Inquiry into the control of invasive animals on crown land

Submission by the Invasive Species Council

September 2016

Introduction

The Invasive Species Council is committed to the protection of Australia's biodiversity and ecosystems from the impacts of weeds, feral animals and other invasive species. We appreciate Parliament's role in debating policy solutions for invasive animal control on Crown land, and welcome the opportunity to make this submission.

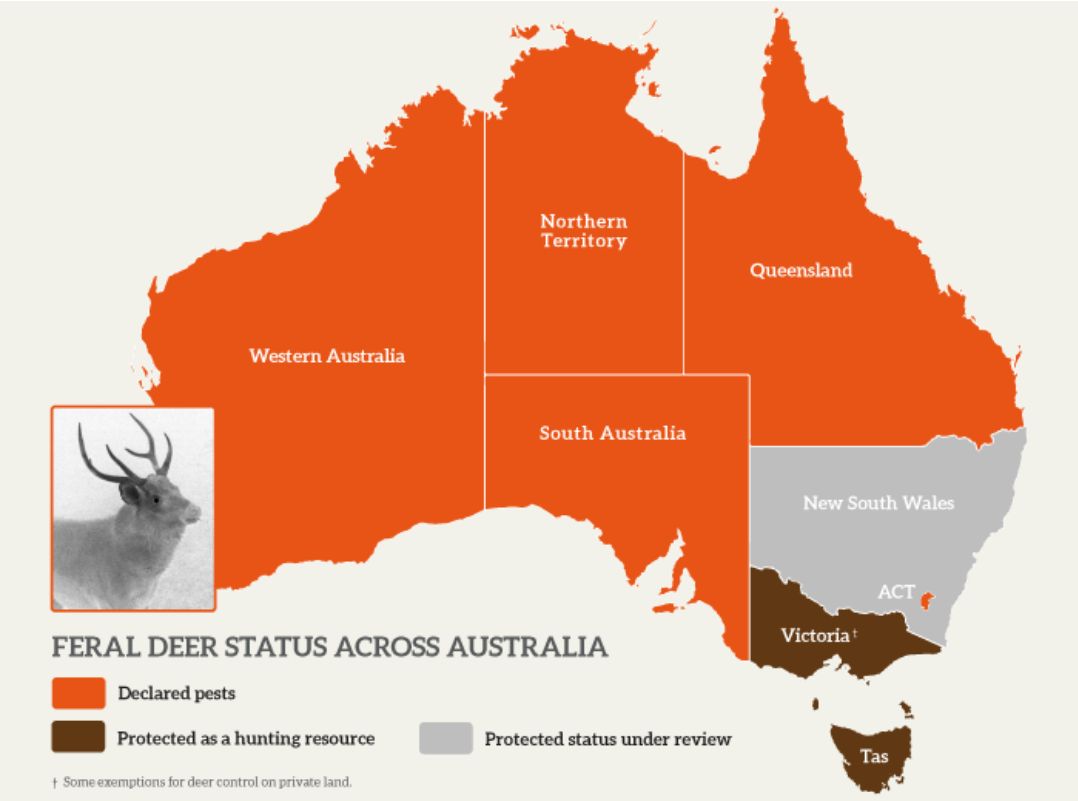
We note the terms of reference for this inquiry as follows:

> ... consideration ... into the benefits of Parks Victoria and other agencies such as the Game Management Authority's use of community hunting organisations and individuals in the control of invasive animals on Crown land including but not limited to the following:
>
> 1: assessment of the biodiversity outcomes, community safety and limitations of the trial conducted by Parks Victoria on control of deer populations in a national park;
>
> 2: consideration of the application of these types of programs for other invasive animal species in partnership with Crown land managers;
>
> 3: assessment of the relative costs and benefits, financial or otherwise, of other forms of pest control in national parks.

These terms of reference emphasise the benefits rather than disadvantages of use of community hunting organisations in invasive animal control. We are pleased to see that the relative costs *and* benefits at least of other forms of pest control are taken into account, because a focus only on benefits would run counter to the principles of well informed, judicious and integrated pest management.

We are aware that deer are not listed as pest animals in Victoria. The listing of deer as pest species and the removal of their protection as "game" would be key steps towards the control of these animals on Crown land. As the diagram below shows, deer are listed as pests across most of Australia (their protected status in NSW is under review given large impacts on the environment, national parks, farms, the economy, infrastructure and human life- deer have caused several road fatalities in NSW).

Figure 1: Status of deer in Australia showing anomalous protection as game in the South-East



Our submission calls for consistent management of all invasive animals as pest species, and for increased resourcing of their prevention, eradication, containment and control on public and private lands, in the public interest.

