

Economic, environmental and social impacts of pest animals

Overview

- 3.1 Landholders suffer significant losses due to pest animal predation of livestock and destruction of crops and pasture. There are also tremendous costs involved in attempting to control pest animal populations, and the cost of time spent in pest control which could be productively utilised elsewhere.
- 3.2 The committee notes with concern the terrible social impact that pest animals are having on rural families and communities. This is manifested in a number of ways: through the physical and psychological stress for families of having to deal with pest problems, distress caused by constantly witnessing attacks on livestock and family pets, and in some cases the heartbreak of having to leave family properties due to a combination of drought, pest animals and weeds, and other problems.
- 3.3 Although it is not a focus of the terms of reference, the committee also notes that a substantial amount of evidence received focused on the environmental consequences of pest animals. The committee considers that the best outcome for all will be achieved if pest animal strategies take into account both agricultural and environmental impacts of pest animals. This will enable the true scope of the

problem to be ascertained, and appropriate strategies for dealing with it to be developed.

Economic impacts

- 3.4 Although pest animal control is expensive, it is a smart investment in terms of the benefits it brings to both industry and the public. Although it is difficult to calculate exactly the return on investment, a Queensland study found that every dollar invested in weed and pest animal management yielded between \$4.30 and \$6.40 in benefits.¹ In 2002, the Prime Minister's Science, Engineering and Innovation Council identified invasive species as one of four areas likely to provide the greatest return on investment in helping to stop the diminishing value of Australia's natural systems and biodiversity.² Having a clear picture of the economic impacts of pest animals enables an understanding of the significant benefits that can be derived from investment in pest animal control.
- 3.5 The committee notes that the economic impacts of pest animals can be assessed at two levels. The first is the level of scientific research, which seeks to quantify the economic cost of pest animals across Australia. Although such analyses can never be complete, due to the difficulties of quantifying things such as time spent on pest animal control and social impacts, the committee acknowledges that it is important to try to achieve a broad view picture of the impact of pest animals.
- 3.6 The second level is the experience of individual farmers, families and communities experiencing problems with pest animals. Many of the submissions received by the committee discussed the enormous economic, physical and psychological cost of having to deal with pest animal problems. The committee notes that these individual accounts are equally as important as scientific research in attempting to understand the cost to Australia of the pest animal problem.

1 *Exhibit 1, AEC Group, Economic Impact of State and Local Government Expenditure on Weed and Pest Animal Management in Queensland, Local Government Association of Queensland, Fortitude Valley, October 2002, p. 99.*

2 Prime Minister's Science, Engineering and Innovation Council, *Records of Eighth Meeting, 31 May 2002*, DEST, Canberra, viewed 13 October 2005, <http://www.dest.gov.au/NR/rdonlyres/EE0F827A-94BB-4E0C-80F5-A058293F190C/2014/Sustaining_our_Natural_Systems_and_Biodiversity_Wo.pdf>, p. 14.

Research into impact of pest animals

3.7 The most comprehensive recent figures that provide an indication of the economic cost of pest animals in Australia come from the Pest Animal Control Cooperative Research Centre (PAC CRC). In its report, *Counting the Cost: Impact of Invasive Animals in Australia, 2004* (the McLeod Report), it estimates that exotic pest animals cost the Australian economy \$720 million per annum, as indicated in the table below.

Table 1: Annual Impact of Pest Species (order of cost)

	Triple Bottom Line Impact			
	Total (\$m)	Economic (\$m)	Environmental (\$m)	Social (\$m)
Fox	227.5	37.5	190.0	Nq
Feral Cats	146.0	2.0	144.0	Nq
Rabbit	113.1	113.1	Nq	Nq
Feral Pigs	106.5	106.5	Nq	Nq
Dogs	66.3	66.3	Nq	Nq
Mouse	35.6	35.6	Nq	Nq
Carp	15.8	4.0	11.8	Nq
Feral Goats	7.7	7.7	Nq	Nq
Cane Toads	0.5	0.5	Nq	Nq
Wild Horses	0.5	0.5	Nq	Nq
Camels	0.2	0.2	Nq	Nq
Total	719.7	373.9	345.8	

Source McLeod, R. (2004) *Counting the Cost: Impact of Invasive Animals in Australia 2004*. Cooperative Research Centre for Pest Animal Control. Canberra.

