

Addendum to variation of EPBC 2011/6183 - Response to comments received during the public submission phase

To meet the requirements of Section 95A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), documents relating to the Wild Dog Aerial Baiting Operation in Gippsland Victoria (EPBC 2011/6183) were provided to seek public submissions on the proposed action for a period of 20 business days. The public submission period closed at 5pm Monday 17 February.

A total of seventeen submissions were received; each raising similar concerns. The issues raised have been categorised as follows:

- a) *Potential impacts on the spot-tailed quoll and non-target species;*
- b) *The influence of reducing apex predator populations on mesopredator numbers and potential impacts on non-target species;*
- c) *Protection of pure dingoes;*
- d) *Promotion of guardian animals for livestock protection;*
- e) *The use of 1080 as a means of wild dog control;*
- f) *Controlling wild dogs may increase livestock predation;*
- g) *Impacts on other natural value assets;*
- h) *Use of public monies;*
- i) *Monitoring should be more rigorous; and*
- j) *Location of transects within the 3km livestock protection buffer.*

The potential impacts of aerial baiting on the spot-tailed quoll and non-target species (a) and indirect impacts on other listed species as a result of the removal of apex predators (b) were the only issues raised which directly relate to matters of national significance under the EPBC Act. While the Victorian Government is only required to respond to matters that directly relate to the EPBC Act (a&b), responses to all issues raised are provided below. A summary of the main responses for each comment are provided in the grey text boxes, followed by a detailed description of the issue.

Matters Relating to EPBC Act

a) Potential impacts on the spot-tailed quoll and non-target species

The Department of Environment and Primary Industries (DEPI) believes it has adequately addressed the potential impacts on the spot-tailed quoll by:

- Undertaking monitoring at three of the proposed sites, finding no evidence of quolls eating baits;
- Selecting three additional sites that are unlikely to support quoll populations or have no previously identified populations.

DEPI believes it has adequately addressed the potential impacts on non-target species by:

- Ensuring the operation will conform with regulatory safeguards for the safe, effective and humane use of 1080, including managing risk to native species;
- Considering the risk to non-targets with regard to the reduced susceptibility of native species to 1080.

Six submissions raised concerns regarding potential impacts of 1080 baits delivered aurally on the spot-tailed quoll and the monitoring undertaken in 2012-13. Four additional submissions were concerned with potential bait take by non-target species.

Following the decision to declare the aerial baiting operation a controlled action in December 2011, the Victorian Government undertook ground-based baiting in and around the sites deemed appropriate for aerial baiting. In order to determine the level of bait take by wild dogs and non-target species, including the spot-tailed quoll, the Arthur Rylah Institute of Environmental Research was contracted to undertake monitoring in four sites within the north east and Gippsland regions of Victoria. Three of the sites are proposed as appropriate for aerial baiting. Given the solitary nature and extensive home range of the spot-tailed quoll, a monitoring regime to detect the species must incorporate the most cost-effective techniques to allow sampling effort to be maximised over large sampling units. The use of cameras has been stated by some authors (e.g. Mace et al., 1994; Vine et al., 2009) as the most efficient method of detecting species at low population densities or in difficult to access areas. As a result, cameras were chosen as the most appropriate and cost-effective monitoring method as opposed to other sampling techniques including observation of latrine sites, track and scat monitoring and the use of hair tubes. Ongoing monitoring of the wild dog management operation has continued within the resources of the project.

As stated previously, monitoring occurred in three of the six proposed sites; however the remaining sites (Burrowa, Wonnangatta/Punchen Budweid and Bullhead) have been selected as they contain similar habitat to the monitored sites. Furthermore, best available data including habitat modelling and the Victorian Biodiversity Atlas and Atlas of Living Australia indicate these sites are also unlikely to support quoll populations or have no previously identified populations.

Every attempt has been made to ensure quoll populations will not be impacted upon throughout the development of the operation. This includes the timing of the operation to commence in early autumn to ensure it does not coincide with the peak breeding season for the quolls, reducing the likelihood that if quolls are in fact present, they will be unlikely to encounter bait. However, should this occur some discussion on potential impacts is considered below.