Recreational hunting is not an effective means of controlling invasive animals. However, the use of skilled volunteer shooters, recruited and inducted through community hunting organisations within a tightly monitored strategic pest management program under government management, can be one effective tool in an integrated pest control program.

Our submission is structured to broadly reflect the terms of reference for the inquiry, describing the problem of feral animals (including deer) and then the solution of strategic and integrated feral animal management. We next address the use of community hunting organisations in that context, and conclude with a note on Victoria's overall biosecurity system.

The problem: the impacts of deer and other invasive feral animals

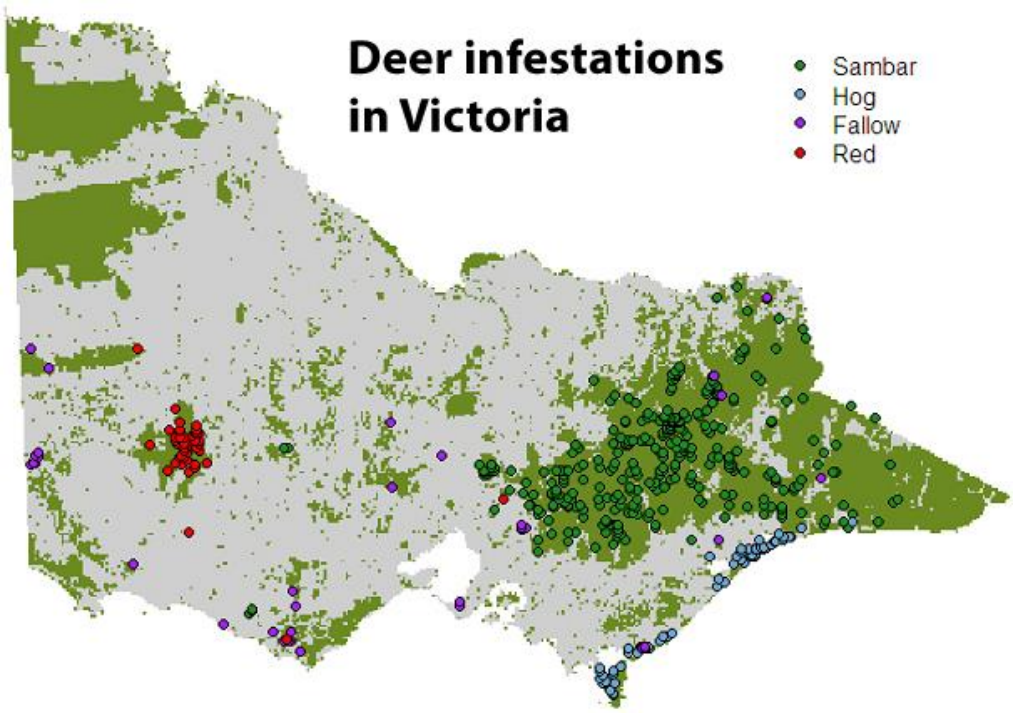
The state of deer and feral animals in Vic

There are six species of feral deer in Victoria: sambar, red, fallow and hog deer, and the less common chital and rusa deer. Deer species in Victoria follow the usual trajectory of invasive species, with small initial infestations extending in geographic range and in population density, followed by new outlying populations becoming established then growing until eventually all suitable habitat is infested with large numbers of animals. Some Victorian species are more advanced in this invasion process than others, but their trajectory is the same.

Deer numbers have been growing rapidly in Victoria in recent years with the sambar population in particular thought to be now perhaps in the hundreds of thousands of animals. Although sambar do not yet occupy all habitat suited to their species (only recently being found at Wilson's Promontory for example), they are very widespread in the state.

Hog deer populations are concentrated mostly along and near the coastal areas of eastern Victoria so far. Red deer are in fairly high numbers in the Grampians with outlying populations in a few locations still in smaller numbers. Fallow deer are found in several locations, while chital and rusa deer are yet to establish very significant populations.

Figure 2: Victoria deer infestations (map courtesy of Department of Environment and Primary Industries)



Many other feral animals are found in Victoria, including cats, pigs, goats, horses, foxes, rabbits and less widely known species like Smooth Newt and Marron. All pose similar problems as invasive species that damage native biodiversity and habitat. Hunting is often cited as a panacea for the control of the larger vertebrate pests, whereas in fact the explosive growth in sambar deer numbers, despite their being widely hunted, suggests otherwise. We discuss the policy responses to feral animals, especially deer, in Victoria, below.