3.8 This table is based on 'triple bottom line' reporting, that is, an attempt to quantify the social and environmental impacts of pest animals as well as the economic cost. Included in the economic cost calculation are control costs (baiting, fencing, shooting and research), production losses for sheep, cattle and cropping industries, and public sector research and management costs.

3.9 It is important to note that the figure of \$720 million per annum does not represent the total economic cost of pest animals to Australia. First, this figure represents only the costs of the 11 major introduced vertebrate pests studied in the report, not the impacts of *all* pest animals in Australia. It does not include the costs of many other pest species about which the committee received evidence, in particular a range of native pest species, bird pests and invertebrate pests.

3.10 Secondly, although the report attempts to provide a triple bottom line analysis, the environmental costs for most species, and the social costs of all species have not been quantified, and are presented in the report only in qualitative terms. It is evident, therefore, that the real cost of pest animals to the Australian economy is much greater than the \$720 million estimate.

3.11 Taking into consideration the economic impact alone, it is apparent from Table 1 that rabbits have the highest economic cost of any pest animal. Representatives of the BRS estimated the economic cost of rabbits at even higher than that estimated in the McLeod Report:

Mr Quentin Hart: Basically, even with RCD (Rabbit Calicivirus Disease), we still estimated that rabbits were having the major impact. In some ways it is unfortunate that with RCD a lot of focus has gone off rabbits, because there is certainly a need for further routine control there. We estimated \$200 million for rabbits, and we made a very conservative estimate of \$40 million for foxes. That was based on a five per cent impact on land production, which would probably be considered quite conservative in some areas.

Dr Bomford: You will appreciate that these are just agricultural impacts in our report. If you start looking at the effects of foxes on native species, you are going into a different ballpark.³

3.12 The committee notes that, because economic costs include control costs as well as production losses, it is perhaps not quite accurate to say that rabbits are the most serious pest animal problem in Australia currently. A breakdown of these figures shows that the annual loss to agricultural production from pigs is \$100 million compared to \$88.11 million for rabbits, but only \$6.5 million annually is spent on management and research for pigs compared to \$25 million for rabbits.⁴ Although rabbits certainly do pose a serious problem for agriculture, other pest species such as wild dogs, foxes and feral pigs also appear to be pest animals of particular significance in terms of the damage that they cause.

3 *Transcript of evidence*, 16 February 2005, p. 7.

4 R McLeod, *Counting the Cost: Impact of Invasive Animals in Australia*, PAC CRC, Canberra, 2004, pp. 14, 26.

- 3.13 The Commonwealth Scientific and Industrial Research Organisation (CSIRO) gave evidence that the impacts of several pest species are even worse than indicated in the research from the PAC CRC. Their submission suggests that the annual economic impact of some major pests is \$115 million for rabbits (lost wool production), \$500-750 million for foxes (control costs), more than \$100 million for pigs (lost production) and more than \$200 million for rodents (lost production per mouse plague).⁵ The committee notes that the figures estimated for foxes and rodents are substantially more than those provided by the PAC CRC.
- 3.14 Some pest animals have a particularly devastating effect in certain areas of Australia. The Queensland Farmers' Federation (QFF) noted that feral pigs are estimated to cost \$50 million per year through predation, competition and destruction of crops and pastures in Queensland.⁶ That is approximately half the national economic cost for feral pigs quoted by the PAC CRC.
- 3.15 The economic cost to producers of pest animals often extends far beyond the costs of lost production and direct control costs. Much time and labour is expended on baiting and other control measures. A face-to-face survey conducted in South Australia during the 1993 mouse plague revealed that the most significant cost of control was the labour needed for mouse-proofing, baiting, trapping, cleaning and disposing of carcasses.⁷
- 3.16 The authors of a recent report prepared for DEH surveyed the relevant literature and were unable to find any quantification of the economic impacts of animal diseases and invertebrate pests. For the purposes of the report, however, they assumed that animal diseases and invertebrate pests of animals cause a five percent yield loss through mortality, reduced growth rates and reduced quality. Based on a figure of \$16.8 billion as the gross value of Australian livestock slaughterings and products for 2002 to 2003, this generated a conservative estimate impact of \$840 million. Adding sales of animal health products of \$382.5 million (for 2001), the total estimated annual impact of diseases and invertebrates was \$1.2 billion. This figure does

