

The Most Unwanted: Pest, Feral, Invasive Alien, Biosecurity Risk

1. Introduction

The phrase, “the most unwanted” comes from a website hosted by the New South Wales (NSW) Department of Primary Industries (DPI), that deals with “non-native pest animals”.¹ Terms such as pest, feral, invasive alien species and biosecurity risk broadly refer to species categorised as threats to agricultural production, the environment, human health and amenity (unwanted species). The majority of these animals, including rabbits, foxes, deer, horses, cats, camels were deliberately introduced and a recent report, prepared by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), for the United Nations, notes that invasive alien species are “one of the five major direct drivers of change” together with climate change and pollution.²

In Australia, managing unwanted species traditionally relies on the use of lethal methods, an approach that from at least the nineteenth century, has polarised public opinion.³ Recent media reports reveal increasing disagreement among conservationists, farmers and animal advocates, with the latter arguing that killing, particularly aerial shooting is inherently cruel, while conservationists and farmers consider that environmental and economic benefits outweigh any perceived cruelty.⁴

This article provides an introduction to the debate, commencing with an overview of the regulatory regime. While unwanted species need to be managed, the issue is whether wholesale killing (killing to waste) is appropriate. Current processes certainly make it easier to kill unwanted animals, but do so by glossing over animal welfare concerns and do not necessarily improve long-term environmental management.

2. Becoming Unwanted

¹Department of Primary Industries NSW, “The Most Unwanted”
<https://www.dpi.nsw.gov.au/biosecurity/newsletter/december-2018/most-unwanted>.

² Helen E Roy, Anibal Pauchard, Peter Stoett *et al* (eds) *Thematic Assessment Report on Invasive Alien Species and their Control*, IPBES (2023), Summary for Policy Makers, 2.

³ J Pottie, “The Horse Question”, *Queanbeyan Age* (from the Town and Country Journal), Thursday, 20 January 1870, 1; “When you are Kept Awake”, *The Armidale Chronicle (NSW)*, Saturday 30 March 1907 p 8; Elizabeth A Denny and Christopher R Dickman, *Review of Cat Ecology and Management 13, 14 t Strategies in Australia*, Invasive Animals Cooperative Research Centre (2010), 4,5.

⁴ William Lynn, “Australia’s War on Feral Cats: Shaky Science, Missing Ethics”, October 7, 2015, the Conversation, <https://theconversation.com/australias-war-on-feral-cats-shaky-science-missing-ethics-47444>; Lara Chung, “A Feral Invasion is Destroying Our Once-Pristine National Parks”, *Sydney Morning Herald*, 4 February 2023, <https://www.smh.com.au/environment/conservation/a-feral-invasion-is-destroying-our-once-pristine-national-parks-20230201-p5ch6s.html>; Edwina Masion, “Minister Sticks to Guns in Rejecting Claims Brumbies were Inhumanely Shot During Snowy Plain Cull”, *About Regional*, 22 May 2023, <https://aboutregional.com.au/minister-sticks-to-guns-in-rejecting-claims-brumbies-were-inhumanely-shot-during-snowy-plain-cull/424058/>; Elise Adamo, “Limestone Coast Feral Deer Move Further South as SA Culling Efforts Ramp Up”, *ABC South East SA*, 9 June, 2023, <https://www.abc.net.au/news/2023-06-09/feral-deer-in-limestone-coast-moving-south/102450116>.

Australia has a complex colonial history of animal introductions, with records of the first fleet indicating that cattle, sheep, goats, horses, chickens, ducks and turkeys were transported⁵ – some of whom escaped and became feral.⁶

Horses were initially valued as farm animals, although they were later abandoned in tandem with the uptake of farm machinery,⁷ with a similar fate befalling camels and donkeys.⁸ Water buffaloes were introduced into the Northern Territory between 1825-1843, for meat farming, but were set free when settlements failed.⁹ In other cases, rabbits¹⁰ foxes,¹¹ and deer,¹² were deliberately introduced for hunting,¹³ with deer, antelope and hares, being protected by closed hunting seasons because they had been imported “at considerable expense for the benefit of the Colony”.¹⁴