The susceptibility of the quoll and other native species to 1080 poisoning is widely known and documents previously submitted to the Australian Government Department of Environment (DoE) regarding the aerial baiting operation identify these issues. Degradation of 1080 in the environment occurs rapidly and begins immediately following dosing of fresh meat baits. Table 1 identifies rate of 1080 degradation over a fourteen day period as described by the Tasmanian Department of Primary Industries, Parks, Water and Environment (2010). The table also identifies the timing and number of baits needed to be consumed in the proposed aerial baiting operation to reach the previously determined LD₅₀ for the spot-tailed quoll (dosage required to kill 50% of the population) on 1.85mg/kg.

Table 1: Number of baits consumed to reach an LD₅₀ for the spot-tailed quoll

Percent dosage	mg	# Days since bait manufacture*	# baits required LD ₅₀ (1.85mg/kg)			
			Female		Male	
			Min (1.5kg LD50 - 2.75mg)	max (2kg LD50 - 3.7mg)	Min (2.8kg LD50 - 5.18mg)	Max (4.6kg LD50 - 8.51mg)
100	6	Dosing	NA	NA	NA	NA
90	5.4	0	0.51	0.69	0.96	1.58
43.3	2.58	1	1.07	1.43	2.01	3.30
28.2	1.68	5	1.64	2.20	3.08	5.07
19.7	1.14	10	2.41	3.25	4.54	7.46
11.6	0.66	14	4.17	5.61	7.85	12.89

* 10% of toxicity is lost during the time from dosing to its deployment; after 1 day concentration has reduced to 43.3%

It can be seen from Table 1 that the LD₅₀ would only be reached if female or juvenile males consumed bait within 24hrs of the bait being laid. Following this time, quolls would need to consume more than one and a half baits at least to reach an LD₅₀. Rate of lay for the aerial baiting operation will be no more than one 250g fresh meat bait per ten hectares. Given this rate, quolls would be required to move substantial distances in order to consume enough bait to reach an LD₅₀.

One submission provided during the public consultation raised the point that a quoll was recently sighted in another area that has long been subject to a fox baiting program, the Grampians National Park. The Grampians Ark program utilises a pulsed baiting program where high (>0.6baits/km²) and medium (0.2-0.6baits/km²) rates of baiting occur continuously for a specific period with a break of several weeks between 'pulses' of baiting. The program consists of baiting 444 km of internal tracks, with 407 bait-stations placed at 1-km intervals. Baits are checked weekly and replaced two times over a period of nine weeks (with a four-week break between pulses). This is repeated four times per year beginning in mid-winter, mid-spring, mid-summer and mid-autumn. Although spot-tailed quolls are generally solitary animals, the presence of an individual in the Grampians National Park is a likely indicator that a population exists within the Park. The survival of the species has therefore continued regardless of the fact that a substantial baiting operation with 1080 has been used for fox control in the region.

The development of the aerial baiting operation has followed a risk mitigation approach which includes complying to regulations governing the use of 1080. The Directions for the Use of 1080 Pest Animal bait products in Victoria (DFU) outlines the use of 1080 in Victoria in accordance with relevant legislation. The document emphasises the responsibilities of the bait user to ensure that any risks associated with the use of 1080 pest animal bait products are managed appropriately. Responsibilities include the provision of signage, warning that 1080 has been used in the area, which must be displayed to inform people using or entering the land of the potential risk. In order to eliminate the likelihood of 1080 leaching into areas where it is not intended, the DFU also provides the minimum distance from dwellings, water bodies, boundary fences etc. that bait can be placed .

Provision of all information regarding the operation in a clear and transparent format to the Australian Government Department of Environment is another way in which the aerial baiting operation has followed a risk mitigation process. The Australian Government is responsible for assessing the aerial baiting and its potential impact on matters of national significance that relate to the EPBC Act.

b) The influence of reducing apex predator populations on mesopredator numbers and potential impacts on non-target species

DEPI believes:

- Research into apex/mesopredator theory is ongoing and its application within complex ecosystems has yet to be demonstrated;
- The Victorian Government has a legal obligation to manage established pest animals including wild dogs on public land.

DEPI is:

- Targeting wild dogs in the aerial baiting operation although it is very likely that foxes will be a significant non-target species;
- Undertaking significant fox control programs across Victoria.

