2 November 2018

Committee Secretary
Senate Standing Committee on Environment and Communications
PO Box 6100
Parliament House
Canberra ACT 2600

Via email: ec.sen@aph.gov.au

Dear Committee Members

The impact of feral deer, pigs and goats in Australia

Thank you for the opportunity for RSPCA Australia to provide a submission on the impact of feral deer, pigs and goats in Australia.

RSPCA Australia recognises that under certain circumstances there is a need to control vertebrate pest species. However, all activities must be justified, effective and humane.

In the attached submission we have made a number of recommendations covering each of the three species as well as several relating to general aspects. The key issues identified include:

- Increased uptake of the most humane methods available
- Prohibiting use of inhumane methods
- Requiring compliance with standard operating procedures for control methods
- Ensuring all shooters are trained, competent and assessed for shooting accuracy including recreational hunters used in control programs
- Review of humane codes and standard operating procedures
- More research on more humane methods, including non-lethal options

We commend the committee for undertaking this inquiry and hope that significant animal welfare improvements can be achieved.

For further information regarding this submission, please contact Di Evans, Senior Scientific Officer devans@rspca.org.au

Kind regards

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RSPCA AUSTRALIA SUBMISSION

Senate inquiry into the impact of feral deer, pigs and goats in Australia

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Contents

1. Introduction

RSPCA Australia recognises that under certain circumstances there is a need to control vertebrate pest species. The RSPCA has a number of policies relating to vertebrate pest control, with the most relevant being RSPCA Policy E01 Wildlife - General principles and RSPCA Policy E02 Management of wild animals. The full wording of these policies is provided in **Appendix A**. Key aspects include ensuring that:

- Programs and strategies which prescribe the management of wild animals (such as threat abatement plans and native animal management plans) are justified, supported by scientific evidence and have clearly stated aims. Such programs should be subject to public consultation, ethical approval and review prior to implementation. Once implemented, the results of such programs should be regularly monitored, evaluated, publicly reported and used to inform future activities.
- A balance is found between maintaining the viability of an ecosystem and protecting the welfare of individual animals.
- Where human activities have the potential to have a negative impact on wild animals, whether directly or indirectly, that they are conducted in a way that causes as little injury, suffering or distress to animals as possible.
- Management programs are aimed at reducing adverse impacts rather than simply reducing the number of animals. RSPCA Australia is opposed to the use of incentive methods (such as bounty systems) where these focus on killing animals rather than reducing impacts.
- The humaneness of current control methods is improved or they are replaced with more humane and effective alternatives.
- There is adoption and implementation of compulsory codes of practice and standard operating procedures for all wild animal management activities
- All activities to control vertebrate pests are:
    - justified - impact must be legitimate, quantified and appropriately measured to assess progress; benefits must outweigh the harms
    - effective - only proven control methods to be used based on scientific evidence and that ongoing control is achieved, and
    - humane – that it is recognised that pest species are sentient, and that the most humane methods are used.

2. Current and potential occurrence of feral deer, pigs and goats in Australia

2.1 Feral deer

Seven species of deer have been introduced into Australia. Accurate information on their population distribution or density is limited, but there is a general acceptance that both are increasing and with them, the adverse environmental, social and agricultural impacts of deer. The NSW Natural Resources Commission reported a 30 percent increase in the distribution of deer in the state from 2005-2009, with anecdotal reports of exponential increases in some areas. Information contained on the Pestsmart website reports that in Australia, red deer are moderately common in the headwaters of the Brisbane River in

Queensland and in the Grampian Ranges of Victoria. There are large areas of suitable habitat that they could occupy in Australia including the south-west of Western Australia, Tasmania and southern Victoria. Fallow deer occupy open woodland in parts of NSW, Queensland, Victoria and South Australia although they are most numerous in Tasmania. Both species are also farmed for venison production and some populations of feral deer have established as a result of deer escaping or being released from farms. While all seven species of deer have been ranked as posing an 'extreme' threat by the national Invasive Plants and Animals Committee, because of the status of deer as game species, there has been little effort expended on quantifying their distribution or impacts, making planning for deer management difficult.

2.2 Feral pigs

Some population estimates for feral pigs are provided in the Background Document to the 'Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs *(Sus scrofa)* (2017)', but it is acknowledged that these are not accurate. For example, it was estimated that in 1990 there were somewhere between 3.5 million and 23.5 million feral pigs across Australia, a huge potential range in terms of the scale of the problem. The Threat Abatement Plan does not provide a more recent or more specific estimate of numbers. Population densities are reported to be highest in Queensland and New South Wales but there is no regular surveying of the population to determine the level of increase. The lack of accurate population density data makes it difficult to plan for control measures.

2.3 Feral goats

Based on information from the Pestsmart website, there are approximately 2.6 million feral goats, throughout all states and territories. The NSW Department of Primary Industries has produced a guide 'Monitoring techniques for vertebrate pests – feral goats' to encourage landholders to monitor populations and impact of feral goats. Effective monitoring, especially of pest animal impact is essential to determine if control is required and to assess effectiveness of control programs.

Recommendations

- Accurate estimates of population density and impacts are essential to underpin and evaluate management plans and programs to enable strategic use of resources and to maximise cost-effectiveness.
- Decisions regarding control programs should be based on reducing adverse impacts rather than simply reducing the target animal population.