5 *Submission 55*, p. 3.

6 *Submission 59*, p. 2.

7 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. 28-29.

not include the economic impact of invertebrate pests on native plants and the commercial plant industry.⁸

Individual accounts of economic impact

- 3.17 In addition to the comprehensive examination of economic costs conducted by the PAC CRC, the committee received a substantial amount of evidence from individual landholders and organisations about the impacts of pest animals on them and their communities.
- 3.18 Much of the evidence regarding the economic impact of pest animals was from pastoralists affected by wild dogs.⁹ Ms Noeline Franklin, from Brindabella in the ACT, who has worked for several years with families affected by wild dogs in the south-east of Australia, described some of the issues faced by people on the land, which provide the background for an examination of the losses being suffered:

I will raise some of the sorts of issues that our people are facing all too often. They have sheep and goats that they are trying to manage, as well as vegetation. They are trying to get equilibrium. Sheep and goats are massacred all too regularly, despite the fact that we have huge trapping and poisoning efforts. Dairy and beef cattle are chased over fences and harassed off pasture. Calves are taken as they are being born. Cows are starting to lose calves – they are having late-stage abortions – through neospora. Calves are turning into blood-stained dirt. We go to authorities and they say, ‘Where’s the proof?’ Do we take them a shovelful of dirt? What do we do?¹⁰

8 Agtrans Research in conjunction with Noel Dawson, *Review of Progress on Invasive Species – Final Report to Department of Environment and Heritage*, DEH, Canberra, 12 April 2005, viewed 21 September 2005, <<http://deh.gov.au/biodiversity/invasive/publications/review/pubs/review-full.pdf>>, p. 18.

9 *Submissions 10, 22, 26, 35, 39, 42, 45, 51, 86, 102, 103*, Mr Harley Hedger, Monaro Merino Association, *Transcript of evidence*, 9 September 2005, p. 20.

10 *Transcript of evidence*, 11 August 2004, p. 2.

- 3.19 The BRS provided evidence that pest animal control for non-indigenous species costs governments and landholders in excess of \$60 million per annum.¹¹ Landholders have to shoulder the costs of baiting, trapping, shooting, fencing, veterinary costs, and other costs associated with injuries and preventing disease spread.¹² In itself, this is a significant cost, however individual submitters to the inquiry focused more on production losses caused by pest animals, particularly wild dogs.
- 3.20 Mr Geoff Burston, from Benambra in Victoria, described the economic impact that wild dogs have had on his family's sheep enterprise:
- There is an economic impact on us. Our property is in three parts – Camerons, the home block and Hinnomunjie – which are about 18 kilometres apart. Over the past five years we have averaged only about 31 per cent lambs weaned as opposed to the 76-plus percentage earlier, although we have had a fairly big fox-baiting program. We calculate the reduced income from this, with not having the excess sheep to sell and the average age of the flock getting older, is about \$21,000 on a 650-ewe flock. The wool from those sheep this year made \$26,500. We are suffering about a 44 per cent loss in that area.¹³
- 3.21 Mrs Marion Kennedy, of Yaouk Valley, stated:
- Trying to make a living out of sheep in the Yaouk Valley has nearly become impossible. Over the last six months I have lost to wild dogs 110 ewes and lambs and ... 678 sheep over the years.¹⁴
- 3.22 Mr Peter Spencer, from Shannons Flat in New South Wales, submitted that last year 300 fine wool Saxon sheep were killed by wild dogs. The loss of the flock, which had a seven-year production capacity, removed from the enterprise an earning capacity of \$1 million.¹⁵

11 *Submission 76*, p. 14.