Concern over the removal of the wild dogs as the apex predator was raised within twelve submissions. It is thought by these submitters that removing wild dogs will lead to an increase in

mesopredator abundance and a potential increase in the predation of other native species, listed or otherwise, by mesopredators. Wild dogs, including the dingo, are considered the top mammalian predator within Australia and research into the influence of the apex predator/mesopredator relationship is ongoing.

Numerous studies have highlighted the fact that wild dogs prey on a range of native mammals (Corbett 1995), including large (Whitehouse 1977; Thomson 1992), medium (Newsome et al. 1983; Claridge et al. 2010) and small native mammals (Triggs et al. 1984). Wild dogs also consume rabbits where they are abundant (Marsack and Campbell 1990) and livestock when other species are unavailable (Corbett and Newsome 1987). Furthermore, a study by Glen & Dickman (2008) on the potential niche overlaps of the spot-tailed quoll, wild dogs and foxes in the Marengo and Chaelundi State Forests found distinct similarities in the diets of the three carnivores indicating a competitive relationship is occurring. The similarities were not only in terms of the range of prey types consumed but also their frequency of occurrence and relative volumes.

The recent monitoring undertaken by DEPI found that all of the fourteen native mammals captured on cameras at bait take stations are considered to be regular prey items of wild dogs. These include: antechinus sp.; bush rat (*Rattus fuscipes*); common ringtail possum (*Pseudocheirus peregrinus*); common brushtail possum (*Trichosurus vulpecula*); common wombat (*Vombatus ursinus*); macropod sp.; *Rattus* sp.; red-necked wallabies (*Macropus rufogriseus*); black wallaby (*Wallabia bicolor*); dasyurid (not spot-tailed quoll); koala (*Phascolarctos cinereus*); long-footed potoroo (*Potorous longipes*); and the long-nosed bandicoot (*Perameles nasuta*).

The concern regarding the impact of mesopredator populations is well founded. Predation of Australia's native species by the European red fox (*Vulpes vulpes*) was deemed a threatening process under the EPBC Act in the year 2000, leading to the development of a threat abatement plan for the species. McLeod (2004) estimates the impact of foxes on the Australian environment to be valued at \$190 million and across Australia, foxes threaten 14 species of birds, 48 mammals including the spot-tailed quoll (Kortner et al, 2004; Kortner and Watson, 2005), 12 reptiles and 2 amphibians, some of which are listed as critically endangered (DEWHA 2008). In the sites to be aerially baited, the following listed species are known to exist: giant burrowing frog (*Heleioporus australiacus*); brush-tailed rock wallaby (*Petrogale penicillata*); smokey mouse (*Pseudomys fumeus*); and the long-footed potoroo (*Potorous longipes*).

The Victorian Government undertakes a number of successful large scale, ongoing fox control programs across the state including Grampians Ark and Southern Ark (Ruff & Murray 2011) and while the aerial baiting operation has not been developed to specifically target foxes, it is likely to impact upon populations of this mesopredator. Foxes have been found to be a significant non-target species during the early stages of a baiting operation (McIlroy et al., 1986) and reducing their numbers will result in improvements to ecological processes that have been in decline since the arrival of the fox. Furthermore, livestock enterprises in the areas to be aerially baited will benefit from a reduction in fox predation on lambs and other livestock and the reduced spread of weeds and diseases carried by foxes.

The areas planned for control action are adjacent to private land, and are within the 3km livestock protection buffer. These areas are influenced by many ecological processes including edge effects across a clear ecotone (agriculture-forest boundary), agriculture processes (e.g. number and type of livestock) in adjacent land, and other multi-species interactions (e.g. other carnivores and abundance of prey, density dependence etc.). Put simply, the ecological processes are complex. Whilst mesopredator release may have a solid theoretical construct, its application in such a complicated ecosystem has yet to be demonstrated and should not influence the protection of

livestock or the Victorian Government fulfilling its legal obligations to manage vertebrate pests as a landowner until there is clear evidence to the contrary.

Matters unrelated to EPBC Act

c) Protection of pure dingoes

DEPI has developed instruments for the ongoing protection of dingoes including:

- *Action Statement 248* which identifies past and future actions for the conservation of the species;
- The *Flora and Fauna Guarantee Act 1988* under which the dingo is listed as a threatened species;
- The *Wildlife Act 1975* under which the dingo is protected.