3. Likely and potential biosecurity risks and impacts

The relative risks of diseases of significance for each species need to be determined to in order to develop and justify control programs in specific geographical regions. The likelihood of feral populations being the source of, an active reservoir or harbouring residual infection for particular diseases should be specifically determined. A generalised statement claiming that feral populations of these species pose an unacceptable biosecurity risk for either endemic or exotic diseases is not scientifically valid.

3.1 Feral deer

Deer can harbour and transfer several important diseases to cattle and horses including exotic diseases. Endemic diseases of importance include Johne's disease, anthrax, bluetongue, brucellosis, and bovine viral diarrhoea. Exotic diseases include foot and mouth disease, rabies and spongiform encephalopathies. It is noted that the Centre for Invasive Species Solutions has commenced a project 'The role of wild deer in the transmission of diseases of livestock' to examine the nature and extent of the risk to biosecurity that feral deer pose, especially foot and mouth disease.

In terms of hunting practices, there is concern regarding the potential dispersal of feral deer, especially where dogs are used, in relation to spread of significant diseases. It is unclear if regulations exist to prohibit hunting should an exotic disease outbreak occur to prevent disease transmission through fomites, deer body parts and/or deer dispersal.

3.2 Feral pigs

The Background Document to the 'Threat Abatement Plan for predation, habitat degradation, competition and disease transmission by feral pigs *(Sus scrofa)* (2017)' (Feral Pig TAP) describes several significant diseases which feral pigs harbour and pose risks to humans and animals, as well as the difficulty in eradicating foot and mouth disease, should it occur in areas where feral pigs inhabit.

3.3 Feral goats

Feral goats may harbour and transmit several significant exotic diseases including foot and mouth disease, rabies and rinderpest. As with other feral species, establishment of infection of exotic diseases in feral goat populations would pose major challenges for eradication.

Recommendations

- Determine potential biosecurity risks of significant diseases and pests for feral deer, pigs and goats in targeted areas.
- Prohibit recreational hunting in the event of an exotic disease outbreak.

4. Effectiveness of current state and national laws, policies and practices

4.1 Current regulation of vertebrate pest control

A broad range of nationally applicable Codes of Practice and Standard Operating Procedures for humane vertebrate pest control have been developed and are widely used by state and territory governments and pest animal control operators. However, despite significant effort to gain endorsement by state and territory governments, these COPs and SOPs are not mandatory. In most jurisdictions there are no legally enforceable minimum standards for control methods for feral deer, pigs or goats. Inconsistencies also exist across states and territories regarding the use of recreational hunting in vertebrate pest control programs including in national parks. This is particularly problematic when it comes to deer, as their status in some areas as a game species actively restricts effective and humane management. Overall, there is a lack of application of established methods to assess the humaneness of control methods and ensure that only the most humane and effective methods are used. There are also competing interests between the need to

reduce adverse impacts and maintain commercially viable populations for species that have a commercial value, such as feral goats.

4.2 Hunting

4.2.1 Impact of hunting on vertebrate pest control

Recreational hunters can have a negative impact on vertebrate pest management. Evidence from genetic studies has shown that pig hunters have illegally transported feral pigs into new areas to increase access for hunting. The Feral Pig TAP states that 'the continued release of feral pigs for hunting, either in new areas or in areas they do not currently occupy is a major threat to the effective management of feral pigs and their damage'. It has also been shown that shooting feral pigs, especially where dogs are used, can be counterproductive to other control methods because it can disperse pigs or make them more wary of humans.

Deer (including fallow, red and chital) have been deliberately and illegally released into 'deer free' areas so that hunters do not have to travel long distances for their sport. Hunters will also selectively take some individuals (large males) and leave others (females, young) because of the motivation to maintain animal populations for future hunting.

4.2.2 Hunting in national parks

Recreational hunters are, or have been, permitted under specific conditions in some national parks in Victoria, Western Australia, Queensland and South Australia. In all states, most national parks and reserves are closed to hunting at all times.

In Victoria, sambar and hog deer can be hunted in a number of parks during a specified calendar period (i.e. 'open season') but dogs must not be used.

In Western Australia, Queensland and South Australia, recreational hunters have participated in shooting programs to kill foxes, feral goats, feral cats and feral pigs. In these states there is no unrestricted recreational hunting in national parks, and hunters are only used as part of planned pest control programs under the administration of statutory authorities responsible for the management of national parks and reserves.

In 2015, the WA government rejected a plan to trial recreational shooting in national parks due to public safety concerns, lack of evidence to support the claim that recreational hunting is effective in managing pest animals, animal welfare issues and the considerable resources required to administer such a program.

In 2014, the New South Wales government commenced a three-year trial permitting volunteer licensed hunters to shoot declared pest animal species including goats, foxes and rabbits in 12 national parks and reserves across the State. Shooters are under the direction of parks and wildlife officers and are required to undergo assessment of shooting accuracy to participate in the program.

Recreational hunting on its own is not an effective form of pest management. In the limited circumstances where shooting is carried out as part of a pest animal management program, professional marksmen have been shown to be more effective than recreational hunters. For example, in the Gum Lagoon Conservation Park in South Australia, 65 recreational hunters over 4 days were only able to kill 44 deer, while one professional marksman in a helicopter was able to kill 182 deer in 4 hours. In Tasmania, an investigation into wallaby shooting methods found that in two nights of shooting, a single professional marksman

achieved the same level of population reduction as four recreational shooters were able to achieve in a year.