12 Braidwood RLPB, *Submission 71, Exhibit 15, Survey – Wild Dogs*, September 2002, provided by Michael and Susan Litchfield.

13 *Transcript of evidence*, 18 June 2004, p. 57.

14 *Submission 16*.

15 *Submission 100*, p. 10.

- 3.23 Kathy and Malcolm Boladeras, from Wonganoo Station in Western Australia, gave the following evidence:

Our family has lost 5,600 sheep to wild dog predation in the last 3 years. Since the first significant losses were felt in 2003 we have spent 3 days of every week, just trapping and baiting. If we didn't, we wouldn't have any sheep left at all by now. Over 100 dogs have been trapped on our property alone, and the figures for some of our neighbours are similar.¹⁶

- 3.24 The PGA gave evidence that in fringe areas directly north of Esperance, lambing percentages are down to 20 or 30 percent due to the effect of wild dog attacks and predation of lambs by wedge-tail eagles.¹⁷

- 3.25 Mr Ernie Constance, whose farm covers approximately 2,200 hectares on the escarpment of the Eastern Monaro, estimated that the personal cost to him of the wild dog problem had been more than \$200,000 over a four-year period from 2000 to 2004. This figure included the value of replacement sheep for those killed, lost wool production, loss of production due to changes in stocking options, time spent checking and moving sheep and baiting, and vehicle costs.¹⁸

- 3.26 A number of sheep farmers gave evidence that problems with wild dogs have forced them to change from sheep to cattle.¹⁹ This has a tremendous impact on farmers themselves, as well as having serious implications for the future of the Australian wool industry. Mr Bart Jones, a pastoralist from the Eastern Goldfields region of Western Australia, anticipated that, without action to curb the wild dog problem in the region, his family would have no sheep left within five years.²⁰

16 *Submission 87*, p. 1.

17 *Transcript of evidence*, 20 July 2005, p. 2.

18 *Submission 5*, p. 2.

19 *Submissions 39, 87*, p. 1, 103, *Exhibit 2*, TFAWG, *Submission*, General Purpose Standing Committee No 5 Inquiry into Feral Animals, August 2001, p. 4.

20 *Transcript of evidence*, 20 July 2005, p. 7.

- 3.27 AgForce stated in its submission that producers are being forced out of the sheep industry and into cattle production, resulting in broad scale unemployment in Queensland agricultural communities and forcing families to leave towns.²¹
- 3.28 Mr John Sinclair, a farmer from Yea-Alexandra, described some of the economic implications of switching from sheep to cattle, particularly on smaller properties:
- In relation to agricultural viability, the gross margin for sheep as against cattle in our particular high-rainfall areas is sheep at a base one and cattle about two-thirds. So the profit from cattle on a gross margin basis is about two-thirds of what it is for sheep. With the wild dog problem influencing people to move from sheep enterprises into cattle enterprises, the viability of our farms is being affected. Where farms are of a marginal size, and there are many of those, a family farm moving from sheep into cattle can certainly tip its viability over the balance. I would have thought that is of great concern not only for the people concerned but also for the Australian economy.²²
- 3.29 Mr Russell Murdoch, from the New South Wales Upper Murray Graziers, indicated that he stopped running sheep last year due to the dog problem.²³
- 3.30 The committee is aware that the cost of pest animal control for all pest animals is a significant burden on landholders. This includes not only wild dogs, but also foxes, feral pigs, rabbits and kangaroos.²⁴
- 3.31 It is apparent that pest animals have a significant economic impact, both at the national level and at the level of the individual farmer and grazier. These impacts have reached the point where some pastoralists are being forced to leave their enterprises as they are no longer economically viable. The means of addressing these problems, through enhanced prevention and detection, and improved control measures, are considered in Chapters 5 and 6.