DEPI has have policy instruments for the management of dingoes including:

- A Governor in Council order declaring the dingo unprotected on certain lands in Victoria;
- The *Catchment and Land Protection Act 1994* which details how established pest animals are to be managed.

The Regulation and Compliance Group of the Department of Environment and Primary Industries (DEPI) believes:

- Dingo populations must be clearly defined in their distribution and abundance to assist with their conservation management;
- The impacts of wild dogs (including dingoes, as defined by Fleming *et al.* 2001) on primary production requires proactive management.

Concerns were raised by five submissions regarding the potential impact of the aerial baiting operation on the 'pure' dingo. Within Victoria, the Dingo (*Canis lupus subsp. dingo*), is listed as 'threatened' under the *Flora and Fauna Guarantee Act 1988* (FFG Act) and is also protected under the *Wildlife Act 1975*. However, following an extensive consultation period it was declared unprotected by the Governor in Council on 28 September 2010 in the following areas:

- all private land in Victoria; and
- public land within 3 km of any private land boundary in designated areas of the north west and east of the State; and
- public land within 3 km of a boundary of any land subject to a perpetual lease under section 53 of the *Lands Act 1958* in the previously mentioned designated areas.

In early September 2013 the Victorian Minister for Environment and Primary Industries remade this Order to be effective for a further five years following consultation with numerous groups.

All sites and transects for the proposed aerial baiting operation are within the livestock protection buffer that extends 3 kilometres into public land from the private/public land interface. Wild dog control operations in Victoria are focused on this buffer and operational aerial baiting will be applied strategically only within those areas where conventional ground baiting is not possible or is difficult due to inaccessible terrain.

Identification of 'pure' dingoes in the field is difficult without the use of DNA analysis; the aerial baiting operation will therefore be targeting wild dogs as defined by Fleming *et al.* (2001) within the 3km livestock protection buffer as described above. A recent study by Stephens (2011) however, provides the first comprehensive investigation of the population genetics of dingoes, wild dogs and

their hybrids across their Australian distribution. Results indicate that although the purity of dingoes remains in relatively high proportions in the central and western parts of the Australian continent, south-eastern Australia has a much higher level of hybridisation possibly as a result of extended European settlement. Of the 626 Victorian samples analysed in the study, as little as 1-4% were deemed to be pure dingoes. The author goes on to state that in order to appropriately conserve the dingo, hybridisation must first be addressed requiring the isolation of pure dingo populations. Furthermore, the recently developed *Action Statement No. 248* for the Dingo *Canis lupus* subsp. *dingo* under the *Flora and Fauna Guarantee Act 1988* provides the mechanisms for protection of the species in Victoria and recognises the need for further research into dingo purity.

The dingo is not a listed species under the EPBC Act, and its management is a state issue.

d) Promotion of guardian animals for livestock protection

DEPI promotes the Best Practice Manual for the use of Livestock Guardian Dogs by the Invasive Animals Cooperative Research Centre (<http://www.invasiveanimals.com/wp-content/uploads/2010/09/Guardian-Dogs-web.pdf>).

DEPI supports a multi-control tool approach to wild dog management.

Best practice wild dog management requires an integrated approach using all available management options including baiting, trapping, shooting, exclusion fencing and appropriate animal husbandry. The Victorian Government aims to proactively manage wild dogs to reduce their impact through provision of best practice management information as highlighted in the recently released *Action Plan for Managing Wild Dogs in Victoria 2014-2019* (Action 6.1). A recent media release (29 November 2013) from DEPI provides the following information for alternative wild dog control measures (DEPI 2013):

- Moving lambing and calving to paddocks away from known wild dog pathways or access points.
- Removing and disposing of deceased livestock swiftly.
- Watching for changes in livestock habits or movements and wildlife behaviour, as this may be an indication of the presence of wild dogs.
- Constructing and maintaining electric wild dog exclusion fencing, as these fences provide the best line of defence for managing wild dogs.
- Trapping and shooting used in combination with other pro-active control measures. DEPI (in conjunction with Australian Wool Innovation) can assist in training landholders in the use of traps.
- Guard animals include Maremma dogs, alpacas, llamas and donkeys.