Professional marksmen are also proficient at shooting animals humanely. During a cull of 856 wild impala in the Mkuzi Game Reserve, South Africa by a marksman, 93% of animals were killed with only one shot (to the head) and 6% were wounded and then killed. The average survival time for wounded animals was 30 seconds. No animals escaped wounded. The animals were hunted at night with the aid of a spotlight to reduce animal stress prior to shooting and to ensure a high proportion of animals were killed instantaneously. In this example, the level of instantaneous unconsciousness quickly followed by death is comparable to what is achieved in commercial abattoirs (>94 % stunned instantly).

Undoubtedly some recreational hunters are highly skilled at shooting, but there are many who are not. In New Zealand, 5% of recreational hunters account for more than half of all deer shot for sport, leaving the majority of hunters with limited experience of shooting animals. The picture is similar in Australia. Also, there is no requirement for hunters to demonstrate shooting competency as a condition of licensing (except for hunters participating in formal control programs in NSW). Given that one of the main factors influencing animal welfare is operator skill, a shooter skills test should be mandatory. Of greater concern is the fact that there have been no independent audits of wounding rates of animals shot by recreational hunters. Until such studies are done recreational hunters cannot make claims regarding the humaneness of their hunting.

Recommendations

- Where licensed shooters are used in vertebrate pest control programs, they must be trained, competent and assessed for shooting accuracy prior to undertaking any shooting.

4.3 Feral deer

To date, feral deer management has not been conducted in a strategic and coordinated way but has relied on recreational hunting to remove deer. The RSPCA does not consider recreational hunting to be a justified, effective, sustainable or humane approach to managing deer and is concerned that this approach continues to be taken by several state governments including Victoria, Tasmania and New South Wales.

To date, legislation around deer management has been focused on maintaining populations through the use of open and closed seasons, and providing access to hunters rather than from a vertebrate pest control perspective. In Victoria feral deer management is incorporated into the state's sustainable hunting action plan. In New South Wales, feral deer are listed as a game species, despite the NSW Natural Resource Council recommending in 2016 that deer be managed and listed as a pest species. With heightened awareness of the need to manage deer effectively and humanely, it is imperative that reconsideration of their 'game' status is undertaken so that the focus can shift from hunting to one of population and impact management.

The RSPCA has concerns about listing feral deer as a pest species as this would effectively remove any protection under animal welfare legislation. One alternative option, where state legislation allows, is to list deer as unprotected wildlife as this would remove restrictions on the control of deer without removing protections against the use of inhumane methods.

The species of deer hunted in Australia are sambar, hog, red, fallow, chital, rusa and wapiti. The methods used during recreational hunting of deer are:

- Stalking of deer with a rifle or firearm – involves a hunter attempting to get progressively closer to a deer until such point as he/she can get a clean shot with a rifle or firearm which he uses to kill

the deer (usually with a shot to the chest to damage the heart and lungs). Hunters also use stationary tree platforms where they sit and wait for a deer to approach. Sometimes dogs are used for locating, pointing, or flushing deer during stalking.

- Stalking of deer with a bow/crossbow – involves a hunter attempting to get progressively closer to a deer until such point as he/she can get a clean shot with a bow/crossbow which is used to kill the deer (with a shot to the chest to damage the heart and lungs). Bow hunters must get much closer to their target than hunters who use a firearm.

- Hunting with the use of scent-trailing hounds – this method is only used in Victoria and only for sambar deer. It involves the deer being chased by a pack of dogs up to the point of near exhaustion when it comes to a standstill and is then shot (usually with a shot to the chest to damage the heart and lungs).

Recommendations

- All states and territories should ensure that deer are managed under natural resource/environmental management legislation, rather than regarded as a game animal.
- Where possible, deer should be listed as unprotected wildlife to facilitate effective management without removing the protection of animal welfare legislation.

4.4 Feral pigs

The Feral Pig Threat Abatement Plan (TAP) provides the most relevant and useful framework for managing feral pigs in a consistent manner across states and territories. State/territory government resourcing is essential to develop and implement state/territory plans which are based on the national plan. Ongoing support is required at both the state and federal level to enable periodic review and refinement of the Feral Pig TAP.

4.5 Feral goats

As with feral pigs, the 2008 Threat Abatement Plan for competition and land degradation by unmanaged goats (Feral Goat TAP) and the Five Yearly Review Report released in 2013 provide the most relevant and useful framework for managing feral pigs in a consistent manner across states and territories. State/territory government resourcing is essential to develop and implement state/territory plans which are based on the national plan. Ongoing support is required at both the state and federal level to enable periodic review and refinement of the Feral Goat TAP.

5. Efficacy and welfare implications of currently available control methods and potential for new methods

5.1 Principles for humane vertebrate pest control

There is increasing community concern and expectations regarding the treatment of vertebrate pest animals. In the past, little scrutiny was given to the animal welfare impacts of vertebrate pest control methods, however, over the past decade, there has been a greater focus on animal welfare in

management plans and stratrgies. However, unless this translates into improved practices on the ground, progress will not be achieved. More needs to be done especially in relation to humaneness of control methods, competency of operators and research into more humane management options.

