

# Nomination Form for listing a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

## Threatening Process Details

### Name of the threatening process:

1080 poison baiting used for the control of vertebrate 'pest' animals.

### A description of the threatening process that distinguishes it from any other threatening process, by reference to:

- (i) its biological and non-biological components.
- (ii) the processes by which those components interact (if known).

#### *What is 1080 used for?*

1080 poison (sodium monofluoroacetate) is used extensively in Australia to control vertebrate pests, for both agriculture and conservation purposes. Species considered as vertebrate pests in Australia are introduced species the pig, cat, fox, rabbit, goat and wild dog and the native dingo. In Tasmania, native species, the pademelon and Bennett's wallaby are also considered pests. Table 1 lists the different species targeted with 1080 poison in Australia's states and territories.

**Table 1: The use of 1080 for vertebrate pest control in Australian States and Territories.**

Source: 1080 Working Group of the Vertebrate Pests Committee (2001).

State or Territory	Target animals
New South Wales	Foxes, pigs, dogs, dingoes, rabbits
Victoria	Dogs, dingoes, foxes, rabbits, pigs
South Australia	Dogs, dingoes, rabbits, foxes
Australian Capital Territory	Dogs, dingoes, rabbits
Queensland	Foxes, dogs, dingoes, pigs, rats, rabbits
Northern Territory	Dogs, dingoes, foxes
Tasmania	Bennet's and rufous wallabies, rabbits, brushtail possums, cats, foxes
Western Australia	Dogs, dingoes, foxes, rabbits (also used experimentally for pigs, cats, goats, agile wallabies, and sulphur crested cockatoos)

#### *Deployment methods*

1080 poison is presented in a variety of baits. Baits for herbivores, granivores and omnivores are usually grain, carrots or pellets prepared from pollard and bran. The amount of 1080 in these baits varies and is usually 0.5mg per bait in pellets and 0.33mg per bait in carrots (Denny 2001). Baits for carnivores and omnivores are fresh or dried meat. Baits for wild dogs and dingoes generally contain 6mg of 1080 (but in Victoria baits contain 4.5mg and in Queensland baits contain up to 10mg), baits for foxes contain 3mg and baits for feral pigs require a heavy 1080 dose of 75mg.

Deployment methods include aerial baiting, trail baiting and mound baiting. Aerial baiting involves

the dropping of baits along transects, usually from a helicopter. Trail baiting is similar to aerial baiting in that baits are distributed from a moving vehicle. Mound baiting involves the burying of baits up to 15cm at bait stations. Aerial baiting is not permitted in South Australia, the ACT and Victoria (however aerial baiting trials are currently being carried out in Victoria, with the aim of long-term introduction of aerial baiting). Aerial baiting is used extensively in NSW, Western Australia, Northern Territory, Queensland and Tasmania. All types of deployment are considered by the nominator as a key threat to native wildlife. Table 2 provides a summary of some of the applications and uses of 1080 in various states and territories.

**Table 2: Application and use of 1080**

(Source: APVMA 2005a)

<b>Target species</b>	<b>Application and use</b>
Rabbits	<p><i>Queensland:</i> Carrots are used as bait. Baits are placed in furrows at a maximum of 10kg/km. Aerial deployment has been used in southwest Queensland.</p> <p><i>South Australia:</i> Oats are the preferred bait and are mixed to contain 375mg/kg of 1080.</p> <p><i>Victoria:</i> Pellet, carrot and oats are used as bait. Baits are laid in trails or aerially deployed at a rate of 15kg/ha (for carrot baits). Rabbait® is a commercial bait used in Victoria.</p> <p><i>Western Australia:</i> Oats are the preferred bait and are mixed to contain 560 or 1120 mg/kg of 1080. The WA Forest Products Commission deploys oat baits in pine and eucalypt plantations. Baits are placed in furrows or ribbons at a rate of 6kg/km; or scattered at 10kg/km.</p> <p><i>NSW:</i> Carrots, oats and pellets are used for bait. Bait is offered either as a concentrated trail or broadcast in a swath on the ground or from the air (Sharp and Saunders 2004).</p>
Wallabies and Possums	<p><i>Tasmania:</i> Carrots are used as bait material and are mixed so that 42,458 baits contain 140mg/kg of 1080. Trail baiting is carried out by hand at 10-20kg bait/km. Optimum bait size is a 1cm cube.</p>
Foxes	<p><i>Eastern States:</i> Large-scale fox baiting operations occur only in western NSW (aerially deployed) and eastern Victoria (ground baiting). Baits must be buried at 8-10cm in Victoria.</p> <p><i>Western Australia:</i> Meat baits containing 3mg of 1080 are used widely in agricultural landscapes and over conservation areas. Large areas are aerially baited four times a year under the Western Shield program for fox control.</p>
Wild dogs	<p><i>Queensland:</i> Meat baits contain 6-10mg of 1080. Baits are laid along transects at 200-500m spacing. Many grazers bait twice a year to target adults during peak breeding activity (April/May) and to target pups and juveniles (August/September).</p> <p><i>Victoria:</i> Meat baits contain 4.5mg of 1080 and must be buried at least 8cm depth. Aerial baiting trials are currently being carried out in north-east Victoria. 1080 Predator Baits (49354) are used.</p>

	<p><i>NSW:</i> Meat baits contain 6mg of 1080. Aerial baiting is carried out extensively. Rate of application is usually around 30 baits per km.</p> <p><i>Northern Territory:</i> Meat baits contain 6mg of 1080 and laid by hand close to watering pints or along fence lines. Aerial baiting is permitted but rarely used. Baiting mainly restricted to large pastoral properties and conservation areas.</p> <p><i>Western Australia:</i> Meat baits contain 6mg of 1080. Ground baiting is used in accessible areas, while aerial applications are used along watering points, vehicle tracks, watercourses and gorges. Application rates are not specified. Baiting is carried out Spring or later when water is less available.</p>
Pigs	<p>There is no specific bait material used for pigs. Baits are dosed at 75mg of 1080.</p> <p><i>Western Australia:</i> Feral pig control in WA is expected to remain heavily reliant on 1080.</p> <p><i>NSW:</i> NPWS prefers the use of grain as bait material. Aerial baiting has been conducted in parts of the Blue Mountains.</p> <p><i>Victoria:</i> Baiting for pigs is very limited and occurs only on public land. A 1080 bait (49352) is registered for feral pig baiting in Victoria.</p> <p><i>Queensland:</i> Bait material includes grain and meat. Baiting is mainly carried out on an individual property basis, although coordinated programs are occasionally carried out such as at Cunnamulla. Baits are laid along transects or at bait stations. Aerial baiting is carried out on Cape York Peninsula.</p>