DEPI also regularly collects data on the use of alternative wild dog control measures including exclusion fencing and guardian animals via a pre-response assessment that is made following any reports of wild dog attacks on livestock enterprises. Provision of extension material to landowners including the Best Practice Manual for the Use of Guardian Animals, as developed by the Invasive Animals Cooperative Research Centre, occurs regularly.

e) The use of 1080 as a means of wild dog control

DEPI supports the use of 1080 as a safe, effective and relatively humane means of controlling wild dogs.

DEPI complies with all regulations to ensure that the use of 1080 fulfils label requirements and minimises risk as well as standards set by the Australian Pesticide and Veterinary Medicines Authority (APVMA).

Concerns were raised in eight submissions on the use of 1080 as a means of managing wild dogs. Sodium fluoroacetate (1080) occurs naturally in about 35 species of Australian plants, such as *Acacia georginae* (gidgee), *Gastrolobium spp.* (heart leaf poison bush) and *Oxylobium spp.* (box poison bush). Consequently, native animal species are generally less susceptible to fluoroacetate than introduced species and canids. 1080 is widely and legally used for vertebrate pest control in both Australia and New Zealand. In Victoria the use of 1080 for pest animal control is legal under the *Catchment and Land Protection Act 1994* and section 9(1)(j) of the *Prevention of Cruelty to Animals Act 1986*.

Regarding the humanness of 1080, a study by Twigg & Parker (2010) found that as the poison is not endocrine-disrupting and it does not have the potential to alter the normal functioning of the endocrine system in either humans or wildlife, nor is it carcinogenic. Furthermore, using the commonly cited time from ingestion to death as an indicator of its humaneness is unrealistic based on the time lag that occurs before signs of poisoning occur. These authors suggest that the 1080 poison is not inhumane as commonly believed.

In fact, it is known that 1080 impairs neurological function, mainly through effects on acetylcholine and glutamate, and as this impairment includes some pain receptors, it is therefore difficult to interpret the behaviour of affected animals, or to assess their ability to experience discomfort and pain. It is also accepted that sub-lethal doses may occur as a result of 1080 degradation potentially leading to bait shyness; however this may occur regardless of the mode of delivery (ground or aerial baiting).

1080 rapidly degrades in the ecosystem due to its high water solubility and it is quickly broken down by micro-organism activity. It does not leave residues nor will it pollute waterways.

The *Agricultural and Veterinary Chemicals (Control of Use) Act 1992* imposes controls on agricultural and veterinary chemical use to protect the health of the public and chemical users, the environment, animal health and welfare, trade and product effectiveness. The proposed aerial baiting operation will be delivered under a permit granted under Section 25(2)(b) of the *Agricultural and Veterinary Chemicals (Control of Use) Act 1992*- Use of a restricted agricultural chemical product contrary to label directions. This permit will ensure that DEPI comply with the safe use of 1080.

f) *Controlling wild dogs may have a negative influence on livestock predation*

DEPI undertakes wild dog management in Victoria following best practice guidelines and utilising a nil-tenure, large-scale integrated approach. This approach has been proven to provide positive outcomes for livestock enterprises.

Concerns regarding the belief that baited areas may see an increase in livestock predation due to the fracturing of wild dog social groups were raised in four submissions. A report by Allen & Fleming

(2004) on the impacts of wild dogs on QLD cattle enterprises highlighted that attacks on cattle have been known to occur when prey populations are low, during times of below-average rainfall and when baited areas had been recolonised by wild dogs. The study found that young, dispersing wild dogs were more likely to attack livestock than stable wild dog populations. The authors therefore state that attempting to reduce predation loss by controlling wild dogs on individual properties may be both ineffective and counterproductive.

However, when the management of wild dogs in the region moved to an annual, large-scale coordinated baiting program involving aerial baiting across multiple properties with a combined area of roughly 50,000km², calf branding rates, i.e. calf retention rates, increased dramatically (refer Figure 1). On average, branding rates were 18% higher than for the previous decade which equated to the branding of an additional 407 calves per year (Allen & Fleming 2004).