Impacts of deer and other feral animals on biodiversity

With growing populations of deer in an expanding range across multiple locations, it is unsurprising that their environmental impacts are also growing. Environmental impacts from deer include:

- trampling damage to stream-banks and wetlands,
- damage to trees and shrubs from chewing and rubbing of bark (ringbarking)
- browsing and damage to native plants and wildflowers leading to reduction in plant biodiversity and the possibility of extinction of rare or threatened plants
- competition with native herbivores for food and habitat
- Exposure of soil to weed invasion

Because of these impacts, sambar deer are already listed as a potentially threatening process under the state's Flora and Fauna Guarantee Act. While the impact of different deer species varies, all deer species are exotic animals with hard hooves, browsing habits and other ecological characteristics that are not compatible with maintenance of healthy natural ecosystems in Victoria.

Due to their rising numbers and their effect on natural ecosystems, we consider deer to be the most important emerging vertebrate pest in eastern Australia.

Other vertebrate and invertebrate pests also have high impact on ecosystems and biodiversity. These impacts vary depending on the ecological characteristics of the pest in question.

Predators like foxes and cats place native animals at risk through predation. Herbivores like goats and rabbits compete with wildlife for food and habitat resources and can have a high impact on native vegetation sometimes denuding areas and exposing land to further degradation through erosion. Omnivores like pigs (whose spread throughout Victoria is thought to have been deliberately brought about by hunters) have multiple impacts including severe soil disturbance and direct browsing on native plants such as often rare or threatened orchids.

Although extinction is an end point, it occurs through a process whereby a plant or animal becomes less abundant within its range, its range then contracts, sub-populations become separated and in turn shrink and disappear until the last individual dies.

In most cases this occurs as a result of several threatening processes affecting the same species. So for example loss of habitat for an Alpine Marsh-marigold may occur through trampling of stream-sides by hard-hooved deer. This in turn may encourage weeds to invade the disturbed soil placing further pressure on the native plant. Browsing by deer may combine with browsing by feral horses to then bring about an accelerated decline in the plant's population over time.

The most cost-effective way of avoiding extinctions is to address the extinction process at its early stages.

With this in mind it is critical to address the ecological effects of feral deer promptly to arrest the impacts on native species ideally before those species are put in peril by deer. Done well, nature conservation is as much about avoiding impacts, as it is about reversing impacts and restoring populations of indigenous species already in decline.

Many native plant and animal species depend on the ecosystems that deer are damaging. That damage must be halted to avoid growing costs in ecosystem and species conservation in coming years.