### ***What is 1080?***

1080 (Sodium monofluoroacetate) is a sodium salt of fluoroacetate or fluoroacetic acid. Fluoroacetic acid is one of the most toxic substances known to man (Statham 1996).

Fluoroacetate has been identified in 41 Australian plant species from two genera of Leguminosae – *Gastrolobium* and *Acacia* (Twigg 1994 in Statham 1996). Thirty-nine *Gastrolobium* are confined to the south-west corner of Western Australia. Native species in these areas have developed varying degrees of tolerance. The other two Australian species containing fluoroacetate are *Gastrolobium grandiflorum* and *Acacia georginae*. These species occur only in isolated patches in Northern Australia and are less toxic (Statham 1996). No fluoroacetate-bearing plants are known to occur in any other parts of Australia.

Fluoroacetate is highly soluble in water, chemically stable, odourless and tasteless, and biodegradable. It is relatively slow acting but extremely toxic to a wide range of vertebrate species (Statham 1996). After ingestion the initial signs of poisoning do not appear for at least 20 minutes and up to several hours. The length of this period varies between species. Death will usually occur within 24 to 48 hours but can often take less or more time than this. McIlroy (1984) states that for birds the onset of symptoms can take as long as 60 hours and death may not occur for 11 days.

### ***Processes by which 1080 affects native species***

The key determinant of sensitivity of native animals to 1080 is the extent to which these species have developed a heritable resistance to 1080 over time, through the ingestion of fluoroacetate present in native vegetation (Anon, Department of Agriculture, Western Australia). This tolerance is most pronounced in species indigenous to Western Australia (Anon, Department of Agriculture,

WA). For instance the lethal dose for possums from WA is 100 mg/kg while the lethal dose for possums from areas without fluoroacetate bearing plants is 1 mg/kg (Anon, Department of Agriculture, Western Australia).

The median lethal dose (LD<sub>50</sub>) is the most common measurement of the sensitivity of an organism to a toxin, although these are not always available for rare or endangered species. Furthermore, LD<sub>50</sub> estimates require studies on captive animals and may not always reflect the absolute sensitivity of the same species in the wild. Studies have revealed different sensitivities between phylogenies. Carnivores are highly sensitive to 1080; herbivores and birds are less sensitive; while reptiles and amphibians are relatively insensitive. Other factors affecting sensitivity include level of exposure to 1080, the age of individuals, their breeding condition, body size, metabolic rate and inherited tolerance (Anon, Department of Agriculture, Western Australia).

1080 baiting programs can affect animals by both primary poisoning and secondary poisoning. Primary poisoning occurs when an animal directly consumes bait and secondary poisoning occurs when an animal consumes tissues or vomitus from an affected animal (Anon, Department of Agriculture, WA).

### ***1080 policy in Australia***

Australia's reliance on 1080 baiting in pest control has offered no incentive to investigate and develop methods that are less harmful to non-target species. In September 2004, Tasmanian Premier, Paul Lennon, announced that the use of 1080 in State Forests would be phased out and banned by December 2005. Furthermore, in their 2004 election policy, the Coalition Government committed \$4 million over two years to fast track research into alternative methods and to end the use of 1080 poison baits in Tasmania, on both public and private land, by no later than December 2005. However the phase out of 1080 in Tasmania has not occurred and in fact its use has begun to recently increase again. Regardless, Tasmania only uses 4% of 1080 poison in Australia (Premier Paul Lennon, excerpt 2004) (controversially targeting native species), and there has been no mention of phasing out 1080 use in any other states or territories. On the contrary, in NSW aerial baiting is being used more extensively, with similar plans in Victoria.

The 1080 ban in Tasmanian state forests would be a positive step, however it does not address the large percentage of baiting that is carried out on private land in Tasmania. Also, recent efforts to control the potential threat of foxes in Tasmania have meant an increase in the use of meat baits. According to the Tasmanian Department of Primary Industries, Water and Environment (*in Paine 2005*), in the six months to December 2004, 18,000 1080 baits for foxes were laid over 300,000 to 35,000 ha. During July, August and September 2005, 8,060 1080 baits for foxes were laid. This eradication program is expected to continue (Department of Primary Industries, Water and Environment 2005).

The nominator considers 1080 baiting in all states and territories as a key threat to wildlife. We note that while most native animals in Western Australia have a high tolerance to 1080 poison, native dingoes in these areas are still quite sensitive to the toxin (Martin and Twigg 2002). Thus we consider 1080 baiting in Western Australia as a key threat to the dingo only.

This nomination presents evidence to indicate that 1080 baiting used in vertebrate 'pest' control has a significant impact on listed and unlisted fauna, and therefore meets the criteria to be listed as a key threatening process (KTP) under the EPBC Act.