RSPCA Australia supports the eight principles derived from A National Approach to Humane Vertebrate Pest Control workshop held in 2003, jointly hosted by RSPCA Australia, the Animal Welfare Science Centre and the Vertebrate Pest Committee (HVPC Working Group, 2004). These principles provide a logical pathway by commencing with important ethical considerations regarding justification and likelihood of success of pest control, then leading into humaneness aspects of methods to be used, evaluation, ongoing maintenance and concluding with a commitment for continuous improvement. These principles are quite comprehensive and should therefore provide a robust framework in terms of meeting animal welfare requirements.

1) The aims or benefits and the harms of each control program must be clear; control should only be undertaken if the benefits outweigh the harms.
2) Control should only be undertaken if there is a likelihood that the aims can be achieved.
3) The methods that most effectively and feasibly achieve the aims of the control program must be used.
4) Whether or not each control program actually achieved its aim must be assessed.
5) Once the desired aims or benefits have been achieved, steps must be taken to maintain the beneficial state.
6) The most humane methods that will achieve the control program's aims must be used (this requires an assessment of the humaneness of all existing methods).
7) The methods must be applied in the best possible way.
8) There should be research to reduce the negative animal welfare impacts of existing control methods and to develop novel methods that cause less pain and distress.

5.2 Current control methods

For the control of all three feral species, there is heavy reliance on lethal methods, mainly shooting and baiting. It is recognised that total eradication of these species is not possible on mainland Australia but local population reduction to minimise adverse impacts is achievable. However in general, continued reliance on lethal methods is unlikely to be sustainable, humane or cost effective. There is an urgent need to investigate more effective, humane and sustainable non-lethal methods.

Significant progress could be made if steps were taken to prevent the use of methods that are widely recognised as inhumane. In the case of feral deer, pigs and goats, two methods have been universally recognised as inhumane and unacceptable: the use of warfarin and yellow phosphorus (CSSP) for pig control. In 2007 state governments agreed to phase out these methods, but to date no legal provisions have been introduced to do this. Voluntary phase-outs have occurred in some jurisdisctions, for example in NSW, the use of warfarin and yellow phosphorous for feral pig control has been phased out. It is unclear of the status of the use of these compounds in other states/territories.

The Humaneness Assessment Model (Sharp & Saunders, 2011) developed by the NSW Department of Primary Industries is an essential tool for pest animal management, as it helps decision makers to choose the most humane methods available. It assesses and ranks pest control methods based on the welfare impact prior to death and the effectiveness to achieve a humane death - instant loss of consciousness and

rapid death without consciousness being regained (Sharp and Saunders, 2011). The model is very effective in identifying the most humane method currently available, particularly lethal methods. There is also an ongoing need to use the model to assess and review as many control methods for different species as possible.

Recommendation

- All existing and proposed control methods should be assessed for relative humaneness using the Model for Assessing the Relative Humaneness of Pest Animal Control Methods (Sharp and Saunders 2011) and the most humane and effective method should be used.

5.2.1 Feral deer

Unlike other vertebrate pest species where different methods are available to control populations, only one method (shooting) is used for feral deer. Research has been conducted to assess the potential use of cyanide, which is considered to be a relatively humane toxin, however, an appropriate target-specific delivery system has not yet been developed. There is an urgent need for further research into more humane control methods for feral deer.

Ground shooting

Ground shooting is the only currently available method for controlling deer and a best practice approach is set out in the standard operating procedure DEE001 Ground shooting of feral deer. If the correct firearm and ammunition are used, a well-placed head shot (with the brain as the point of aim) will result in immediate unconsciousness. When there is adequate damage to the brain and the animal does not regain consciousness there will be no suffering. In contrast, with chest shots (which cause damage to the heart and lungs) the time to unconsciousness can range from seconds up to a few minutes. When an animal is shot in the chest, the time to loss of consciousness and the time to death will depend on which tissues are damaged and, in particular, on the rate of blood loss and hence how long it takes for the brain to have insufficient oxygen. Loss of consciousness and death is likely to be quicker when animals have been shot in the heart. A phenomenon called 'hydrostatic shock', where a pressure wave from the bullet causes damage to internal organs, can contribute to 'bringing down an animal' quicker and causing a more rapid loss of consciousness in some instances when animals are shot in the chest. However, compared with head shot animals, those that are chest shot have a higher risk of remaining conscious and suffering for a short period prior to death - though the extent of suffering will vary depending on which tissues are damaged and the rate of blood loss. During severe bleeding they are likely to feel a sense of breathlessness and potentially some anxiety and confusion before they lose consciousness.

Head shooting should be carried out at all times unless it is not possible in exceptional circumstances or where it is necessary on welfare grounds to use a chest shot. It is known that chest shooting is often preferred to head shooting by hunters so as to preserve the head and antlers for trophy display. Thus, including hunters in control programs creates a conflict in terms of ensuring the most humane method for killing deer is used. Ground shooting by professional, trained and competent shooters is considered to be the most effective and humane technique currently available for reducing wild deer populations.

To minimise animal stress, shooting should be carried out in accessible areas at night from a vehicle with the aid of a spotlight. A red filter is placed over the spotlight to reduce the amount of light seen by the deer. Rifles fitted with sound suppressors can also be used to reduce animal disturbance and facilitate accurate shooting. Dogs are not used at any stage during a professional culling program.

The aim is to shoot all animals in a group to prevent social disruption and distress in surviving animals. Shooting is conducted with the appropriate firearms and ammunition and in a manner which aims to cause immediate insensibility and painless death.