21 *Submission 27*, p. 2.

22 *Transcript of evidence*, 18 June 2004, p. 73.

23 *Transcript of evidence*, 18 June 2004, p. 44.

24 Hume RLPB, *Submission 77*, p. 1.

Social impacts

- 3.32 Much of the evidence received by the committee referred not only to the economic impact of pest animals, but also the social consequences of having to deal with them on a day-to-day basis. These consequences are wide-ranging and include stress and family breakdown, problems associated with financial difficulty, lifestyle changes and unemployment.²⁵
- 3.33 Some of these problems were described by the State Council for the RLPB of New South Wales, in its submission:
- Impacts that also need to be taken into account, but you can't place an economic price on are social aspects on the affected landholder – not just the cost of control in terms of materials and time or labour, but the emotional stress associated with survival in their chosen industry, fear and anguish, frustration, the loss of productive land, the sleepless nights wondering when the next attack will happen, family and community breakdown, loss of self esteem or face in the community etc.²⁶
- 3.34 The impact of feral animals is also manifested in the increased pressure that is placed on landowners to manage pest animal problems on their land. Landowners are required to find additional time in their busy days to deal with attacks on stock, to undertake control measures and fulfil administrative requirements. Additionally, feelings of helplessness and lack of control are experienced by many who are faced with pest animal problems on a regular basis.²⁷
- 3.35 A number of submissions pointed to the significant health implications of pest animals, including depression and thoughts of suicide that are brought on by constantly having to deal with problems associated with living on the land.²⁸ Bruce and

25 *Submissions 31*, p. 2, 40, 42, 76, p. 6, 81, p. 5, Mrs Marion Kennedy, Adaminaby Yaouk Wild Dog Committee, *Transcript of evidence*, 9 September 2005, p. 40, Mr Douglas Paton, VFF Corryong Branch, *Transcript of evidence*, 18 June 2004, p. 46.

26 *Submission 81*, p. 5.

27 *Exhibit 10*, R Hunt and Brindabella and Wee Jasper Valley wild Dog/Fox Working Group, *Brindabella and Wee Jasper Valleys Cooperative Wild Dog-Fox Control Plan July 2002-June 2005*, 2002, p. 8.

28 *Submissions 35, 42, 78, 80*, p. 5, 81, p. 5, Mr Michael Hartmann, CCA, *Transcript of evidence*, 15 June 2005, p. 2.

Barbara Reid, Victorian sheep farmers, described some of the health implications for farmers of constantly having to deal with the after-effects of wild dog attacks:

There is nothing more depressing for a sheep farmer than to find sheep with their intestines hanging out. I am forced to deal with these animals straight away, and the only quick and humane thing to do is to cut the suffering animal's throat. Needless suffering by these poor sheep, and me being forced to slaughter them immediately, have taken their toll on my health. I have often doubted whether I should keep farming or not.²⁹

3.36 Similar evidence was provided by Mrs Betty Murtagh, Secretary and Treasurer of the Barnawartha Branch of the Victorian Farmers Federation (VFF):

The conclusion can be drawn from this that there are considerable health risks to people as well as financial and traumatic effects on the rural industry and the rural community. To come out one beautiful morning to find lambs torn to pieces and their mothers endeavouring to drag themselves around is an experience that is very hard to put out of mind. You then go on to depression and heartache and a breakdown of the family circle in rural areas because of the unnecessary tension and stress that is put on many families.³⁰