**Name any species or ecological communities listed as threatened under the EPBC Act that are considered to be adversely affected by the threatening process:**

- Tiger quoll, spot-tailed quoll, spotted-tail quoll (*Dasyurus maculatus maculatus* – south east mainland population) – listed as endangered under the EPBC Act.
- Tiger quoll, spot-tailed quoll, spotted-tail quoll (*Dasyurus maculatus maculatus* – Tasmanian population) – listed as vulnerable under the EPBC Act.
- Long-nosed potoroo (*Potorous tridactylus tridactylus* – southeast mainland population) – listed as vulnerable under the EPBC Act
- Northern quoll (*Dasyurus hallucatus*) – listed as endangered under the EPBC Act
- The spotted-tailed quoll or yarri (*Dasyurus maculatus gracilis* – North Queensland subspecies) – listed as endangered under the EPBC Act
- Wedge-tailed eagle (*Aquila audax fleayi* – Tasmanian population) – listed as endangered under the EPBC Act

**Name any species or ecological community, other than those that are listed under the EPBC Act that could become eligible for listing in one of those categories because of the threatening process:**

- Dingo (*Canis lupus dingo*)
- Eastern quoll (*Dasyurus viverrinus*)
- Brown antechinus (*Antechinus stuartii*)
- Other species listed below

### **Justification for this nomination**

In a consultancy report to HSI on the suitability of 1080 poisoning for listing as a KTP under the EPBC Act, Dr Martin Denny (2001) suggests that the required criteria could be met. The range of non-target native fauna affected by 1080 poisoning is considerable. This report is provided in Appendix II.

In a series of papers, the CSIRO tested the sensitivity to 1080 poison of 84 native species (McIlroy 1981a, 1981b, 1982a, 1982b, 1983a, 1983a, 1984; McIlroy *et al.* 1985), in order to assess the potential danger non-target species face from 1080 poisoning campaigns. McIlroy (1986) summarises and discusses these results. According to McIlroy (1986), of the 84 native species tested, 69 are likely to or known to eat baits intended for rabbits and pigs and the majority only need to eat a small percentage of their body weight as bait to ingest a lethal dose. Also, 35 out of the 84 species are likely to or known to eat meat baits intended for dogs, dingoes and pigs.

Based on overall sensitivity and susceptibility, McIlroy (1986) made two major conclusions. The first is that native macropods appear to be most at risk during rabbit or pig poisoning campaigns using pellet, grain or carrot baits. The second is that carnivorous mammals including native carnivorous marsupials are most at risk from dog, dingo and pig poisoning campaigns using meat

baits.

The CSIRO studies indicate that there is the potential for a massive range of species to be impacted on by 1080 poisoning campaigns. Limited data means that the extent of impact is potentially underestimated. Here we present strong evidence to indicate that 1080 baiting is a key threat to a number of species.

**(a) Evidence that the threatening process could cause a native species or ecological community to become eligible for listing in any category, other than conservation dependant:**

**Dingo (*Canis lupus dingo*):**

Significant evidence indicates that the dingo is already eligible for a threatened species listing under the EPBC Act. A nomination to list the species as endangered under the NSW *Threatened Species Conservation Act 1995* (TSC Act) is currently being assessed by the NSW Scientific Committee. The dingo is listed as endangered on the IUCN (World Conservation Union) Red List of Threatened Species. The use of 1080 baiting in wild dog control is believed to be a threat to remaining dingo populations in core dingo habitat areas (██████████ ██████████ pers. comm. March 2005).

The dingo is ostensibly protected in all National Parks, but is recognised as a pest animal, requiring eradication in NSW, Victoria, Queensland, Western Australia and South Australia and baiting is carried out in National Parks in all these states. The dingo is not officially declared a pest animal in the Northern Territory or the Australian Capital Territory, but is still targeted with 1080 poison in these states.

1080 baiting can impact on dingoes directly and indirectly.

***Directly***

Canids (foxes, wild dogs and dingoes) are the most sensitive animal group with respect to the toxic effects of 1080 (Australian Pesticides & Veterinary Medicines Authority 2005a; Anon, Department of Agriculture, Western Australia). 1080 baiting programs directly target dingo populations, therefore 1080 baiting has an obvious direct impact on the dingo. It is difficult to quantify the level of reductions of dingoes from direct poisoning, as carcasses are rarely distinguished from hybrid dogs.

***Indirectly***

The use of 1080 baiting in wild dog control is a major cause of decline in pure dingoes as it facilitates hybridisation. Hybrids exist in all populations in Australia and the portion of hybrids appears to be increasing. Wilton (2001) states that estimates of the proportion of hybrids in populations are as high as 78% in some areas, while Corbett (*in* Dickmann and Lunney 2001) notes surveys in NSW, in which 100% of samples were hybrids.

Fleming *et al.* (2001) states that the behavioural differences between dingoes and domestic dogs are great enough to make it difficult for dogs to infiltrate dingo society and breed. Dingoes typically live in tight knit packs with one dominant breeding female, which breeds only once a year. Stable dingo packs strongly defend their territory and prevent dispersing dogs from colonising and thus avoiding hybridisation. According to Eldridge *et al.* (2002) and ██████████ ██████████ (pers comm., March

2005), 1080 baiting can cause the male-female hierarchy in a dingo pack to collapse, through the loss of dominant animals. This loss of social cohesion encourages increased fecundity and a higher likelihood of dingoes breeding with immigrant domestic and hybrid dogs.

Furthermore “evidence presented by Fleming *et al.* (1996) showed that aerial baiting was efficient in reducing wild-living dogs by 66-84%, however dog numbers returned to their initial abundance within one year” (Meek and Shields 2001). There are countless numbers of dogs in rural districts and these dogs flow into the dingoes’ domain after a 1080 poisoning event. Thus 1080 baiting causes the amount of hybrids to increase at the expense of pure dingoes (Eldridge *et al.* (2002) and ██████████ pers. comm. March 2005).

Note: The above evidence suggests that 1080 baiting would not have indirect benefits for dingoes, by reducing wild dog numbers and thus reducing the probability of hybridisation, particularly when considering that dingoes are equally susceptible to poisoning.

### ***Conservation status of the dingo***

According to the Fleming *et al.* (2001) pure dingoes are extinct in much of eastern and southern Australia as a direct result of 1080 baiting campaigns. Fleming *et al.* (2001) also state that the extinction of pure dingoes on the mainland is inevitable unless there are changes to Government policies on the management of wild dogs.