Although some animals, including wild horses, steadily expanded their range throughout the nineteenth and twentieth centuries, regulators remained unconcerned because wild horses did not cause agricultural damage.¹⁵ Foxes and rabbits, however, were targeted for eradication and control,¹⁶ with rabbits being formally classified as a nuisance to agriculture in 1883.¹⁷ It is a matter of some irony, given the campaigns against cats in the 21st century, that cats were declared the enemy of the rabbit and deliberately released across Australia in their tens of thousands in failed attempts to reduce rabbit numbers.¹⁸

⁵ Tim Low, *Feral Future* Viking Victoria, Australia (1999), 24-5.

⁶ D Choquenot, J McIlroy and T Korn, *Managing Vertebrate Pests: Feral Pigs* Bureau of Resources Sciences Australian Government Publishing Service Canberra (1996) paragraphs 1.1-1.2.

⁷ Department of Sustainability, Environment, Water, Population and Communities Fact sheet Feral Horse (*Equus Caballus*) And Feral Donkey (*Equus Asinus*), (2011), <http://www.environment.gov.au/biodiversity/invasive-species/publications/factsheet-feral-horse-equus-caballus-and-feral-donkey-equus-asinus>;

⁸ Ibid; Australian Government, Department of Sustainability, Environment, Water, Population and Communities, *National Feral Camel Action Plan: A National Strategy for the Management of Feral Camels in Australia*, Department of Sustainability, Environment, Water, Population and Communities, (2010), 15, <http://www.environment.gov.au/system/files/resources/2060c7a8-088f-415d-94c8-5d0d657614e8/files/feral-camel-action-plan.pdf>.

⁹ Department of Sustainability, Environment, Water, Population and Communities Fact sheet *The Feral Water Buffalo (Bubalus Bubalis)* (2011). Available from <http://www.environment.gov.au/system/files/resources/b4a187ba-7a72-4ed2-ab06-7a8b8a1b87a0/files/buffalo.pdf>.

¹⁰ NSW Government, Environment and Heritage, *Rabbits – Fact Sheet*, <http://www.environment.nsw.gov.au/pestsweeds/RabbitFactsheet.htm>.

¹¹ Department of Sustainability, Environment, Water, Population and Communities, *Fact Sheet, European Red Fox (Vulpes Vulpes)* (2010), <http://www.environment.gov.au/system/files/resources/1910ab1d-a019-4ece-aa98-1085e6848271/files/european-red-fox.pdf>.

¹² Department of Sustainability, Environment, Water, Population and Communities Fact sheet *Feral Deer*, Department of Sustainability, (2011), <http://www.environment.gov.au/system/files/resources/c6679b32-5f03-4839-aa57-9c5723153b0f/files/fs-feral-deer.pdf>.

¹³ *Rabbits – Fact Sheet*, above 10; *Fact Sheet, European Red Fox*, above 11; *Fact sheet Feral Deer*, above 12.

¹⁴ *Game Protection Act* (1866), recital, sections 5-7, First Schedule.

¹⁵ P Bayliss and K M Yoemans, “Distribution and Abundance of Feral Livestock in the 'Top End' of the Northern Territory” (1985-86), and Their Relation to Population Control”, (1989) 16 *Australian Wildlife Research*, 651, 652.

¹⁶ Richard Symanski, “Contested Realities: Feral Horses in Outback Australia” (1994) 84 (2) *Annals of the Association of American Geographers*, 251, 255.

¹⁷ *Rabbit Nuisance Act* 1883 (NSW), sections 1 and 4.