3.37 Mr Noel Cheshire, a third-generation farmer in the north-east of Victoria, spoke to the committee about the consequences of not taking action to control the wild dog problem:

We would be looking at probably 100,000 sheep, conservatively, in the north-east of Victoria. If we could get more sheep in our area, it would have enormous on-flow to the local people. You would have more shearers. You would have more people employed on farms. ... More shopkeepers. Your hospitals would be doing better. Your vet would be doing better. You would have more people in your corner stores. You would have a viable industry. But at the moment these dogs are eroding our values and our trying to keep on our farms. We were talking about the next generation of farmers. If we do not do something, we will not have another

29 *Submission 42.*

30 *Transcript of evidence, 18 June 2004, pp. 23-24.*

generation of farmers because there will be nothing left. These animals are controlling our destiny, and we have to do something seriously about it.³¹

- 3.38 The committee acknowledges the enormous social impact that pest animals have had on rural communities. Although social impacts are difficult, if not impossible, to quantify, it is important to note that they are part of the total cost to Australia of pest animal issues.

Environmental impacts

- 3.39 Although not part of its terms of reference, the committee considers it appropriate to include some of the evidence that was presented in relation to the environmental impact of pest animals. Ultimately, the committee believes that the environmental impacts and impacts on agriculture of pest animals must be dealt with together, if a proper solution to the problem is to be found.

- 3.40 Research provided by the BRS pointed to the environmental impacts of some major pest species:³²

- Rabbits feed on native plants and threaten native species through competition for food and habitat destruction. They have been responsible for the extinction of an endemic parrot and two endemic plants on Phillip Island. The cost of rabbit control is estimated at more than \$20 million per year.
- Foxes prey on a number of native species, including rock wallaby, numbat and mallee fowl. Estimated cost of control is \$7 million per year with an additional \$4 million for research.
- Feral goats compete with native fauna for food, water and shelter, and contribute to ecosystem changes. Approximately \$2 million per annum is spent on feral goat control, with about \$1.5 million in research.

31 *Transcript of evidence*, 18 June 2004, pp. 50-51.

32 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. 30-36.

- Feral cats cause major declines in small vertebrate native species populations. Nineteen species of endangered or vulnerable mammals, six species of endangered birds and two species of endangered or vulnerable reptiles are at high risk from predation by feral cats. At least \$1 million annually is spent on feral cat control, with an equivalent amount spent on research.
- 3.41 Ms Noeline Franklin provided evidence about the contribution of pest animals to the destruction of native fauna and to the devastating bushfires which ravaged the Snowy Mountain region in 2002 and 2003. She argued that wild dogs deplete stocks of grazing animals, which allows ground foliage to build up to dangerous levels, constituting a fire hazard.³³
- 3.42 The evidence outlined above represents only a fraction of the toll that pest animals take on the Australian environment. The Senate Environment, Communications, Information Technology and the Arts References Committee inquiry into invasive species dealt with the environmental impact of pest animals in much greater detail than this committee was able to, due to the scope of its terms of reference. The Senate committee found that the invasion of native ecosystems by invasive species is regarded as a major threat to biological diversity worldwide. Environmental impacts were found to include hybridisation of native and introduced species, reduction in native wildlife populations, soil erosion and impacts on native vegetation.³⁴
- 3.43 The committee believes that it is important to refer to environmental impacts, as well as agricultural impacts, in order to obtain a broad picture of the total cost of pest animal damage. The solution to pest animal problems must ultimately encompass both types of damage.
- 3.44 The tremendous costs of pest animals in Australia – economic, social and environmental – are the reason for this inquiry and provide the context for the recommendations that follow in Chapters 4 to 10.

33 *Transcript of evidence*, 11 August 2004, pp. 2-3.

34 Senate Environment, Communications, Information Technology and the Arts References Committee, *Report on the regulation, control and management of invasive species and the Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002*, Commonwealth of Australia, Canberra, December 2004, pp. 14-23.