According to Fleming *et al.* (2001 in IUCN 2004) remnant populations of pure dingoes occur mostly in the northern, north-western and central regions of Australia; dingoes are extremely rare in southern and north-eastern regions; and are probably extinct in south-eastern and south-western regions.

██████████ (pers comm., June 2005), of the University of New South Wales, provided the nominator with the most recent genetic data on the proportion of hybrids in dingo populations in NSW and the ACT. This data indicates that out of the 735 individuals sampled, only 142 were pure dingoes. This is only 19% of the population sampled.

Corbett (*in* Dickman and Lunney 2001) states that under current threats, “it is likely that most populations of pure dingoes will be extinct by the end of the 21<sup>st</sup> century”. Research carried out by Dr Alan Wilton (reported by Davidson 2004) has indicated that dingoes could reach extinction within 50 years, if current threats continue.

The nature of data on dingo declines presents difficulties in determining the level of reduction in the species. However Dr Alan Wilton’s findings indicate that the dingo would meet criterion 5 to be listed as vulnerable under the EPBC Act (criterion 5 requires a 10% chance of extinction within 100 years).

### ***1080 Baiting in New South Wales***

In NSW 1080 aerial baiting for wild dog control is carried out extensively, particularly in Kosciusko National Park. The dingo population in Kosciusko National Park is under particular threat from 1080 baiting. According to ██████████ (pers. comm. 2005) the Kosciusko dingo population is one of the seven the most important remaining populations of pure dingoes in Australia. It is also a rare example of the ‘alpine type’ dingo subpopulation (██████████, pers. comm. 2005). The Kosciusko National Park is regularly targeted by large-scale aerial 1080 baiting campaigns. In 2005 alone, at least five large-scale aerial baiting campaigns were carried out in the

Kosciusko National Park area. Dr Alan Wilton's latest data on dingoes in Kosciusko National Park paints a sad picture. Out of 106 wild dogs sampled, only 13 of these were pure dingoes.

### ***1080 Baiting in the Northern Territory***

The Northern Territory has a long history of 1080 use in dingo control. By 1979 80% of all pastoralists' properties had been involved with 1080 aerial baiting programs. At this time some sections of the community began to raise concerns that dingo numbers had decreased to such low levels that they were in danger of localised extinction (Eldridge *et al.* 2002). An attempted moratorium on 1080 aerial baiting was rejected following pressure from the pastoral industry (Honner 1983 in Eldridge *et al.* 2002). The Parks and Wildlife Commission of the Northern Territory is now responsible for 1080 baiting programs, however 1080 aerial baiting is still carried out annually in areas known to have dingo populations (Eldridge *et al.* 2002). According to Eldridge *et al.* (2002) 1080 baiting for dingoes is carried out, with very little regard to actual levels of calf predation. Eldridge *et al.* (2002) suggests that such indiscriminate baiting of dingoes puts the stability and social structure of pure dingo packs at risk in the NT.

### ***1080 Baiting in Western Australia***

We note that, while most native animals in Western Australia have a high tolerance to 1080 poison, dingoes in these areas are still sensitive to the toxin (Martin and Twigg 2002). In Western Australia over 3.7 million hectares of conservation estate (predominantly in the south-west of the state) is aerially baited for foxes at least four times a year under the *Western Shield* program (CALM 2005). Discussions between the nominator and CALM have revealed that dingoes are known to be killed by these baits. Wild dog baiting (including dingoes) is carried out within and adjoining pastoral leases in Western Australia (CALM 2005).

### ***1080 baiting in Victoria***

In Victoria 1080 baiting for foxes is carried out under the *Southern Ark* program, whereby approximately one million hectares in Gippsland, is baited continuously. As stated above dingoes are known to be killed by fox baits. Also, baits targeting wild dogs and dingoes are laid in specific areas close to farmland. The Victorian Department of Sustainability and Environment is currently carrying out 1080 aerial baiting trials, targeting wild dogs, in north-east Victoria. Aerial baiting has previously been prohibited in Victoria as it is the most indiscriminate method of baiting. The aim of these trials is to allow the long-term introduction of aerial baiting for wild dogs, in north-east Victoria and Gippsland (██████ ██████ pers. comm. January 2006).

### ***1080 baiting in South Australia***

Dingo and wild dog control in South Australia is separated into sheep and cattle zones. These zones are separated by a dog proof fence. Within the sheep zone, the policy objective of the Animal and Plant Control Commission is to maintain complete eradication of the dingo. Within a buffer area outside and immediately adjacent to the dog fence the policy aim is to reduce the number of dingoes present. In the cattle zone the control of dingoes is less concentrated and only occasional 1080 baiting is carried out (Animal and Plant Control Commission (1993).

### ***1080 baiting in Queensland***

In Queensland, baiting of dingoes and wild dogs is extensive. 1080 baits are regularly, aerially dispersed through more than 15 million ha of National Parks and forest during mating season, when feral dogs and dingoes are most active. A wild dog barrier fence extends through Queensland and baiting is carried out on both sides of the fence.

## **Conclusion**

1080 baiting campaigns are a key threatening process causing the pure dingo to be eligible for listing in a category, other than conservation dependant under the EPBC Act. Farmer lobby groups have considerable influence on the Rural Lands Protection Boards that approve pest control plans for wild dogs. These Boards continue to urge that core dingo habitat areas such as Kosciusko be targeted for aerial baiting programs.

**Note:** The Australian Government classifies the Australian dingo as a native species, as it was well established in Australia before European settlement (Australian Dingo Conservation Association 2005). Included in the definition of a “native species” under section 528 of the EPBC Act is:

*“native species means a species:*

*(f) that was present in Australia or an external Territory before 1400”*

The most recent evidence from mitochondrial DNA (Savolainen *et al.* 2004) suggests that dingoes arrived on the continent around 5,000 years ago. Therefore *C. lupis dingo* is defined as a native species under the EPBC Act as it was present in Australia before 1400.