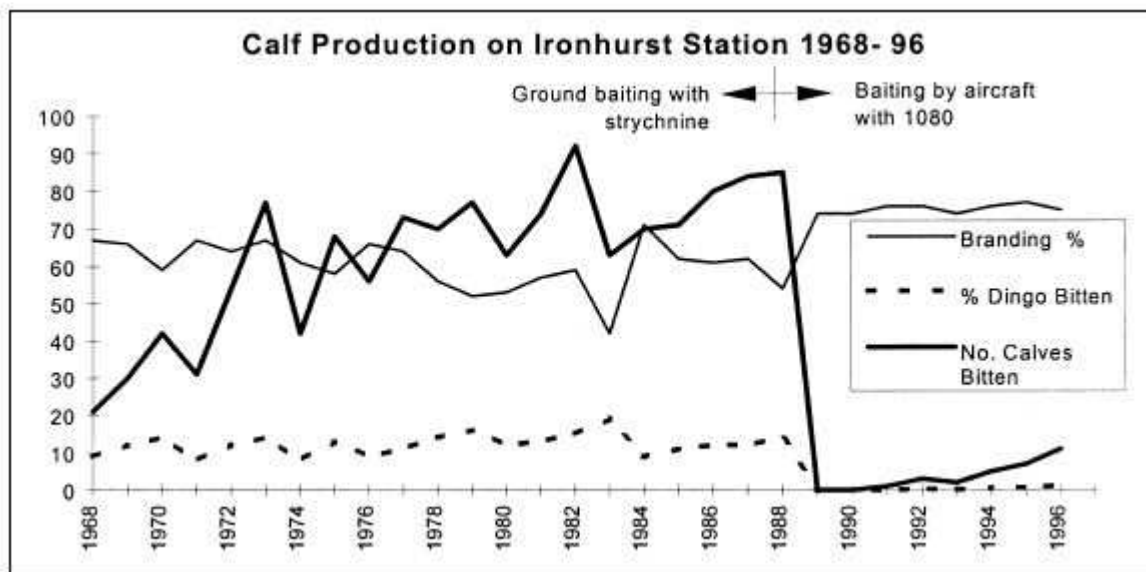


Figure 1: Changes to the branding rates and number of calves bitten following large-scale changes in wild dog management.

Source: Allen & Fleming 2004

The management of wild dogs in Victoria follows best practice guidelines and utilises a nil-tenure, large-scale integrated approach with all available management options including baiting, trapping, shooting, exclusion fencing and appropriate animal husbandry.

g) Impacts on other natural value assets

DEPI is not undertaking aerial baiting in areas of high natural value such as Wilderness, Reference or remote and natural areas based on advice from the former Department of Sustainability and Environment.

Potential impacts on natural value assets including Wilderness, Reference and Remote and Natural areas was raised in one submission. During the development stage of the original aerial baiting operation, site selection occurred with independent advice provided by the then Department of Sustainability and Environment (prior to the amalgamation with Department of Primary Industries). Any site selected for aerial baiting which was within an area of high natural value such as Wilderness

or Reference areas was immediately dismissed. Furthermore the aerial baiting operation is only occurring within the 3km livestock protection zone which abuts private land.

h) *Use of public monies*

DEPI is meeting the Victorian Coalition Government's election commitment of complementing existing on-ground wild dog management techniques with an aerial baiting operation.

The cost of the proposed aerial baiting operation was raised by four submitters who felt that the money could be better invested within the wild dog program. Wild dog management in Victoria aims to manage the economic impacts of attacks on livestock enterprises, and reduce the significant social impacts resulting from wild dog attacks as farmers and their families attempt to cope with the emotional stress associated with killed and maimed livestock (Lightfoot 2010; Thompson et al 2013). To this end, the Victorian Coalition Government made an election commitment, prior to the last election, to reintroduce aerial baiting for wild dog management.

i) *Monitoring should be more rigorous*

DEPI will be monitoring the aerial baiting operation as part of a program of continual improvement.

Please refer to detail provided above regarding the spot-tailed quoll and non-target species.

j) *Ensuring baiting transects are within the 3km livestock protection buffer*

DEPI focusses its management of wild dogs in and around the 3km livestock protection buffer that abuts private land. Focussing on this region during the aerial baiting operation will provide the best outcomes for livestock enterprises. It is also only within this buffer that the dingo is unprotected on public land.

Please refer to detail provided above regarding protection of pure dingoes.

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