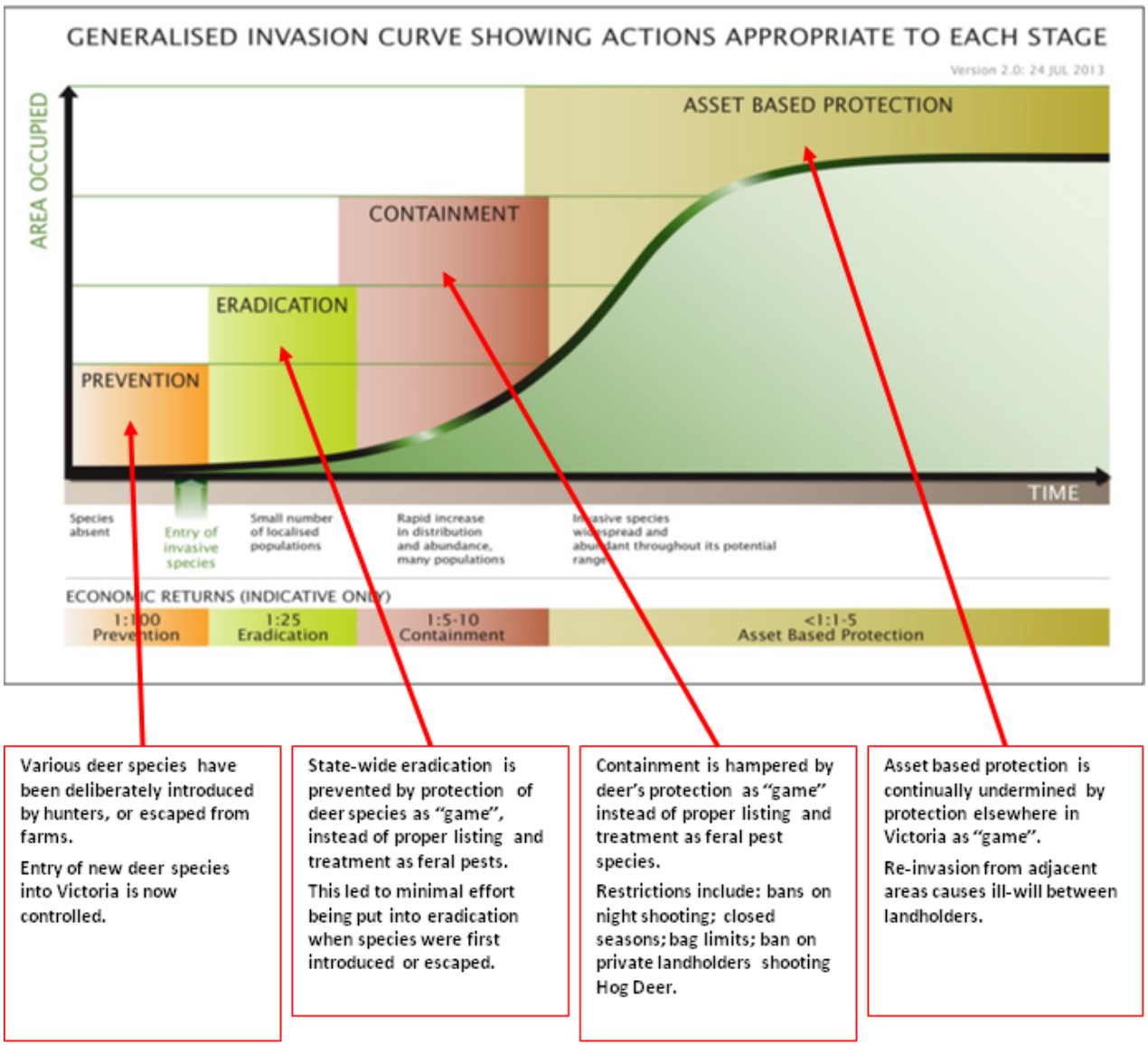
Policy responses to deer in Victoria to date

Policy responses to feral deer species in Victoria have been distorted by their treatment as game, instead of acknowledging their potentially serious environmental, agricultural and social costs and taking into account an understanding of the pest invasion process.

In best practice invasive species management, actions are tailored to the stages of the generalised invasion curve shown in figure 3. The most cost-effective approach to invasive species management is always to focus on the earliest stage of the invasion curve possible (i.e., prevention wherever possible). Figure 3 shows how the cost-effectiveness of management of deer species in Victoria has been severely compromised by their treatment as game rather than pests.

Far from our preventing their introduction, feral deer populations have been *deliberately* created in Victoria by "acclimatisation" enthusiasts and by hunters. Other deer populations have resulted from farm escapes. Today, at least, the introduction of more new deer species to Victoria is prohibited. But as far as the cost-effective prevention of the ecological and economic damage that the four deer species already well established in Victoria is concerned, "the deer has bolted". Because their full range is still not reached, containment of deer to prevent their further spread is still possible for many areas of Victoria

Figure 3: Generalised pest species invasion curve showing problems caused by treatment of deer species as game instead of pests



State-wide eradication of deer species is precluded by their listing as protected game and by the Game Management Authority's (somewhat ambiguous) statutory responsibility to sustain them (for more on the Game Management Authority see below). So the second-most cost-effective treatment of these feral animals is ruled out under the current perverse legislation and regulations. (Although land managers may attempt local eradications where exceptions to the protection of deer as game sometimes apply, these localised efforts fit under the "asset-based protection" stage of the invasion curve in figure 3, as they cannot achieve broad-scale eradication or containment in any ecologically or economically meaningful way while deer remain protected across the state and there is no government-led, landholder supported containment strategy).

Because of their treatment as game in the interest of hunters, the established deer species in Victoria have by-and-large reached the containment stage in the invasion curve, wherein there is a rapid increase in their distribution and abundance and there are many populations. Even at this stage though, deer's treatment as game animals hampers proper broad-scale containment efforts. Containment (use of integrated control methods across all relevant tenures to prevent further spread and eradicate outlying populations) is hampered as shown in figure 3.

And so although most deer in Victoria are at the containment stage of the curve (sambar being at the furthest end of that stage due to the policy failures described here), land managers have to revert to using management strategies tailored to the asset-based-protection stage. This assumes that the feral animals cannot be eradicated or contained (a false assumption for species at the containment stage of the curve) and dooms local attempts at asset protection to either never-ending toil or to ultimate failure due to increasing numbers of animals that infest and re-invade the sites in question.