## **Eastern quoll (*Dasyurus viverrinus*)**

The eastern quoll is listed as endangered under the NSW TSC Act and as threatened under the Victorian *Flora and Fauna Guarantee Act 1988*. In their advice to the Minister on listing this species, the NSW Scientific Committee stated that *“its population and distribution have been reduced to a critical level ...and it faces severe threatening processes”*.

The National Parks and Wildlife Service (Threatened Species Information) lists 1080 baiting as a major threatening process for the eastern quoll and states *“baiting of dingoes results in direct poisoning (Belcher 1998) and changes the composition of predators, reduced dingo numbers favours foxes which compete with [eastern] quolls (Gilmore & Parnaby 1994)”*.

A study carried out by Belcher (1998) found that eastern quolls detected, dug up and consumed buried 1080 baits; and could consume up to 1.5 baits in a single meal. Belcher (1998) concluded by stating, *“the buried-bait technique is not specific for introduced predators”*.

Furthermore, other studies have indicated very clearly that quolls are heavily impacted on by this control method (see section on the listed tiger quoll, spot-tailed quoll, spotted-tail quoll (*Dasyurus maculatus maculatus* – south east mainland population)).

Despite being eligible for a listing, the eastern quoll is not listed as a threatened species under the EPBC Act. Evidence indicates that 1080 baiting is likely to be a contributing factor to the critical decline in the eastern quoll. The species is in fact believed to possibly be extinct on the mainland (Parks Flora and Fauna Division 2001), however some sources claim that this is yet to be confirmed (NPWS Threatened Species Information). Considering the extremely critical conservation status of this species, it is concerning that 1080 baiting is being carried out in areas that possibly contain remaining populations.

Data on the potential impact of 1080 baiting on this species is limited, so the nominator can not provide any further information.

### **Brown antechinus (*Antechinus stuartii*)**

According to McIlroy (1982a), 1080 baiting in NSW has a significant impact on populations of brown antechinus. Research carried out by McIlroy (1982a) in the Brindabella Range, NSW, found that aerial baiting, in particular, has a negative impact on this species.

McIlroy (1982a) examined an area subject to 1080 baiting (Area A) and an area not subject to 1080 baiting (Area B). After baiting Area A contained 73% less brown antechinus than Area B, even though before the baiting Area A had 23% more brown antechinus than Area B.

McIlroy (1982a) states “...it is evident from the results that the higher density of baiting and/or higher concentration of 1080 involved in the simulated aerial baiting had a greater reducing effect on brown antechinus numbers than those associated with trail baiting”.

McIlroy (1982a) also states that this species would only need to eat a bait containing 0.015mg of 1080 to have a 73-100% chance of being killed.

Data on the potential impact of 1080 baiting on this species is limited, so the nominator can not provide any further information.

### ***Other species at risk:***

Table 3 lists the additional species known to take 1080 baits and table 4 lists the additional species known to be killed by 1080. Due to limited information available on the potential impact of 1080 baiting on these species, the nominator is unable to determine whether it threatens their survival. Tables 3 and 4 indicate that there is a potential for 1080 baiting to impact on a large number of species. This information also highlights the lack of research that has been carried out on the potential impact of 1080, which is concerning considering that this method of pest control is so widely and commonly used in Australia.

**Table 3: Additional non-target species known to take baits containing 1080**

Source: Denny (unpublished) and Glenn and Dickman (2003a and 2003b)

#### **Mammals and Reptiles**

*Ningaui* spp. \*  
*Dasyurus hallucatus* \*  
*Planigale maculata* \*  
*Sminthopsis dolichura*  
*Sminthopsis crassicaudata*  
*Sminthopsis hirtipes*  
Common brushtail possum (*Trichosurus vulpecular*)  
Mountain brushtail possum (*Trichosurus caninus*)  
Grey kangaroo (*Macropus giganteus*)  
Swamp wallaby (*Wallabia bicolor*)  
Common wombat (*Vombatus ursinus*)  
Bush rat (*Rattus fuscipes*)  
Swamp rat (*Rattus lutreolus*)

#### **Birds**

Crimson rosella  
Galah  
Sulphur-crested cockatoo  
Wonga pidgeon  
Common bronzewing  
Maned duck  
Whistling kite  
Little eagle  
Brown falcon  
Nankeen kestrel  
Brown Goshawk  
Pink robin  
Eastern yellow robin  
Olive whistler

Long nosed potoroo ( <i>Potorous tridactylus tridactylus</i> )	Grey shrike-thrush
<i>Pseudomys hermannsbergensis</i> *	Superb fairy-wren
<i>Leggadina forresti</i> *	White-winged chough
<i>Zygomys argurus</i> *	Grey currawong
<i>Rattus tunneyi</i>	Pied currawong
<i>Notomys mitchelli</i>	Australian magpie
<i>Mastacomys fuscus</i>	Little raven
'Rats'	Australian raven
'Goannas'	Corvids
Superb lyrebird ( <i>Menura novaehollandiae</i> )	
Australian brush turkey ( <i>Alectura lathami</i> )	

\* From enclosure experiments, remainder from field studies.

**Table 4: Additional non-target species known to be killed by 1080 baiting**

Source: Denny (unpublished) and McIlroy (1982a)

<b>Mammals</b>	<b>Birds</b>
Fat-tailed dunnart *	Black kite
Common wombat	Masked lapwing
Common brushtail possum	Wood duck
Tasmanian bettong	Green rosella
Long-nosed potoroo	Crimson rosella
Red-necked wallaby	Silver gull
'Wallaby' sp.	Australian magpie
'Kangaroo' sp.	Magpie-lark
Bush rat	Little crow
Swamp rat *	Corvids
Silky mouse	
Long-tailed mouse	

\* From enclosure experiments, remainder from field studies.

**Native target species in Tasmania:** The targeting of native species in Tasmania with 1080 poison is known to considerably reduce these populations. According to McIlroy (1892b) the deliberate baiting of forest browsing 'pests' with 1080 carrot baits has resulted in up to 94% mortality amongst brushtail possum populations, 96% mortality amongst red-bellied pademelons and 86% mortality amongst Bennett's wallabies.

