in Australia is the Red Imported Fire Ant (RIFA), which established itself in the Brisbane City area over a five-year period before it was detected in 1999. The current eradication program for RIFA is budgeted at \$175.4 million over a five-year period.<sup>120</sup> RIFA also has the potential to cause serious environmental impacts on native invertebrates, small ground-dwelling vertebrates and large vertebrates including deer.<sup>121</sup>
- 2.115 The committee also received evidence about the impact that wingless grasshoppers have on crops in parts of Australia. Mr Ernie Constance, a farmer in the Eastern Monaro region, gave evidence that wingless grasshopper plagues in 1982 to 1983 and 1995 to 1996 wiped out pasture at huge cost to farmers.<sup>122</sup>
- 2.116 Locusts were also cited as a problem by the Country Women's Association of New South Wales (CWA), which pointed to devastating effects on crops following a recent plague in New South Wales.<sup>123</sup> Locusts have also caused recent crop devastation in Queensland, according to AgForce.<sup>124</sup>
- 2.117 Mr Craig Allen, of Jindabyne in New South Wales, submitted that the European Wasp poses a threat to agriculture and the environment. In particular, he noted that European Wasps have spread through parts of the Monaro in New South Wales and through the Australian Alps into Victoria. He called for a coordinated national approach to their control and eradication.<sup>125</sup>

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118 *Submission 2.*

119 Mr Dick Bashford, *Submission 2.*

120 DAWA, *Submission 98*, p. 12.

121 DAWA, *Submission 98*, p. 12.

122 Mr Ernie Constance, *Submission 5.*

123 CWA, *Submission 19*, p. 2.

124 *Submission 27*, p. 4.

125 *Submission 94*, see also Mr John Gell, *Submission 83.*

- 2.118 DAWA provided a detailed submission in relation to invertebrate pests. They stated that invertebrate pest animals impact significantly on broad-acre agriculture, bulk grain storage, animal husbandry, horticulture and forestry, as well as the natural and urban environments.<sup>126</sup>
- 2.119 A number of insect pests pose a serious threat to timber production systems, including the Asian gypsy moth and the Asian longicorn beetle. These pests can seriously affect native and exotic trees. Pests of softwood timber have the potential to cause serious damage to end-use timber; it is estimated that there is \$2.8 billion of timber in building construction at risk in Western Australia.<sup>127</sup>
- 2.120 DAWA also called for more research into the impacts of feral European honey bees and the exotic Bumble bee, *Bombus terrestris*, recently introduced into Tasmania. Feral bees pose a significant environmental threat because they occupy tree hollows, ousting native birds, and contribute greatly to the spread of weeds.<sup>128</sup>

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126 DAWA, *Submission 98*, pp. 5-6.

127 DAWA, *Submission 98*, p. 9.

128 DAWA, *Submission 98*, pp. 18-19, Material forwarded to committee by CCWA, 12 May 2005.