The use of community hunting organisations in certain strategic eradication or asset management efforts (such as the recent trials in certain parks) must be viewed in this context. Without a policy decision to take a systematic approach- by listing deer as pest species across the state and selecting management strategies and tactics appropriate to pest animals on the relevant stage of the invasion curve- such site-specific efforts will prove costly and ultimately futile.

The hunting lobby has of course been consistently enthusiastic about the utility of hunting in vertebrate pest control, and has taken every chance to push hunting as a policy solution. This has prompted policy responses to pest animals that have proven futile as they exaggerate and misrepresent hunting's utility and fail to recognise the problems of broader policy settings favouring hunters (as outlined in figure 3). For example the fox bounty in Victoria did not effectively reduce the impacts of foxes as a pest species- rendering the public funds applied to the bounty scheme a dead loss to the public purse.

On the other hand, some carefully designed pest control efforts involving community hunting organisations under strict guidelines and supervision have proven effective in complementing other pest control methods in an integrated professional program.

We discuss the shortcomings of the notion of hunting as a pest control tool below.

Regarding the Game Management Authority, we note that the Minister attempted to clarify the GMA's role in relation to promotion of hunting with the following statement:

> "...the GMA will promote sustainability and responsibility in game hunting; however, it will not have an explicit role in promoting the industry".

However we also note that the term "sustainability" is not defined in the Game Management Authority Act 2014. The Minister's clarifying statement could then be read as an expectation that the GMA will merely maintain (sustain) populations of feral animals that are considered game- as opposed to applying a definition of sustainability that is tied, for example, to the National Strategy for Ecologically Sustainable Development- encompassing protection of biological diversity and maintenance of essential ecological processes.

The concept of game in Australia is closely tied to exotic species living in the wild in a way that would otherwise see them considered pests. This puts the GMA in an invidious position with many of their game industry stakeholders expecting them to maintain (or even increase) populations of animals that would

otherwise be considered feral, and some of which (like sambar deer) are actually listed as potentially threatening processes under other legislation. The current constraints on managing hog deer (bag limits, a one-month open season and a ban on control by private landholders) exemplify the extent the Game Management Authority goes to limit the effect of hunting pressure while the population is small.

Indeed the GMA Act provides that Authority Members may *actually have pecuniary interests in game hunting or game management* (so long as those interests are no greater than the interests of "any other person so engaged"). We do not point this out in order to impugn sitting Members of the GMA, but only to underline the point that the GMA's institutional role *vis-a-vis* pest animal control is not pure from an invasive animal control point of view, nor entirely divorced from the interests of the vocal hunting lobby.

It is our view that the Game Authority's role should be performed by government, to ensure that management of feral animals does not undermine other public good policy objectives such as nature conservation and national park and conservation area management.

Biodiversity outcomes achievable with proper deer control

The environmental impacts of deer outlined briefly above can be reduced by containing, eradicating and reducing deer populations. This will limit the ecological damage from deer and forestall the need to list further native species as threatened with extinction. It will also reduce the rate of decline of native species affected by the browsing and habitat damage caused by deer (remembering that most extinctions are caused by several threatening processes acting in concert but also noting that some threatened plant species are directly susceptible to deer impacts).

Ultimately then some of the biodiversity benefits available through better control of deer are:

- Reduced rate of decline of threatened species affected by deer;
- Improved habitat quality for native animals;
- Halting of the decline of ecosystem health (including: damage to riparian zones; water quality decline from stream-bank erosion, siltation, and faecal contamination; death of trees and shrubs from rubbing and browsing; promotion of weed invasions through exposure of soil and spread of propagules in dung);
- Avoidance of impacts that would otherwise see further native species added to lists of threatened species

The solution: strategic and integrated management of invasive animals

Name the problem: list deer as feral pest species

Treatment of an invasive feral animal should reflect a science-based risk assessment that takes a precautionary approach regarding the need to protect biodiversity. With this in mind it is clear that Victoria's current treatment of deer as protected game is archaic and dysfunctional. Proper modern invasive species management would see deer assessed as a very high risk to public good environmental and agricultural values, and listed and managed as pest species like any others across all lands, using all available management tools. The serious potential cost of feral deer to human safety has also been ignored. Over a seven year period there were nine motorist deaths due to feral deer strikes in the Illawarra south of Sydney up until 2011.

The explosion of deer numbers across Victoria in recent years is proof of the inadequacy of current arrangements that fail to implement a precautionary, preventative approach in the broader public interest. The public cost of these perverse regulatory arrangements is mounting and must be addressed in the public interest.