Shots to the head are preferred over chest shots as they are more likely to cause instantaneous loss of consciousness. Fawns/calves and juveniles are shot before shooting mature deer in case they escape and cannot be located. The target animals in a group are checked to ensure they are dead before moving on to the next group of animals.

However, there is no requirement for recreational hunters to comply with any standard operating procedure. The recreational hunting of deer is regulated by state agencies responsible for hunting and requirements can run counter to best animal welfare practice. For example, the NSW and Victorian regulations state that 'hunting of deer at night is prohibited' and 'a spotlight or artificial source of light cannot be used to hunt deer'. The Victorian Game Management Authority website states that:

> *"The spotlighting of deer is a major enforcement issue for government agencies, such as the Game Management Authority and Victoria Police. It is illegal, dangerous, unethical and reduces recreational hunting opportunities for law-abiding hunters."*

Hunters often kill the larger males and leave smaller animals and dependent young, which can result in a disrupted social group as well as distressed and orphaned young. Recreational deer hunters have an interest in ensuring the ongoing sustainability of deer populations for hunting, rather than the welfare of hunted deer or to contributing to effective population control. In contrast, standard operating procedures for professional deer shooters aim to ensure the humane and efficient killing of feral deer.

Use of dogs

Deer are 'flighty' animals and are easily frightened by dogs, so being chased by dogs, even for short periods, has the potential to result in distress and injuries if deer run into fences and other obstacles. When deer are pursued for extended periods by scent-trailing hounds, the negative welfare impacts are increased. In Britain, studies to examine how hunting affects the biology of red deer showed that the effects of extended pursuit are severe. Muscle tissue is disrupted, glycogen (energy) reserves are exhausted, cortisol levels (an indicator of stress) are at a maximum and red blood cells start to break down. Researchers concluded that red deer are poorly adapted to predation by sustained pursuit and the suffering caused by this activity is likely to be significant.

The regulations relating to the use of dogs to hunt deer differ between states and there is sometimes confusion around the difference between 'hunting with hounds' and 'hunting with dogs'. 'Hunting with hounds' (that is scent-trailing hounds) is used to hunt sambar deer in Victoria, but this practice is not permitted in NSW. Sambar deer are the largest of Australia's wild deer and are considered a premier game animal by hunters. In some states in Australia it is still legal to use dogs to locate, point to, or flush out deer when hunting and also in Victoria, to use scent-trailing hounds to chase deer. Dogs are not permitted to be used for hunting deer in Tasmania.

The Victorian game regulations prescribe where and when hunting sambar with hounds can occur as well as height and breed standards for the hounds used (beagles, bloodhounds and harriers), the number of hounds that can be used during a hunt (five hounds with up to three additional pups under

the age of 12 months) and numbers of hunters that can hunt at any one time (10 persons with up to two junior or non-Australian resident hunters). In Victoria scent-trailing hounds must not be used to hunt hog deer, red deer, rusa deer, chital deer or fallow deer. However, prescribed breeds of 'gundogs' (e.g. Labrador retriever, Irish setter, cocker spaniel, pointer, Weimaraner) and 'deer hunting dogs' (e.g. Border terrier, fox terriers, German hunting terrier, Jack Russell terrier, Finnish spitz, Norwegian elkhound, dachshund) can be used on all deer species (except for hog deer - the smallest species of wild deer in Australia). The regulations set the maximum number of gundogs and deer hunting dogs to two at any one time.

In NSW, a dog may only be used for locating, pointing, or flushing deer, but hunting with scent-trailing hounds is not permitted. A person hunting alone must not use more than one dog and a group that is hunting together must not use more than two dogs for hunting feral deer.

Bow hunting

Some hunters use a bow and arrow to hunt animals because they consider it to be an 'art' or challenge that requires skill and patience. However, from an animal welfare perspective it results in significant pain and suffering. Wounding rates can be high, the time to death can be prolonged and animals remain conscious while they die from massive blood loss.

Bow hunters use either a longbow, recurve bow or compound bow with a broad-head arrow to kill animals. Compound bows are most commonly used as the system of wheels and cables along with sights, makes them easier to fire. Crossbows are prohibited weapons in most states and are not permitted for hunting. However, they can be used when hunting deer in Victoria as long as hunters hold the relevant government approval.

The same game species permitted to be hunted with a firearm can also be bow-hunted (i.e. deer, feral pigs, feral goats, foxes, feral cats, wild dogs, rabbits and hares as well as game birds). The arrow is aimed at the chest to cause damage to the heart and lungs. Head shots are never used since deflection of the arrow is likely to occur from striking skull bones.

Bow hunting is regulated in NSW (by the Department of Primary Industries) and Victoria (by the Department of Environment and Primary Industries) but there are no specific bow hunting regulations in other states and territories.

The number of animals wounded (but not killed) by bow hunting is variable but can be very high. For example, with deer hunting, surveys of bow hunters indicate that between 12% and 48% of deer may escape whilst injured. This is significantly higher than the reported 5% of wounded animals that escape when shot with a rifle by professional shooters. Wounded animals that are not retrieved and killed can suffer from the disabling effects of the injury, pain and wound infection.

When using a bow, hunters need to get very close (no more than 20 metres) to the target animal. The arrow's flight path to the chest must be unobscured by leaves or branches or it might be deflected and hit another part of the body. It can also be difficult to follow and kill mobile injured animals if they escape into thick cover, rough terrain or other inaccessible areas. Furthermore, with animals that are injured and have gone down, it can be hard to get another shot into the chest with an arrow, depending on the position the animal is lying.