**(b) Evidence that the threatening process could cause a listed threatened species or ecological community to become eligible for listing in another category representing a higher degree of endangerment:**

**Tiger quoll, spot-tailed quoll, spotted-tail quoll (*Dasyurus maculatus maculatus* – south east mainland population)**

The south east mainland population of the tiger quoll has recently been upgraded from vulnerable to endangered under the EPBC Act. It has declined by at least 50% in New South Wales and Victoria and is considered locally extinct in South Australia (Threatened Species Scientific Committee (TSSC) 2004).

1080 baiting has a significant impact on the tiger quoll. In the TSSC's advice to the Minister on listing the tiger quoll as endangered, it is noted that:

*“research at two study sites in southern New South Wales and one in Victoria indicated local declines in the order of 60 - 100% over the past five years, the researcher suggesting aerial baiting for wild dogs with 1080 poison to be the primary cause of these localised population declines and extinctions”.*

The TSSC concludes that:

*“[1080 baiting programs] may play a significant role in localised population declines to the extent that local populations may decline rapidly to extinction”.*

Reports carried out by Belcher (1999, 2000a) makes particularly clear the threat to all quoll populations from 1080 baiting campaigns:

*“Survey results from Otway Ranges found that the tiger quoll was critically endangered and that the decline was most likely due to 1080 poison baiting and clear fell logging” (Belcher 1999).*

*“Population monitoring in south-eastern NSW and East Gippsland has documented population crashes and local extinctions following 1080 baiting” (Belcher 2000a).*

*“Aerial, hand and mound 1080 poison baiting is widespread throughout the (tiger quoll) species range in QLD, NSW and VIC. The impact of baiting on populations monitored at Baja State Forest, Tallanganda State Forest and Suggan Buggan ranged from 60% to 100% reduction in local populations” (Belcher 1999).*

*“The results of the analysis of tiger quoll records from the Otway Ranges and the Southwest of VIC indicate that the species is likely to become extinct within the next 10 years under current land management practices, such as clear-felling and 1080 poison baiting” (Belcher 1999).*

When the tiger quoll was listed as endangered under the EPBC Act, the TSSC (2004) had found that it met criterion 1, which meant that it has undergone, is suspected to have undergone or is likely to undergo in the immediate future a severe reduction in numbers (or ‘An observed, estimated, inferred or suspected population size reduction of  $\geq 50\%$  over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible’). The TSSC stated that the threats to species (including *“inappropriate 1080 poison baiting”*) continue to operate at varied intensities throughout its range and both the historic and future impact of identified threats is difficult to quantify.

In order for the conservation status of the tiger quoll to move up to the critically endangered level, under this criteria, it would have undergone or would likely undergo in the immediate future a very severe reduction in numbers (or ‘An observed, estimated, inferred or suspected population size reduction of  $\geq 80\%$  over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible’).

Considering that the species has already undergone a reduction of at least 50% and Belcher (1999) has recorded local population reductions after baiting ranging from 60% to 100%, it is possible to conclude that the species would meet criterion 1 to be listed as critically endangered if this threat were to continue.

The Department of Environment and Heritage's (DEH) EPBC Act 'Administrative Guidelines on Significance: Supplement for the Tiger Quoll (southeastern mainland population) and the use of 1080' (2004), states:

*"It is an offence for any person to undertake an action that is likely to have a significant impact on the southeastern mainland population of the Tiger Quoll without approval ...Activities that are likely to require referral under the EPBC Act include large scale 1080 baiting (aerial or broadscale surface baiting) as used for wild dog and dingo control in areas where the southeastern mainland population of the Tiger Quoll is known to, or potentially, occurs."*

However, several 1080 baiting programs have been carried out in tiger quoll habitat without referral under the EPBC Act. For instance 1080 aerial baiting trials are currently being conducted in north-east Victoria (known tiger quoll habitat), without referral and the nominator is aware of at least one 1080 baiting program having been carried out in Kosciusko National Park without referral (see letter from Humane Society International to the Minister for Environment & Heritage, Senator Ian Campbell, October 2004).

Since their publication there has been a disregard for the Guidelines in EPBC Act decision making processes. The Guidelines imply that large scale 1080 aerial baiting is likely to have a significant impact on the tiger quoll, and states "*Aerial or broadcast surface baiting should only be used in areas where it can be demonstrated that there is a low risk to Tiger Quolls*", however 1080 aerial baiting programs in key tiger quoll habitat areas, which have been referred under the EPBC Act, have been approved without being declared controlled actions and without full environmental assessments. These baiting programs were carried out in NSW and are listed further on, in this section.

The NSW Government has been using preliminary results from recent studies into the impact of 1080 on tiger quolls to justify the reintroduction of large-scale aerial 1080 baiting in Kosciusko in the Adaminaby and Yaouk areas in 2004 and 2005. These preliminary results come from studies carried out by the NSW DEC and the Queensland Department of Natural Resources & Mines. In NSW at least one quoll was found to have died of 1080 poisoning and in the Queensland at least two quolls died of 1080 poisoning. These results are discussed further below under the section 'Recent 1080 baiting trials carried out by the NSW Department of Environment & Conservation and the Queensland Department of Natural Resources & Mines'. The nominator believes it is premature to use the results to conclude that 1080 poison has a low impact on quolls when they are an endangered species.

The Victorian Department of Sustainability and Environment is currently carrying out 1080 aerial baiting trials in quoll habitat in north-east Victoria. As discussed above, these baiting trials have not been referred to the federal DEH for approval despite the EPBC Act Guidelines. Aerial baiting has previously been prohibited in Victoria as it is the most indiscriminate method of baiting. The aim of these trials is to allow the long-term introduction of aerial baiting in north-east Victoria and Gippsland (██████████ pers. comm. January 2006). This is of considerable concern when

considering that these locations (north-east Victoria and Gippsland) contain some of the last remaining populations of tiger quolls in Victoria (Parks Flora and Fauna Division, June 2001).

