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# **Submission to the inquiry on bow hunting and crossbow hunting in South Australia**

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This submission addresses primarily point 4 in the terms of reference, the relationship of bow hunting to the *Animal Welfare Act 1985*. No distinction is made between bows and crossbows since the areas of concern in relation to animal welfare apply equally to both.

Since bow hunting can only legally target introduced animals, the inquiry must also consider the relationship to the Codes of Practice developed by PestSmart, managed through the Centre for Invasive Species Solutions and the Commonwealth Department of Agriculture, Fisheries and Forestry. As the PestSmart website notes<sup>1</sup>:

*“The humane control of pest animals in Australia is guided by a set of Model Codes of Practice which were developed under the former Vertebrate Pests Committee. The Standard Operating Procedures describe the best practice application of recommended management techniques for a range of pest animal species.”*

The inquiry must also consider the model for assessing the relative humaneness of pest control methods, developed with the financial support of the Department of Agriculture, Fisheries and Forestry under the Australian Animal Welfare Strategy. As the authors note (Sharp & Saunders, 2011, p.5): *“There is a worldwide trend towards ethical and moral concern for welfare of animals regardless of their status. This trend cannot be ignored.”*

## **Background on bowhunting in SA**

The use of bows for hunting is unlicensed and unregulated in South Australia. It is an issue shrouded in secrecy; even some politicians are surprised to learn that bow hunting goes on in SA. Given the lack of regulation, it is impossible to know how many hunters in SA use bows, or which species of animal are hunted, with what outcomes.

A hunter must have a Basic Hunting Permit in order to use any type of bow, including cross-bows, for hunting. This permit entitles the holder to hunt any introduced (feral) mammal or bird, and unprotected native animals listed in Schedule 10 of the Act. Children under 14 can obtain a sub-junior Basic Hunting Permit; it is not clear whether they are also permitted to use bows.

References to bow hunting are hard to find, with just passing references buried in documents. According to the *Hunting Feral Species* factsheet<sup>2</sup>: “Hunting is not confined to the use of firearms ... and may include the use of traps, **bows**, ferrets, and other devices ...” The PIRSA factsheet, *Recreational Hunting of Feral Deer*<sup>3</sup> states: “In South Australia the hunting of deer is by shooting and **bows**.” It is not surprising that most people don’t know bow hunting goes on given the paucity of information about it available in government documents.

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<sup>1</sup><https://pestsmart.org.au/framework-overview/government-pest-animal-management-strategies/>

<sup>2</sup> [http://www.environment.sa.gov.au/managing-natural-resources/plants-and-animals/permits-and-licences/Native\\_animals\\_in\\_the\\_wild/Hunting\\_Permits/Hunting\\_feral\\_animals](http://www.environment.sa.gov.au/managing-natural-resources/plants-and-animals/permits-and-licences/Native_animals_in_the_wild/Hunting_Permits/Hunting_feral_animals)

<sup>3</sup>[https://www.pir.sa.gov.au/\\_\\_data/assets/pdf\\_file/0003/344856/PIRSA\\_FAQ\\_recreational\\_hunting\\_feral\\_deer\\_FINAL.pdf](https://www.pir.sa.gov.au/__data/assets/pdf_file/0003/344856/PIRSA_FAQ_recreational_hunting_feral_deer_FINAL.pdf)

Ironically, the PIRSA document also states: *“Deer must be destroyed humanely. Pest Smart Code of Practice (DEE001) details the standard operating procedure for shooting feral deer. Hunters must take all reasonable steps to avoid any cruelty or mistreatment offences under the Animal Welfare Act (1985).”*

Why are these statements problematic? Firstly, the Standard Operating Procedure (DEE001) referred to makes no mention of bows to kill deer, in fact appears to prohibit them when it states<sup>4</sup>: *“Shooting must be conducted with the appropriate firearms and ammunition and in a manner which aims to cause immediate insensibility and painless death.”* The SOP goes on: *“Large calibre, high powered centre-fire rifles fitted with a telescopic sight should be used.”* So how can bow hunters conform to the PestSmart Standard Operating Procedure when it does not allow the use of bows? The same is true of SOPs for other introduced animals that may be killed under the Basic Hunting Permit, such as pigs and goats.