¹⁸ For example, Proclamation by His Excellency, the Right Honorable Lord Augustus William Frederick Spencer Loftus, declared cats as the enemy of the rabbit for a number of Electoral Districts, including, Albury, the Hume, Murrumbidgee, the Murray and Bourke, *New South Wales Government Gazette*, Tuesday July 31, 1883, page 4130; Proclamation by His Excellency, the Right Honorable Henry Robert Brand, Viscount

Up to the 1980s, the literature contains sporadic commentary on the impacts of some introduced animals, such as feral livestock,¹⁹ but it was not until the 1990s, and the advent of the Convention on Biological Diversity in 1992, that state parties, including Australia, came under obligations to “prevent the introduction and/or control and eradicate” invasive alien species, namely species that threaten native biodiversity.²⁰

Table 1 provides a non-exhaustive summary of the ways unwanted animals are regulated. For convenience, the table is divided into three columns, each representing a category of management, none of which is mutually exclusive. Indeed, depending on the jurisdiction, animals such as foxes, rabbits and cats may be found in all three categories.

The first column deals with threatening processes, where legislation lists the actions of an introduced species as a threat to native biodiversity. Regulators have a great deal of leeway as to how they deal with the species, including by way of threat abatement plans, strategies and action plans. The second column deals with animals classified as a biosecurity risk, with many nominated animals having already been identified as a pest or threat to biodiversity. Legislation commonly imposes penalties on those who feed, treat, or release these animals.²¹

The mainstay of regulation is found in strategies, plans and targeted legislation, set out in column Three of Table 1. These instruments provide the detail and day to day operation of managing unwanted animals and predominantly involve the use of lethal measures.

Table 1
Management of Unwanted Animals

Threatening Process	Biosecurity	Pest/Feral/Invasive

Hampden, that the Iguana was natural enemy of the rabbit within the land district of Boorowa, *New South Wales Government Gazette*, Wednesday, 16 December, 1896, page 9063; Sophie Riley, “The Changing Legal Status of Cats in Australia: From Friend of the Settlers, to Enemy of the Rabbit, and Now a Threat to Biodiversity and Biosecurity Risk” (2019) 5 (18) *Frontiers in Veterinary Science*, 1, 3-5, <https://doi.org/10.3389/fvets.2018.00342>.

¹⁹ P Bayliss and K M Yoemans, “Distribution and Abundance of Feral Livestock in the 'Top End' of the Northern Territory” above 15, 665.

²⁰ Article 8(h), Convention on Biological Diversity 1992. The convention was adopted 5 June 1992, [1993] ATS no 32 (entered into force 29 December 1993) and has 196 parties.

²¹ Biosecurity Act 2014 (QLD), ss 42-45, Schedule 2; *Biosecurity Act 2015* (NSW), ss s 12, 151, Schedule 3.

<ul style="list-style-type: none"> • Flora and Fauna Guarantee Act 1988 (Vic) s11 • Nature Conservation Act 1992 (QLD), s16 (b) • Nature Conservation Act 2014 (ACT) ss73-79 • Threatened Species Protection Act 1995 (Tas) ss 8, 10, 27 • Environment Protection and Biodiversity Conservation Act 1999 (CTH) ss 183, 188, 528 • Biodiversity Conservation Act 2016 (NSW), ss 4.1, 4.31, Schedule 4 • Biodiversity Conservation Act 2016 (WA) s 5, 34 	<ul style="list-style-type: none"> • Biosecurity and Agriculture Management Act 2007 (SA) ss 27-42 • Biosecurity Act 2014 (Qld) ss 42-45, schedule 2 • Biosecurity Act 2015 (CTH) ss, 4(b), 9, 26 • Biosecurity Act 2015 (NSW) ss 4A, 15 • Biosecurity Act 2019 (Tas), ss 16, 21 • Biosecurity and Agriculture Management Act 2007 (SA) ss 27-42 	<ul style="list-style-type: none"> • Catchment and Land Protection Act 1994 (Vic) – categories of pest animals • National Feral Camel Action Plan: A National Strategy for the Management of Feral Camels in Australia (pest and feral animals) 2010 • 2012 ACT Pest Animal Management Strategy, 2012-2022 (pest and feral animals) • Game and Feral Animal Control Act 2002 (NSW) • Local Land Services Act 2013 (NSW), ss 130, 142 • 2016 Kakadu National Park Management Plan 2016-2026 (feral animals) • 2017 Australian Pest Animal Strategy, 2017-2027 (pest and feral animals) • Protection of the Alpine National Park: Feral Horse Action Plan 2021, Parks, Victoria (pest and feral animals) • 2023 Western Australian Feral Cat Strategy 2023–2028
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3. Managing Unwanted Species – the Debate

The heart of the debate concerns management practices that turn to killing as a first point response, raising at least two issues: whether the regime takes animal welfare into account; and, whether continuous killing is effective in the long-term.