The Australian Pesticides and Veterinary Medicines Authority (APVMA) released findings from a Preliminary Review on the use of 1080 (the APVMA Preliminary Review), in May 2005. Among the APVMA Review's (2005a) findings were:

*“Aerial baiting using biomarkers indicates that a high proportion of resident quolls are likely to locate baits deployed at high rates by this unselective method.”*

*“...trapping results indicate substantial reductions in tiger quoll populations after aerial wild dog baiting.”*

*“The meat baits used for canid control are likely to be toxic to native carnivores such as quolls.”*

As a result of these findings the APVMA stresses:

*“Do NOT exceed 2 baits per km in locations where carnivorous native mammals are active”.*

**Note:** the findings from the APVMA Preliminary Review were released for public consultation on 23<sup>rd</sup> May 2005. Following the public consultation period these preliminary findings are being revisited to include assessments of the public submissions received. A final report has not yet been released. The APVMA's recommendations do not have regulatory status at this time.

In reality, 1080 Baiting campaigns for canid control fall far short of meeting even these minimum standards. The nominator is aware of at least six 1080 aerial baiting campaigns carried out in 2005 alone, in areas known to contain tiger quoll populations that exceeded this minimum:

- October to November 2005 – 30 baits per km were dropped in the Murrumbidgee Gorge, Yaouk Valley.
- October 2005 – 10 baits per km were dropped in the Scabby Range Nature Reserve, Yaouk Nature Reserve and a section of northern Kosciusko National Park.
- October 2005 – 10 baits per km were dropped in a section of the Kosciusko National Park adjacent to the Snowy Plain area.
- May 2005 – 21 baits per km were dropped in the Singleton Military Area and Bulga Coal Mine.
- May 2005 – 40 baits per km were dropped in the Styx River and 10 baits per km were dropped in Cunnawarra National Park and Jacobs River.
- June 2005 – 30 baits per km were dropped at Murrumbidgee Gorge, Yaouk Valley.

All baits contained 6 mg of 1080, which is enough to kill a large male quoll.

These baiting campaigns were referred to DEH under the EPBC Act. As discussed above, despite the obvious indication that these actions were likely to have significant impacts on local quoll populations, DEH approved them without any environmental assessment. The nominator cannot understand how DEH came to this decision, particularly when comparing the rate of bait deployment with APVMA's recommendation to *“NOT exceed 2 baits per km”*.

Furthermore, the directions for the use of 1080 baits for the control of foxes and wild dogs in Victoria recommend minimum distances between baits of only 20 to 150 metres (Landcare 2004, 1999).

The APVMA Preliminary Review is discussed further under the section ‘Australian Pesticides & Veterinary Medicines Authority (APVMA) 1080 Review’. The nominator would like to note that while we quote the APVMA Preliminary Review (2005a), we do not generally advocate its claims that careful bait placement can ‘ensure’ that baiting does not threaten tiger quoll populations. Evidence, documented below, indicates that 1080 baits ‘placed with great care’ for targeting wild dogs can still be fatal to quolls.

During a non-lethal study, Glenn and Dickman (2003b) observed tiger quolls taking 3-4 baits in one night from bait stations 400 m apart from each other. This would indicate that even a low bait placement rate of 2 baits per km would still pose a risk to quolls. Furthermore, according to Murray (1996 & 1998), Belcher (2000b) and Murray *et al.* (2000) tiger quolls will consume baits on the surface and will excavate and consume baits buried to 8 cm depth.

Results from a study carried out by Glenn and Dickman (2003a) found that target animals took only 15% of baits. Table 5 shows the results of Glenn and Dickman’s (2003a) survey, indicating that quolls were significantly the main species to take baits – 46.2% of baits were taken by tiger quolls compared with 8.5% wild dogs and 6.6% red foxes.

**Table 5: Numbers of baits removed by different species Source: Glenn and Dickman (2003a)**

Species	Number of takes
Spotted tail quoll ( <i>Dasyurus maculatus</i> )	49 (46.2%)
Small mammals	14 (13.2%)
Unknown	13 (12.3%)
Australian brush turkey ( <i>Alectura lathami</i> )	12 (11.3%)
Wild dog ( <i>Canis lupus</i> )	9 (8.5%)
Red fox ( <i>Vulpes vulpes</i> )	7 (6.6%)
Superb lyrebird ( <i>Menura novaehollandiae</i> )	2 (1.9%)

Another survey carried out by Glenn and Dickman (2003b) indicated similar results. This study observed two factors – the take of bait by different species and the difference in the take of bait buried in the ground surface and buried in raised mounds. Again the results show that a large majority of baits were taken by tiger quolls. Furthermore results indicated that even though less tiger quolls took baits buried under ground surface than baits buried in raised mounds, the majority of baits from under ground surface were still taken by tiger quolls. Table 6 shows these results.

**Table 6: Numbers of baits removed from bait stations by different species Source: Glenn and Dickman (2003b)**

Species	Mound	Flat	Total
Spotted tail quoll ( <i>Dasyurus maculatus</i> )	33	13	46
Small mammals	11	3	14
Unknown	7	5	12
Wild dog ( <i>Canis lupus</i> )	6	6	12

Red fox ( <i>Vulpes vulpes</i> )	4	0	4
Superb lyrebird ( <i>Menura novaehollandiae</i> )	2	0	2
Australian brush turkey ( <i>Alectura lathami</i> )	1	0	1
Total	64	27	91
Number of bait nights	341	318	659

Glenn and Dickman do not discuss the density of different species in the area of the study, so it can not be determined whether feral species were more or less abundant than quolls at the time. However the study was carried out in the Upper Hunter Valley of NSW (Fosterton and Chichester State Forests), which is an area known to experience a relatively abundant population of foxes and feral dogs.

Regardless, the results of Glenn and Dickman's studies (2003a and 2003b) leave no doubt that there is a high potential for significant numbers of baits to be removed by non-target species, particularly quolls.