Proper application of the mix of control techniques, whether including the use of community hunting organisations or not, cannot be made as long as deer are protected and the objectives of state-wide deer

management are skewed towards recreational hunting interests against the broader public interest. Our approach does not seek an end to recreational hunting. Instead it seeks to ensure that recreational hunting is rejected as feral animal control– something it is not except in very restricted and specific circumstances.

We recommend to you the draft findings of the NSW Natural Resources Commission review of pest animal management (http://www.nrc.nsw.gov.au/pest-animal-management) that provides sound analysis recommending that deer be declared a pest species in NSW and managed appropriately.

Fix the problem: apply professional integrated pest management strategies and techniques

Feral animal control must be strategic, effective, and humane.1 Effective feral animal control programs require careful planning and coordination and the judicious selection of an integrated variety of pest control methods to meet defined environmental outcomes.

Progress towards achievement of measurable environmental and land management outcomes, must then be closely managed and evaluated within the context of the overall integrated pest management program.

Because of the high rate of increase of many feral animals and their mobility, a very large proportion of a targeted population will have to be killed to achieve strategically meaningful control. For example, a yearly kill rate ranging from of up to 34% (for fallow deer) and 97% (for mice) of a total population may be needed to achieve any reduction of a population. The yearly kill rate required to effectively control species commonly targeted by hunters are up to 35% for goats, 65% for foxes and 70% for pigs. Removal of smaller numbers of animals will make little difference to an invasive feral species' impacts.

To achieve adequate population reductions the following steps must be included:

- Removal of large numbers from the main infestation (but for large infestations, 'asset' protection may be more suitable);
- Entire removal of small isolated or outlying populations;
- Consistent and sustained targeting of animals around the low-population-density edges of the main population to limit their spread.

There are many different techniques for controlling invasive animals apart from recreational hunting. Most successful control programs employ a mix of techniques tailored to achieving certain outcomes. Aerial shooting and/or ground shooting (usually by professional pest control marksmen under strict animal welfare guidelines), poisoning, fumigation, sterilisation, trapping, fertility control and mustering can all play a part, depending on the species targeted and outcome sought. But one must have clear goals and an integrated program of control techniques to effectively deliver adequate strategic outcomes in pest management.

As well as the above techniques there is a pressing need to develop new control methods aimed at achieving public good protection of biodiversity from the impacts of invasive animals. Investment in long-term research to determine deer numbers and impacts and to identify new control measures is essential.

The best time to determine the likely efficacy and costs and benefits of various control techniques is during program and project planning within public land management organisations (where public land is concerned). At that point, the specific invasive species targeted is known along with the risks it poses to the land in question, and the specific environmental and land management outcomes sought through control are also known. The various control techniques can then be assessed by professional land managers on the basis of the relative likelihood of delivering cost-effective program or project outcomes.

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[1] NSW Government codes of practice, eg. Sharp T, Saunders G. 2007. Model code of practice for the humane control of wild dogs. NSW Department of Primary Industries. www.invasiveanimals.com/downloads/ COP_for_wild_dogs.pdf

Development of a coordinated government-led containment strategy to control deer in Victoria would be a welcome step, but the effectiveness of any such strategy will be compromised until the perverse protection of deer as game is revoked.

Once deer are listed as a pest species and their spread and population growth are contained through integrated pest management programs, decisions can then be made about the practicability of their total eradication from Victoria. If that is not deemed possible, their management within containment lines can be tailored to reduce ecological and economic damage *to a minimum*. This can only be achieved when deer are treated properly as feral pest species and the Game Management Authority's institutional remit to sustain these feral animals is removed.

Use of hunting organisations: part of the solution?

Community organisations cannot replace proper funding for public land pest management

On the broad point of Parks Victoria's use of community hunting organisations in pest control we firstly urge that community hunting organisations should not be speciously exploited in an attempt to "paper-over" inadequate funding for strategic and integrated pest animal management across the parks estate. It is important that the Committee apprise themselves of the scale of the pest animal management challenge in Victoria's parks and Crown lands, the human and financial resources required to tackle that challenge adequately in acquitting statutory land management and environmental accountabilities, and the shortfall in currently available resources. With that information in hand it will be apparent that community hunting organisations cannot be seen as a panacea, nor be used in lieu of proper funding and resourcing of Parks Victoria's and other Crown land mangers' day-to-day pest animal management.

Hunting is generally not an effective means of pest animal control

Hunting is rarely an effective method of control for invasive species. Most recreational hunting is *ad hoc* and fails to follow feral animal control program guidelines in virtually every way. There are usually no defined objectives, no assessment of the effectiveness and appropriateness of shooting for the (non-specified) purpose, no integration with other programs and control techniques, no quality control and no monitoring.