According to the Australian Veterinary Association’s policy on hunting<sup>5</sup>: *“... the Codes of Practice for the Humane Control of Vertebrate Pests and associated Standard Operating Procedures must be strictly adhered to and enforced.”* Clearly this is not the case when bows are used for hunting.

Secondly, the Animal Welfare Act (1985), section 13 defines an offence if someone:

*“(g) kills the animal in a manner that causes the animal unnecessary pain; or*

*(h) unless the animal is unconscious, kills the animal by a method that does not cause death to occur as rapidly as possible; “*

Bows are inefficient weapons. Death, when it occurs, is as a result of bleeding out, which may be a slow and painful process. In contrast, a rifle bullet hitting an animal in the head will, with reasonable likelihood, instantly destroy the brain, bringing immediate insensibility.

Wounding may also cause pain without causing death. As will be demonstrated in this submission, bow hunting is inevitably, even if unintentionally, cruel, so there is no way bow hunters can conform to the requirements of the Animal Welfare Act. The PIRSA document on deer hunting is inconsistent with the government documents mentioned, and the reality of hunting with bows in general.

The remainder of this document will show why all bow hunting must be banned immediately. The only place for bows is on the archery field as a non-harmful sport.

It should be noted that bow hunting has been banned in the UK since 1965, and is still banned under the Wildlife and Countryside Act 1981:

*“11 (1) Subject to the provision of this Part, if any person –*

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<sup>4</sup> <https://pestsmart.org.au/toolkit-resource/ground-shooting-of-feral-deer/>

<sup>5</sup> <http://www.ava.com.au/policy-advocacy/policies/hunting-and-fishing/hunting/>

*(b) uses for the purpose of killing or taking of any wild animal ... **any bow or crossbow** or any explosive other than ammunition for a firearm ...*

*he shall be guilty of an offence.”*

## **The nature of suffering caused by bow hunting**

Professor Neville Gregory of the Royal Veterinary Institute London investigated welfare issues associated with bow hunting of deer, although he notes that the same issues apply to other species hunted with bows (Gregory, 2005). He states that death from an arrow injury depends on blood loss from severed arteries. Unlike with rifles, head shots are not feasible because the arrow may not penetrate the skull. Instead, the heart and lungs are prime targets. However, Gregory notes that even puncturing a lung is no guarantee of rapid blood loss and death because arterial pressure in the lung is relatively low. Arrows can also lodge in muscles or the abdomen, where they may or may cause death, possibly due to infection or predation.

The inevitability of wounding is acknowledged, in this example by a practitioner of and advocate for bow hunting (Ditchkoff, 2018, p.27):

*“There’s an old saying amongst deer hunters, ‘If you haven’t wounded a deer and lost it, then you haven’t hunted much.’ Unfortunately, there’s a lot of truth to this statement. Anyone who’s spent much time chasing deer has felt that sick feeling in the pit of their stomach when they realised they’d failed in the execution of their shot and the deer they had hoped to bag was going to suffer and die over the coming hours or days.”*

## **The shooting process and its outcomes**

There are a number of possible scenarios when an animal is hit by an arrow:

1. the archer locates and, if necessary, kills the animal (bagged);
2. the archer fails to find the animal and it dies (crippled);
3. the archer fails to find the animal and it survives (wounded).

### **1. Bagged animals**

Most animals hit by an arrow do not die instantly and try to flee, so the archer has to locate the victim by following a blood trail. In one study, of the deer bagged, only 12% collapsed on the spot where they were shot, while the remaining 88% travelled an average of 262 yards before they were located (Langenau, 1986). The extent of pain and distress experienced by these deer in the interim can only be imagined.

### **2. Crippled animals**

Some wounded animals are not located by the archer and at some later point succumb to their injuries. In one study, deer were radio-collared prior to a hunt in order to be able to accurately locate them (Ditchkoff et al, 1998). Half of the deer hit by arrows were not

retrieved by archers. In this group, 3 of the 11 animals were later found dead by researchers, all hit in the abdomen. Two had died within 24 hours, the third after 5-7 days. One of the researchers commented on such deaths (Ditchkoff, 2018, p.36)

*“When an arrow (or rifle slug) penetrates the abdominal cavity and sacrifices the integrity of the stomach complex (rumen, reticulum, omasum or abomasum), small intestine or large intestine, it’s next to impossible for that animal to survive. What was interesting about all of these animals was that we found them dead within a few feet of standing water (creek, stream, pond, etc). Gut-shot animals quickly become dehydrated due to their loss of blood volume and, hence, seek water. ... Because they become progressively weaker by the hour, the probability that they will die at that location is significant.”*

It is a protracted and no doubt painful death.