Recommendations

- Review the SOP DEE001 Ground shooting of feral deer to require head shooting only except for exceptional circumstances and/or on welfare grounds, when a chest shot is required, e.g. to dispatch an injured animal.
- Review the SOP DEE001 Ground shooting of feral deer to prohibit bow hunting and the use of dogs.
- Mandate compliance with the SOP DEE001 Ground shooting of feral deer by incorporating into state/territory based legislation.

5.2.2 Feral pigs

The currently available methods for controlling feral pigs are shooting, trapping and baiting using various compounds.

Based on humaneness assessments for feral pig control methods conducted using the Sharp and Saunders (2011) model, the most humane methods are ground shooting (head shot), trapping (followed by shooting) and sodium nitrate baits. Chest shooting should be avoided. The use of 1080 baiting should be avoided, given a more humane poison, sodium nitrate is available. The use of warfarin and yellow phosphorus should be banned as these methods are universally regarded as inhumane (see above).

The SOP PIG003 Ground shooting of pigs includes chest shooting which is not as humane as head shooting. Head shooting should be carried out at all times unless it is not possible in exceptional circumstances or necessary on welfare grounds to use a chest shot.

The Model Code of Practice for the Humane Control of Feral Pigs provides a good overview of the key considerations to improve animal welfare. However, the Code was last reviewed in 2012 and so should be reviewed and updated in the near future. The following Standard Operating Procedures (SOPs), except for PIG003: Ground shooting of feral pigs were published in 2012 and should also be reviewed and updated.

PIG001: Trapping of feral pigs
PIG002: Aerial shooting of feral pigs
PIG003: Ground shooting of feral pigs
PIG004: Use of Judas pigs
GEN001: Methods of euthanasia

Use of dogs

The use of dogs in pig hunting poses significant welfare risks to both the pig being hunted and the dogs involved. Hunting pigs with dogs involves the dog flushing out the pig and chasing it until it is exhausted or cornered. When the pig has been 'bailed up' (the pig remains stationary facing the dog), the hunter moves in to either shoot the pig at close range with a firearm or kill it by stabbing in the heart with a knife (called 'sticking').

Pig dogs are usually large mixed-breed dogs. In NSW, lone hunters are permitted to use a maximum of three dogs, while groups of hunters can use up to five dogs. The methods used to train pig dogs can be inhumane, including setting dogs onto confined pigs that have been captured specifically for this purpose.

The regulations concerning hunting pigs with dogs vary between states and territories. For example, in Victoria, dogs may be used to 'point or flush pigs' but not to 'attack or hold pigs'. However, in NSW, dogs are permitted to be used for 'locating, holding or bailing pigs'. The holding (or lugging) of pigs is likely to result in higher levels of injury and distress to the pig and also cause more injuries to the dogs.

Regardless of whether dogs hold pigs or not, hunting of pigs with dogs is inherently cruel and unnecessary. Chased pigs will experience fear, panic and distress, and for those that are killed by sticking, death will be painful and prolonged (compared with those that are shot).

If the hunter plans to stick the pig rather than shoot it, dogs are used to hold (or 'lug') the pig by the ears while it is being stabbed. Sticking a pig to kill it is inhumane because it does not cause instantaneous death: it takes some time for the pig to lose consciousness from lack of oxygen to the brain following destruction of the heart. This method is also unnecessary - pig hunters should instead ensure they use an appropriate firearm to kill pigs humanely with an accurate head shot.

Although pig hunters vehemently defend their sport and would like the public to believe that their dogs do not maul or attack pigs and their dogs do not get injured (they claim that the protective chest plates and collars prevent this), there is plenty of video, photographic and direct evidence that reveals the true nature of pig hunting.

Pig dogs often suffer from severe injuries and do not always receive prompt and adequate veterinary attention. Sometimes the wounds sustained by dogs during pig hunting are fatal. Veterinarians working in areas where pig hunters are active attest to the number of pig hunting dogs that are presented for treatment: this number is likely to represent only a proportion of dogs actually injured.

Some hunters admit to castrating male pigs or removing their bottom tusks (often done by bashing them with a rock) to make the top tusks grow bigger, or removing the ears and tails of pigs before releasing them, so they are 'more of a challenge' for their dogs to catch the next time. They also purposely do not take small pigs or sows thus ensuring 'sport' for future seasons. These actions are cruel and in direct opposition to effective pig control.

Recreational hunting of pigs with dogs is not an effective or humane method of managing feral pig populations. Pig hunters only kill a small percentage of the population, disperse pigs through regular disturbance and hunt on relatively small, easily accessible areas. In addition, many aspects of pig hunting involve significant cruelty and would breach animal welfare legislation.

Recommendations

- Prohibit the use of warfarin and yellow phosphorus for feral pig control under legislation.
- Review the SOP PIG003: Ground shooting of feral pigs to require head shooting only except for exceptional circumstances and/or on welfare grounds, when a chest shot is required, e.g. to dispatch an injured animal.
- Review the SOP PIG003: Ground shooting of feral pigs to prohibit the use of dogs.
- Mandate compliance with SOP PIG003: Ground shooting of feral pigs is a mandatory requirement when undertaking feral pig control.
- Prohibit 'sticking' feral pigs under animal welfare legislation.