The only circumstances under which recreational hunters are likely to be able to contribute to effective pest animal control are when they supplement other methods of control as part of a well coordinated and closely managed program. Otherwise, as explained in the Invasive Species Council fact sheet, *Recreational hunting NSW: claims v facts*, recreational hunting is generally not effective in feral animal control for the following reasons:

- Feral animals are typically highly fecund (produce many offspring) and many populations are saturated with a large 'doomed surplus' (that would normally die due to lack of resources), which enables them to quickly replace animals killed by hunters;
- Ground shooting, even using skilled shooters, is not an effective means of primary control for most feral animals, and according to most government standards should only be used as part of coordinated programs, usually as a supplement to other methods;
- Most hunting is *ad hoc* with no specific environmental goals, planning or monitoring, and hunting effort is usually dispersed;
- Hunters often prefer to kill large trophy males, which makes little contribution to control because in polygamous species such as deer, pigs and goats the remaining males can inseminate all the females;

- Hunters are often motivated to maintain feral animal populations for future hunting, leaving young and females (indeed Victoria's system of game management is partly aimed at sustaining feral animal populations as a game resource for hunters);
- Hunters have highly variable skill levels (few skills tests are conducted for recreational hunting licensing in Australia). As an example, in 2010-11, each hunting day for hunters licensed by the NSW Game Council in NSW state forests resulted on average in only 0.7 feral animals killed- a very large investment of time for a very low kill rate, falling well short of the skill level needed for effective feral animal control.

The claims by supporters of hunting of their effectiveness in feral animal control are often based on total numbers of feral animals killed by hunters each year. This measure is meaningless unless examined in the context of the size of the targeted populations of each feral animal and the environmental and land management outcomes achievable given the amount of population reduction.

The Invasive Species Council is deeply concerned by the growing influence of the hunting lobby over feral animal policy in Australia.

Actively supporting recreational hunting as a means of pest control or giving hunters greater influence in government, such as in NSW where the NSW Game Council was established, has potentially adverse consequences. The NSW Game Council and bodies representing hunters actively opposed the designation of deer as pest species, the listing of deer as a 'key threatening process' under NSW threatened species legislation and the listing of sambar deer as a 'potentially threatening process' under Victorian legislation.

Deer have still not been declared as pest species in NSW, Victoria or Tasmania due to the influence of hunters (although that is now under review in NSW).

Maverick hunters also sometimes exacerbate feral animal problems by deliberately spreading feral animals into new areas as a hunting resource. This is true of deer and of pigs for example in Victoria.

Even when ground shooting is properly determined to be an appropriate feral animal control method, recreational hunting has distinct **dis**advantages compared to professional shooting, including:

- Recreational hunting has a highly variable skill-base;
- The place where recreational hunting is carried out is usually where the hunter chooses (where it is most convenient and attractive from a recreational point of view) rather than where it will be most effective in pest control;
- The date and time of recreational hunting is usually determined by the hunter not by the factors relevant to delivering maximum feral animal control outcomes;
- Many hunters are motivated by capturing a trophy animal (usually a male) rather than by eliminating females and young.

Hunting can also make pest animal control more difficult by causing feral animals to become shyer and more difficult to locate for professional pest controllers. Recreational hunting can push feral animals into new areas and disperse them more widely presenting difficulties for professional pest control programs.

So although ground shooting is a valid and often effective method of pest animal control, recreational hunting is much less effective than use of professional shooters.

Regarding community safety, we envisage that very significant issues could arise if the use of recreational hunting in pest management is done without adequate regulation, training, safeguards and supervision, especially if conducted across larger geographical areas. As the Invasive Species Council's principal

interest and expertise is in protection of the natural environment from invasive species we will not expand upon this point in this submission.

We discuss the use of community hunting organisations (as opposed to casual recreational hunting) below.

Use of community hunting organisations can be effective in limited circumstances

The use of skilled recreational shooters has only proven effective in pest animal control when used as part of a professional invasive species control program, carefully applied, closely managed and monitored to exert sufficient, sustained pressure over well-defined, accessible areas in an integrated pest management effort2. Sufficiently skilled volunteer shooters may prove useful as a supplement to other control methods such as aerial shooting and baiting (as used in Operation "Bounceback" in South Australia).

This can be effective for example where site-specific management objectives like protection of threatened species habitat are sought in small land parcels.