### **3. Wounded animals**

In the study of radio-collared deer (Ditchkoff et. al., 1998), 8 of the 11 wounded deer survived. They had been hit in the upper back and shoulders, and suffered skeletal muscle damage. Radio-tracking revealed that they became very inactive for 7 – 10 days. The need for this sort of recuperation suggests they were suffering stress and/or pain.

Being hit by an arrow undoubtedly produces pain. However, Gregory (2005) also notes, based on human experience, that uncontrolled blood loss leads to a sense of breathlessness and anxiety, in other words, respiratory distress.

A model has been developed under the Animal Welfare Strategy for assessing the relative humaneness of methods to control pest animals, against which bows may be used, sets out the impacts of different levels of injury and functional impairment (Part A domain 3), and the suffering involved in different modes of death (Part B) (Sharp and Saunders, 2011). Bow hunting may involve all levels of impact and suffering described in these sections, up to the severe and extreme. For example, an extreme impact is described as (p. 46):

*“Extreme injuries (e.g. death caused by excessive blood loss or shock ... severe internal bleeding ... Extreme or functional impairment (e.g. ... laboured breathing ... prostration, excessive and prolonged haemorrhaging).”*

As to the mode of death, loss of consciousness is mostly not immediate and there can be severe or extreme suffering before death. For example, severe suffering is described as (p.51):

*“Severance of major arteries resulting in rapid blood loss, hypovolaemia and shock. Severe degree of sickness, e.g. ... lethargy/weakness etc. Severe dyspnoea.”*

In conclusion, by permitting bow hunting the government allows introduced animals to be killed in a way that is inhumane according to official guidelines. Bows will also inevitably result in breaches of the Animal Welfare Act, sections 13 (g) and (h).

## The extent of wounding

Many studies show that large numbers of deer hit by arrows are not retrieved by archers. However, most studies do not investigate the nature of the injury and the fate of these deer.

One exception is the study already mentioned (Ditchkoff et. al., 1998), where deer were radio-collared and tracked. Of the 22 collared deer that were hit by arrows, 50% were not recovered by the archers. Of these, 3 died due to abdominal injuries and 8 survived with skeletal muscle damage.

Another study examined hunter report cards over a period of 17 years (Pederson et. al., 2008). These archers had passed a Bow Hunter Education Program and an annual proficiency test. They could request help from experienced trackers to locate a hit deer. The recovery rate was calculated as the percentage of struck deer recovered within 24 hours, those not recovered were classified as wounded. According to this very lenient criterion, 82% of deer were recovered, no doubt including many deer who suffered significantly prior to death in the 24 hour period. In addition, 18% were wounded but not recovered, their fate unknown.

Wounding in bowhunting is inevitable, but the extent reported varies widely, as shown in the table below:

Study	Extent of wounding	Method, notes
Downing (1971)	Many deer were reported hit, 8 died but only 50% of these were retrieved.	Hunter reports
Stormer et. al. (1979)	58% of all deer reported hit not retrieved, fate unknown.	Post-hunt questionnaire
Gladfelter et. al. (1983)	9.6% - 16.8% of all deer reported hit not retrieved, fate unknown.	4 years of hunter report cards, recurve and compound bows
McPhillips et. al. (1985)	48% of all deer reported hit not retrieved, fate unknown. For every 1 deer bagged 0.92 deer wounded.	Post-hunt questionnaire
Langenau (1986)	57% of all deer reported hit were not retrieved, fate unknown.	Post-hunt questionnaire
Kilpatrick & Walter (1999)	76% of deer reported hit were bagged, 16% escaped and died, 8% escaped and survived	Hunter surveys, passed a Bow Hunter Education Program and proficiency test
Nixon et. al. (2001)	Of deer killed, 37% of females	Deer marked with ear tags,