5.2.3 Feral goats

The currently available methods for controlling feral goats are shooting, mustering and trapping. In pastoral areas, feral goats have commercial value which may provide an incentive for landholders to

remove animals but not eradicate them or control them to meet impact reduction goals. It is a challenge to achieve effective and humane goat control as yarding, handling and potential live export of feral goats pose significant welfare risks. These risks are recognised in the Humaneness Assessment Model (Sharp and Saunders 2011).

The Model Code of Practice for the Humane Control of Feral Goats provides a good overview of the key considerations to improve animal welfare. However, the Code was last reviewed in 2012 and so should be reviewed and updated in the near future. The following Standard Operating Procedures (SOPs) were published in 2012 and should also be reviewed and updated.

GOA002: Aerial shooting of feral goats
GOA003: Mustering of feral goats
GOA004: Trapping of feral goats
GOA005: Use of Judas Goats

The Feral Goat TAP Five Yearly Review Report recognised that the most important developments since 2008 was in stakeholder management of feral goats. Areas emphasised included mustering and shooting and the best way to close water points while still allowing adjoining properties to water stock.

Closing water points to control vertebrate pests is problematic for native animals who have become reliant upon such water sources. This issue was highlighted in the WA Parliamentary Inquiry Report No. 4 The Department of Environment and Conservation's Management of Former Pastoral Leases (2010), which found that the failure by the department to properly co-ordinate culling operations with water source removal had contributed to the inhumane death and suffering of many native and feral pest animals. It is understood that closing water points is still undertaken by some landholders but there are no provisions to ensure animal welfare of both target and non-target species is considered and safeguarded. Where the use of this method causes unnecessary animal suffering, it should be considered an act of animal cruelty and therefore constitutes a breach of animal welfare legislation. Where animal cruelty is caused, the landholder should be held responsible and compelled to take immediate action to prevent further suffering.

In the SOP GOA004: Trapping of feral goats, exclusion fencing is mentioned as a possible control method for feral goats. Exclusion fencing poses considerable welfare risks, including injury, entrapment and entanglement of non-target species. The use of exclusion fencing inevitably prevents access food and water which leads to animal suffering. If fencing is used, there must be close monitoring to ensure that animals are not compromised in this manner. Where the use of this method causes unnecessary animal suffering, is considered an act of animal cruelty and therefore constitutes a breach of animal welfare legislation. Where animal cruelty is caused, the landholder should be held responsible and compelled to take immediate action to prevent further suffering.

Recommendations

- Review and update the Model Code of Practice for the Humane Control of Feral Goats.
- Review and update the feral goat SOPs.
- Permit the closure of water points by landholders as a last resort and only under strict conditions to safeguard the welfare of target and non-target species.
- Permit the use of exclusion fencing by landholders only under strict conditions to safeguard the welfare of target and non-target species.

6. Priority research questions

Many of the currently available control methods are not considered humane thereby causing significant animal suffering and jeopardising community support for vertebrate pest management programs. There is an urgent and ongoing need for research to develop more humane control methods, particularly non-lethal options.

Acknowledgement is made regarding efforts to replace 1080 for wild dog and fox control with the development of PAPP, as well as sodium nitrite for pigs. However, work is needed to improve uptake of the most humane methods as described in the humaneness model (Sharp and Saunders 2011).

It is noted in the Feral Goat TAP Five Yearly Review Report that some work had been undertaken to assess the delivery of toxins in a way that minimises non-target species risks. The RSPCA cautions the use of toxins particularly 1080 due to inhumane aspects. The RSPCA also cautions the use of biocontrol agents for vertebrate pest control, particularly disease causing agents, as these pose significant welfare risks.

Recommendations

- Development of more humane control methods, particularly non-lethal options.
- Improve uptake of the most humane methods as described in the humaneness model (Sharp and Saunders 2011).

7. Benefits of national threat abatement plans

National threat abatement plans provide a robust framework for a consistent approach to be used which includes impact evaluation and animal welfare considerations. These plans also provide a mechanism for sharing resources to maximise cost efficiencies. Currently, of the three species, a national threat abatement plan has been developed for feral pigs and feral goats.

Recommendation

- Develop a national threat abatement plan for feral deer.

Key references

HVPC Working Group (2004) A national approach towards humane vertebrate pest control – Discussion Paper. RSPCA Australia. https://www.rspca.org.au/sites/default/files/website/The-facts/Science/Scientific-Seminar/2003/SciSem2003-DiscussionPaper.pdf

Sharp, T & Saunders, G (2011) A model for assessing the relative humaneness of pest animal control methods. (Second edition). Australian Government Department of Agriculture, Fisheries and Forestry, Canberra.

Appendix A - RSPCA policies

RSPCA Policy E01 Wildlife – General principles (adopted 06/12/10)

1.1 RSPCA Australia recognises that the state of an ecosystem directly affects the diversity of populations, the likely survival of species and the welfare of individual animals within it. Consideration of wild animal welfare thus requires finding a balance between maintaining the viability of an ecosystem and protecting the welfare of individual animals.

1.2 RSPCA Australia believes that wherever human activities have the potential to have a negative impact on wild animals, whether directly or indirectly, we have a duty to ensure that they are conducted in a way that causes as little injury, suffering or distress to animals as possible.

1.3 RSPCA Australia supports the use of independent environmental impact assessments to determine the potential of any development to threaten the continued survival of a species, significantly alter existing ecosystems, or have a negative impact on animal welfare. Where development projects identify threats to the welfare of wild animals, conditions must be placed on the development to mitigate these threats. Where mitigation is not possible or reasonable the development should not go ahead.