At a broader, landscape-scale however, even when encouraged through bounty schemes, broad-scale recreational hunting has not proven an effective means of invasive animal control.

Where skilled recreational shooters may prove effective, community hunting organisations may be capable of assisting with recruitment and induction of adequately skilled shooters and of helping with the logistical aspects of the pest control effort.

Such organisations may also be capable of adding certain layers of governance and administrative assurance- without reducing the proper accountability of public land management bodies.

Instances where use of community hunting organisations has proven effective in pest animal management are the exception, and the use of such organisations will not be a critical success factor in most pest management programs.

The points made above apply to deer and also to other feral and game species. For more information and references on debates about recreational hunting as a pest management tool see the fact sheet "Recreational hunting NSW: claims vs facts" on our website and previously provided to the committee for information.

A note on reforming Victoria's biosecurity and invasive species management system

We understand that Victoria's invasive species and biosecurity arrangements are dated and in need of reform, and that governments over recent years have commenced various policy and legislative review processes to address this situation.

While some aspects of the state's laws, regulations and institutions show national leadership (for example Victoria's system of domestic ballast water controls), other aspects of the State's system lag behind other states and territories (e.g. the perverse protection of feral deer to maintain their populations as "game").

[2] Norris A, Low T, Gordon I, Saunders G, Lapidge S, Lapidge K, Peacock T, Pech RP. 2005. *Review of the management of feral animals and their impact on biodiversity in the rangeland: A resource to aid NRM planning*. Canberra. Pest Animal Control CRC.

Recent reviews of the biosecurity systems of other jurisdictions provide many ideas that Victoria can now draw on in updating and strengthening its system of invasive animal control.

Important elements of a strong invasive species management system include:

1. **Clear goals with prevention at their centre,** aimed at delivering the public good through protection of the natural environment from invasive species: Preventing the entry of new invasive species must lay at the heart of the system,
2. **Purposeful strategies**, targets, and accountabilities for reducing to a minimum the impacts of invasive species on biodiversity and ecosystems,
3. **Putting the environment up front**: by making statutory provision for involvement of environmental agencies experts and stakeholders throughout the decision-making and engagement system for invasive species management,
4. **Starting with what's safe**: applying a "white list" approach to all invasive species, listing those that are safe to bring into Victoria, not just those that are (so far) known to be *un*safe,
5. **A level playing field**: consistent, transparent management of all invasive species (at all taxonomic levels) around transparent science-based risk assessments, and applying the precautionary principle in regard to the protection of biodiversity and ecosystems,
6. **A tenure-neutral approach**: consistent objectives and standards for invasive species management are needed across all land tenures (therefore, for example, this inquiry's focus on Crown lands is not ideal),
7. **Sharing responsibility**: providing for a general duty (or similar) to protect the environment from the impacts of invasive species, and vigorously engaging the community in this mission,
8. **Adequate funding**: providing adequate on-going funding to reduce the impacts of invasive species on biodiversity and ecosystems to a minimum,
9. **Accountability and review mechanisms:** these must reveal the public good outcomes delivered through the system,
10. **Strong governance**: to ensure that the system effectively delivers public-good outcomes.

Conclusion

To be successful, invasive animal control programs must have clear objectives about the environmental and land management outcomes sought, and tailor specific control techniques to meet those objectives. On Crown lands, those objectives must have at their heart the goal of reducing to a minimum the impact of invasive species on the natural environment.

Recreational hunting is not an effective means of controlling invasive animals. That said, the use of skilled recreational hunters within a tightly monitored strategic pest management program under government management, can be one effective pest control tool.

Even so, the use of community hunting organisations is not the solution to Victoria's feral animal problem. No matter which techniques may be successful in controlling feral animals on a given site at a given time, without a strong system for state-wide and systematic management of invasive species, feral animals will continue to damage Victoria's environment.

The lack of research must be addressed to establish the extent and numbers of deer across Victoria and to develop new control mechanisms such as baits, bait delivery devices and traps. The Victorian government is the appropriate authority to lead this research.

The listing of deer as pest species, and removal of their protection as game are critical steps towards responsible management of feral animals in the public interest in Victoria. The Game Authority should be abolished and the Authority's role taken up by government to ensure that public good environmental and land management objectives inform feral animal policy and administration. A state-wide strategy to contain deer would provide a further important plank in a stronger system of feral animal control for the state.

The Invasive Species Council would be happy to provide the Committee with more detail on the matters raised in this submission. Please contact Andrew Cox at andrewcox@invasives.org.au if you would like to discuss this submission.

Thank you for the opportunity to make this submission.

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