	and 31% of males not retrieved. Others may have been wounded but not found.	radio collars, carcasses located post-hunt
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Krueger et. al. (2001) investigated the possibility that unavoidable errors in methodology led to these variable and sometimes very high reports of wounding. There are obvious weaknesses in making assessments of cruelty based on self-reporting, so this study aimed to be more precise. On the basis of daily interviews with hunters, these researchers divided reports into more precise categories. For example, a reported hit was only classified as substantiated when there was physical evidence that the deer had been hit, such as blood on the ground. They took into account deer that were hit but claimed to be retrieved by another archer, and deer that were hit by more than one archer. Of the reported hits, 68% were classified as substantiated and 28% as claimed by another archer, with 4% only presumed hit without evidence. Of the deer eventually retrieved, 10% had been hit previously by another archer. If the reported hit rate had been taken at face value, the percentage of hit deer not recovered would be 28%, but taking into account the more accurate categories, it was 13%, with the fate of these injured deer unknown.

In relation to this study and the loss rate of 13%, a bow hunting advocate has concluded (Ditchkoff, 2018, p. 34): “Without question, these data are cause for optimism.” Would the general public agree with estimation, does this level of wounding meet community expectations for animal welfare?

One of the factors to be considered in the implementation of a control program for introduced animals is public acceptance, as described by Sharp and Saunders (2011, p. 28):

**“acceptability to public** – what is the public’s attitude toward the method? Although the pest animal management profession tends to view pest animals as populations, the public often sees animals as individuals, particularly with some species such as feral horses and kangaroos. With an increasing trend toward public participation in pest management it is important that acceptable methods are used where possible;”

It is unimaginable that the public finds it acceptable for animals to be hit by arrows and run off wounded, never to be found, even if it is “only” 13% of animals hit. The public is regularly outraged by media reports of animals illegally hit by arrows.

Such media reports make a valuable contribution to the investigation of bow hunting (see the appendix for a selection). Firstly, they show just how cruel and inefficient bows are and, secondly, they provide a way of gauging public reaction to killing animals with bows. The domestic animals and native wildlife shown in these reports have been shot illegally, but this is the only way that the public gets to see the suffering caused by arrows. An animal as small as a cat can be hit by 4 arrows and still be alive, albeit very badly injured. The

suffering is no different when the targets are introduced animals, the only difference is that they are not in the public gaze.

All types of bows are cruel and inefficient killing weapons. More animals are hit but not retrieved with bows than with shotguns, even though shotguns are themselves inefficient weapons (Downing, 1971; Stormer et. al., 1979; Langenau, 1986; Nixon et. al., 2001). A more useful comparison is the number of deer wounded by high-powered rifles. One U.K. study produced the following results (Aebischer et. al., 2014):

Missed	4.5%
Killed outright	88.8%
Wounded	6.7% (5.5% killed with 2 <sup>nd</sup> shot, 1.2% escaped)

The stark contrast with the wounding rate of bows is why the Standard Operating Procedures developed by PestSmart insist on the use of a high-powered rifle to control introduced animals. It is also why the RSPCA is opposed to bow hunting: "... because even when carried out by a competent marksman, it does not result in a rapid and humane death."<sup>6</sup> This opposition is explained further:

"When an animal is fatally shot with a bow, it can take several minutes for them to die; they will suffer severe pain over this period due to the trauma and damage to tissue and organs caused by an arrow entering the body.

In contrast, when an animal is shot with an appropriate firearm and ammunition by a trained and experienced shooter, death is instantaneous. ... Based on assessments of animal welfare impacts using an established model<sup>7</sup>, a head shot from a firearm is considered to achieve the most humane death when compared to other hunting methods. **Ethically, there is no justification for using a method of killing that causes increased suffering when another more humane method is available.**" (emphasis added)

In addition to being cruel, the RSPCA also notes that bowhunting makes no significant contribution to reducing the impact of introduced animals in Australia. Thus, there is no excuse for allowing bowhunting to continue. It must be banned immediately, as in the U.K., and the use of bows restricted to archery ranges.

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<sup>6</sup> <https://kb.rspca.org.au/knowledge-base/why-do-some-recreational-hunters-use-a-bow-and-arrow-and-is-this-type-of-hunting-humane/>

<sup>7</sup> See Sharp & Saunders 2011



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