Strategies and plans do not ignore animal welfare. The *Australian Pest Animal Strategy 2017 to 2027* refers to the importance of animal welfare, noting that Model Codes of Practice (Model Codes) and Standard Operating Procedures (SOPs) “have been developed for the humane control of a range of pest animal species... published on the PestSmart website.”²² PestSmart is part of the Centre for Invasive Species Solutions and has developed Standard Operating Procedures and Model Codes for the Humane Control of a range of animals including cats, horses and deer.²³ Management can be controversial and a textual analysis of “humane control” for these three animals is summarised in Table 2.

Table 2
Selected Model Codes and SOPs

²² Invasive Plants and Animals Committee, Department of Agriculture and Water Resources, *Australian Pest Animal Strategy 2017 to 2027*, (2016), 13, 33, 14, 27.

²³ Trudy Sharp and Glen Saunders, Model Code of Practice for the Humane Control of Feral Cats, <https://pestsmart.org.au/toolkit-resource/code-of-practice-feral-cats/>; Trudy Sharp and Glen Saunders, Model Code of Practice for the Humane Control of Feral Horses, <https://pestsmart.org.au/toolkit-resource/code-of-practice-feral-horses/>; Trudy Sharp and Glen Saunders, National Code of Practice For The Effective And Humane Management Of Feral And Wild Deer (2023), <https://pestsmart.org.au/wp-content/uploads/sites/3/2023/06/National-Code-of-Practice-for-Feral-and-Wild-Deer.pdf>; Trudy Sharp, Ground Shooting of Feral Cats (Cat001), Standard Operating Procedure <https://pestsmart.org.au/wp-content/uploads/sites/3/2020/12/CAT001-SOP.pdf>; Trudy Sharp, Aerial Shooting of Feral Horses, Standing Operating Procedure, HOROO, <https://pestsmart.org.au/toolkit-resource/aerial-shooting-of-feral-horses/>; Trudy Sharp, Ground Shooting of Feral Horses, Standard Operating Procedure (2016), <https://pestsmart.org.au/toolkit-resource/ground-shooting-of-feral-horses/>; Trudy Sharp, Ground shooting of feral deer, Standard Operating Procedure (2013) <https://pestsmart.org.au/toolkit-resource/ground-shooting-of-feral-deer/>.

Animal	Code for Humane Control	Standard Operating Procedures
Cats	Shooting, trapping, lethal baiting and exclusion fencing.	Shooting at night with the aid of a spotlight and trained dogs to drive cats out of vegetation. Shooting can be humane if carried out by “experienced, skilled and responsible shooters”... wounded cats should be located and killed quickly.
Horses	Trapping at water, mustering, aerial shooting and ground shooting, exclusion fencing, fertility control...the latter is not feasible over large areas, is costly and labour intensive.	Ground Shooting - humaneness depends almost entirely on the skill and judgement of the shooter. Wounding causes considerable pain and suffering. Dependant young should be killed quickly with a shot to the brain. Aerial Shooting- Humaneness depends on the skill and judgement of the shooter and pilot. Wounding causes considerable pain and suffering.
Deer	Aerial shooting, ground shooting and trapping. Exclusion fencing can impact non-target animals by altering movement and foraging patterns	Ground Shooting - humaneness depends on the skill and judgement of the shooter. Wounding causes considerable pain and suffering.