1.4 RSPCA Australia believes that management practices utilising natural resources (such as mining and logging) must be designed to ensure that they cause as little suffering to animals or negative consequences for the viability of a given population as possible.

1.5 RSPCA Australia supports the establishment and maintenance of national parks and conservation zones in areas of environmental significance to preserve genetic diversity, promote biodiversity and protect native animals from human impacts. The use of such areas should only permit activities that do not compromise animal welfare. At the same time, RSPCA Australia recognises that these areas alone are not sufficient for the conservation of biodiversity.

1.6 RSPCA Australia supports the ratification by the Australian government of international treaties, conventions and agreements which serve to protect biodiversity and promote the humane treatment of wild animals.

RSPCA Policy E02 Management of wild animals (adopted 06/12/10)

2.1 RSPCA Australia acknowledges that in some circumstances it is necessary to manage populations of wild animals, native or introduced. There are three main reasons used to justify the management of wild animals*:

- to protect the welfare of individual animals
- to help conserve a threatened, endangered or vulnerable native species
- to reduce adverse impacts on human activities or the environment.

* It is noted that in most cases these problems have arisen as a result of human activities or interventions.

2.2 Any measures taken to manage wild animals must recognise that whether an animal is native, introduced or viewed as a 'pest' does not affect its capacity to experience pain, suffering or distress.

2.3 Programs and strategies which prescribe the management of wild animals (such as threat abatement plans and native animal management plans) must be justified, supported by scientific evidence and have clearly stated aims. Such programs should be subject to public consultation, ethical approval and review prior to implementation. Once implemented, the results of such programs should be regularly monitored, evaluated, publicly reported and used to inform future activities.

2.4 Management activities (such as on-ground intervention or control) should only be undertaken if it is likely that the aims of the program can be achieved. The methods used must be humane, target-specific and effective (see E2.10).

2.5 Once the aims of a management program have been achieved, steps must be taken to ensure that the outcomes are maintained in the long-term.

2.6 RSPCA Australia advocates the adoption and implementation of compulsory codes of practice and standard operating procedures for all wild animal management activities.

See www.dpi.nsw.gov.au/agriculture/pests-weeds/vertebrate-pests/codes/humane-pest-animal-control

2.7 **Protecting the welfare of wild animals**

2.7.1 Management programs aimed at protecting the welfare of individual animals or populations may be necessary where populations are subjected to severe environmental stress, habitat fragmentation, disease or human activity. Such programs must only be carried out under the supervision of the relevant government agency.

2.7.2 In some circumstances it is considered necessary to reduce the size of a given population of wild animals for the long-term benefit of that population. The killing of animals for this reason should only be permitted where it can be carried out humanely and there is no non-lethal, humane and effective alternative available (see E2.10).

See E3 Rescue and rehabilitation of wild animals

2.8 **Conserving native species**

2.8.1 Management programs aimed at conserving native animals, including threatened, endangered or vulnerable species centre on habitat protection, but include strategies such as captive breeding, translocation and release of animals. Care must be taken to minimise any adverse effects of these activities on the welfare of both target and non-target animals. Such programs must only be carried out under the supervision of the relevant government agency.

2.9 **Reducing adverse impacts of wild animals**

2.9.1 Many introduced animals, and some native animals, are viewed as 'pests' because of their adverse impacts on human activities, health and wellbeing or the environment. These adverse impacts include:

- land degradation, ecosystem effects, and predation and competition with native species
- losses to agricultural, horticultural and forestry production, including grazing competition, damage to crops, predation on domestic animals and damage to infrastructure
- risks to public health and safety

- other human activities such as tourism, recreation and transport.

RSPCA Australia acknowledges that, in certain circumstances, it is necessary to manage populations of wild animals in order to reduce these impacts.

2.9.2 Management programs must be aimed at reducing adverse impacts rather than simply reducing the number of animals. RSPCA Australia is opposed to the use of incentive methods (such as bounty systems) where these focus on killing animals rather than reducing impacts.

2.9.3 Wherever possible, pest control measures should be carried out as part of an integrated pest animal management program in consultation with the relevant government agency. Lethal methods must only be used where there is no non-lethal, humane alternative available that is effective at achieving the program's aims.

2.10 **Management and control methods**

2.10.1 RSPCA Australia is opposed to the use of inhumane methods of controlling or managing wild animals. A totally humane method is one which does not cause any pain, suffering or distress to target and non-target animals.

See also Policy G1 Humane killing

2.10.2 When determining the method of control, the most humane method that will effectively achieve the aims of the management program must be used.

2.10.3 The humaneness of a given control method is influenced by its application and the skill of the operator. Control methods must be applied in the best possible way by trained and competent operators.

2.10.4 RSPCA Australia supports the independent assessment of the relative humaneness of control methods and the publication of these assessments to assist in identifying the most humane available methods for a given situation.

See Sharp T and Saunders G (2008). A model for assessing the relative humaneness of pest animal control methods. Australian Government Department of Agriculture, Fisheries and Forestry, Canberra, ACT

2.10.5 RSPCA Australia believes there is a continuing need to improve current control methods or replace them with more humane and effective alternatives. The RSPCA supports research and development of humane alternatives, including the replacement of lethal methods with humane and effective non-lethal methods, such as reproductive control.