Killing is the mainstay of the regime, often favouring shooting, which is justified because environmental benefits are said to offset the detriment to targeted animals.²⁴ Moreover, aerial killing is thought to be rapid and humane, especially for killing animals in remote and isolated areas.²⁵ The proviso is that killing should adhere to the least cruel methods.²⁶ This approach, however, glosses over whether selected methods are in fact cruel, or indeed, whether killing is necessary.²⁷ The SOPs pointedly note that whether shooting is humane depends on the skill of the shooter, and for aerial shooting, the skill of the pilot. Aerial shooting is particularly contentious because it does not take adequately into account distress to animals, or environmental damage as animals flee helicopter pursuits.²⁸

In 2003, an interlocutory injunction was granted against aerial killing of goats on Lord Howe island, following evidence that not all animals had died immediately and that wounded animals had lingered and suffered.²⁹ In the final determination, the injunction was lifted because the plaintiff lacked standing and the court did not consider that leaving wounded animals to suffer was sufficient evidence of animal cruelty.³⁰ The finding highlights the difficulty of translating the notion of animal welfare into a workable legal construct, especially in the context of killing feral or pest animals. The issue does not depend on whether the treatment of the animal is

²⁴ William S Lynn, “Contested Moralities: Animals and Moral Value in the Dear/Symanski Debate” (1998) 1 (2) *Ethics, Place and Environment*, 223, 224.

²⁵ Corey J A Bradshaw, Andre Doube, Annette Scanlon *et al*, “Aerial Culling Invasive Alien Deer with Shotguns Improves Efficiency and Welfare Outcomes”, (2023) 83 *NeoBiota*, 109, 122, doi: 10.3897/neobiota.83.100993.

²⁶ Model Codes of Practice with respect to camels, cats, donkeys, goats, horses, pigs and foxes, wild dogs and rabbits, under the heading “Choosing Control Techniques”.

²⁷ Generally, Werner Scholtz, “Animal Culling: A Sustainable Approach or Anthropocentric Atrocity?: Issues of Biodiversity and Custodial Sovereignty” (2005) 29 *Macquarie Journal of International and Comparative International Law*, 9, http://www.law.mq.edu.au/html/MqJICEL/vol2/vol2-2_scholtz.pdf.

²⁸ Generally, Rosalie Chapple, “The Politics of Feral Horse Management in Guy Fawkes River National Park, NSW”, (2005) 33 (2) *Australian Zoologist*, 233; Jordan O Hampton, Glenn P Edwards, Brendan D Cowled, *et al*, “Assessment of Animal Welfare for Helicopter Shooting of Feral Horses”, (2017) 44 *Wildlife Research*, 97 .

²⁹ *Animal Liberation Ltd v National Parks and Wildlife Service* [2003] NSWSC 457 <https://www.caselaw.nsw.gov.au/decision/549fb0753004262463b7b8ed>.

³⁰ *Animal Liberation Ltd v National Parks and Wildlife Service*, [2007] NSWSC 221, <https://www.caselaw.nsw.gov.au/decision/549fdcf13004262463c0c7b8>

manifestly cruel, but whether the level of cruelty is legal. In *Brighton v Will*³¹ the appellant killed a dog (who may have been a stray, rather than a feral dog) by stabbing the dog with a pitchfork and suspending him from a tree, finally killing the dog with a mallet. The court found that the killing was abjectly cruel but the appellant had not committed a criminal offence because in accordance with the provisions of section 530(2) of the Crimes Act 1900 (NSW), he had merely exterminated a pest.³² At the time of writing, the case had been remitted back to the local court for re-determination.

Yet, whether an animal is a companion animal, a wild animal, or an unwanted animal, each retains the capacity of sentience, that is, the capability of feeling pain and suffering. It is this capability that forms the foundation of animal welfare and which has been regarded as a legitimate concern from at least 2002,³³ and more recently confirmed by IPBES.³⁴ Yet in practice, conventional narratives still categorise the problem as an agricultural/environmental one, that targets the presence, rather than impacts, of unwanted animals, with animal welfare receiving little more than lip service. This failing is frequently accompanied by lack of explanation regarding how killing will achieve quantified environmental outcomes.³⁵ The *Threatened Species Strategy*, (2015) for example aimed at killing 2 million cats claiming this would assist in the recovery of 40 threatened mammal and bird species, without explaining how this would occur.³⁶ Even plans that refer to managing the impacts of animals, in reality manage their presence,³⁷ contrary to growing calls from the scientific sphere.³⁸ In a forthcoming publication, the author argues that current approaches make it easier to kill animals, but do not automatically enhance environmental management.³⁹

This leads to the second point, whether continuous killing is effective in the long-term. In the 1990's Olsen pointed to the ineffectiveness of culling in managing feral pigs, largely due to problems with re-bound increases in populations.⁴⁰ This phenomenon has also been identified with respect to water buffalo and camels in the northern territory.⁴¹ Researchers conclude that

³¹ *Brighton v Will* [2020] NSWSC 435, <http://www.austlii.edu.au/cgi-bin/viewdoc/au/cases/nsw/NWSC/2020/435.html> .

³² *Ibid*, parag 117.

³³ CBD 'Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species', (Guiding Principles), Guiding Principle 12, Decision VI/23, UNEP/CBD/COP/6/20 (23 September 2002).

³⁴ Helen E Roy, Anibal Pauchard, Peter Stoett *et al* (eds) *Thematic Assessment Report on Invasive Alien Species*, above 2, 14, full report, Chapter 6, Box 6.13, 6.16, <https://zenodo.org/record/7430748>.

³⁵ William S Lynn, *Contested Moralities*, above 24, 224.

³⁶ Department of Climate Change, Energy, the Environment and Water, *Threatened Species Strategy 2015-2020*, 11, <https://www.dcceew.gov.au/sites/default/files/documents/ts-strategy.pdf>.

³⁷ Department of the Environment, *Threat Abatement Plan for Predation by Feral Cats*, Commonwealth of Australia, 2015, 8, <http://www.environment.gov.au/system/files/resources/78f3dea5-c278-4273-8923-fa0de27aacfb/files/tap-predation-feral-cats-2015.pdf>.

³⁸ Pablo García-Díaz, Phillip Cassey, Grant Norbury, *et al*, "Management Policies For Invasive Alien Species: Addressing The Impacts Rather Than The Species" (2020) *BioScience*, bial139, 1, 2-3, 5, <https://doi.org/10.1093/biosci/bial139>.

³⁹ Sophie Riley, "Animals as Killable Objects: Lessons from Australia on the Use of Definitions in Cat Management" in Jane Kotzman and Joanna Kyriakides (eds) *A Quite Crisis: Animal Law in Australia*, Federation Press (2024).

⁴⁰ Penny Olsen, *Australia's Pest Animals, New Solutions to Old Problems*, Bureau of Rural Sciences (1998), 31, 41 and 53.

⁴¹ *Fact sheet The Feral Water Buffalo*, above 9; Matt Garrick, "Kakadu National Park Rangers Prepare for Mass Culls of Feral Animals After Population Boom", ABC 5 March 2023, <https://www.abc.net.au/news/2023-03-05/kakadu-national-park-nt-feral-animals-mass-culls-rangers/102050330>; *National Feral Camel Action Plan* above 8, 5.4.

while the politics of animal management turns to killing as a first response, this is not an effective long-term solution.⁴² Consequently, regulation results in continuous cycles of mass killing, population bounce-back and continued community concern.

Conclusion

The problem of unwanted animals is complex, accompanied by increased public interest in the ethical dimension of their management. This tension is unlikely to disappear, calling for integrated approaches that give animal welfare a key management role. A good starting point would be for governments to investigate and trial alternatives to mass killings, looking towards long-term and humane solutions.

⁴² Benxiang Zeng and Rolf Gerritsen, 'Inadequate Contribution of Commercial Harvest to the Management of Feral Camels in Australia', (2013) 56 (8) *Journal of Environmental Planning and Management*, 1212, 1212-3.