Adding to this evidence is a study by Murray and Poore (2004), using baits injected with a non-toxic baitmarker, Rhodamine B. Murray and Poore (2004) found that out of the 16 tiger quolls subsequently captured, 10 had Rhodamine B in their vibrissae. Furthermore aerial baiting trial with non-poisoned fresh and 70% dried meat baits found that 67% and 33% respectively of the quoll population consumed one or more baits (Belcher 2000; Murray *et al.* 2000; ██████████ ██████████ in prep.).

Also notable were observations in Glenn and Dickman's (2003b) survey of quolls taking multiple baits and moving 800-1200 m between bait stations. Glenn and Dickman (2003b) concluded by saying that while some quolls may survive the dose of 1080 contained in a single foxoff© bait (based on a bait containing 3 mg 1080 and sensitivity data in McIlroy 1981b) the chances of survival after consuming more than one bait is highly unlikely.

The level of risk to quolls from 1080 baiting depends on the amount of 1080 ingested, the size of the animal, and the palatability and accessibility of baits to Quolls. The higher tolerance of tiger quolls to 1080 is offset by the smaller body size than dogs and foxes (McIlroy 1981), and a dose of 3-4.5 mg ingested from a single bait is potentially lethal to juvenile, many female and some male Quolls (Murray 1998; Belcher 2000b). A large male animal consuming two baits (ingesting 6-9 mg of 1080) within a short period is also potentially at risk. Baits for wild dogs typically contain 6 mg of 1080.

According to Belcher (2000b) a large male quoll captured in south-eastern NSW several days after a nearby area was aerially baited for dogs displayed symptoms of 1080 poisoning. It died soon after and subsequent tissue analysis found 1080 present.

Murray (1998) also states that due to the limited reproductive ability of tiger quolls, even the loss of a few animals from poisoning is likely to be significant for small populations.

Finally, in the study by ██████████ ██████████ (in prep) "*the results indicate that aerial baiting can have an immediate, substantial impact on populations of D. maculatus and that the impact may last for more than four years after baiting*".

This threatening process could cause the tiger quoll to become eligible for listing in another

category representing a higher degree of endangerment, under the EPBC Act, particularly when considering the eastern states are shifting back towards highly indiscriminate aerial baiting to deploy 1080 and doing so in this species' habitat.

**Spot-tailed quoll, spotted-tail quoll, tiger quoll (*Dasyurus maculatus maculatus* – Tasmanian population)**

This population is listed as vulnerable under the EPBC Act. In the advice to the Minister for Environment and Heritage on listing this species as vulnerable under the EPBC Act the TSSC (2004) stated, “1080 poison baiting programs may play a significant role in localised population declines to the extent that local populations may decline rapidly to extinction”.

The TSSC (2004) considers the threat of 1080 baiting to the southeast mainland population to also apply to the Tasmanian population. Research carried out on the southeast mainland population of the tiger quoll indicates that the Tasmanian population is potentially at risk from 1080 baiting in Tasmania. The recent intensity of fox baiting in Tasmania has serious implications for the Tasmanian population of *D. maculatus maculatus* (in the six months to December 2004, 18,000 1080 baits for foxes were laid over 300,000 to 35,000 ha (TAS DPIWE (in Paine 2005)) and during July, August and September 2005, 8,060 1080 baits for foxes were laid. This eradication program is expected to continue (Department of Primary Industries, Water and Environment 2005)).

According to the Nature Conservation Branch (undated) of the Department of Primary Industries, Water & Environment (Tasmania) “Application of any poisons in insecticides or meat baits” is a “key threat” to the tiger quoll.

Data on the potential impact of 1080 baiting on this population of the tiger quoll is limited, so the nominator can not provide any further information.

**(c) Evidence that the threatening process adversely affects two or more listed threatened species (other than conservation dependant species):**

**Tiger quoll, spot-tailed quoll, spotted-tail quoll (*Dasyurus maculatus maculatus* – southeast mainland population):**

Evidence presented under the previous criteria indicates that 1080 baiting is likely to have an adverse affect on the listed southeast mainland population of the tiger quoll. We note that the tiger quoll has a limited reproductive ability (Murray 1998). Thus, even the loss of a few animals from poisoning is likely to be significant for small populations (Murray 1998).

**Spot-tailed quoll, spotted-tail quoll, tiger Quoll (*Dasyurus maculatus maculatus* – Tasmanian population)**

Evidence presented under the previous criteria indicates that 1080 baiting is likely to have an adverse affect on the listed Tasmanian population of the tiger quoll. We note that the tiger quoll has a limited reproductive ability (Murray 1998). Thus, even the loss of a few animals from poisoning is likely to be significant for small populations (Murray 1998).

***Other Species at risk:***

Data on the impact of 1080 on other listed species is very limited or absent, however there is enough indication to note that there may be a further range of threatened species adversely impacted by 1080.

#### **Long-nosed potoroo (*Potorous tridactylus tridactylus* – southeast mainland population)**

This species is listed as vulnerable under the EPBC Act. According to [REDACTED] [REDACTED] (unpublished) this species is known to take 1080 baits and is also known to be killed by them. Studies carried out by McIlroy (1982) found that long-nosed potoroos are more sensitive to 1080 poison than rabbits. McIlroy states, “*because of the greater susceptibility to 1080 of this group than of rabbits, rabbit poisoning campaigns should be avoided in areas which contain these non-target species [long-nosed potoroos]*”.

McIlroy also notes anecdotal evidence that long-nosed potoroos are killed during rabbit baiting campaigns ([REDACTED] [REDACTED] pers comm.1979 and [REDACTED] [REDACTED] pers comm. 1981) and states “*long-nosed potoroo ...will readily eat carrot bait because their natural food is underground tubers and roots*”.

The AVPMA (2005a) also states the “carrot baits are likely to be dangerous for potoroos”

Data on the potential impact of 1080 baiting on this species is limited, so the nominator can not provide any further information.

#### **Northern quoll (*Dasyurus hallucatus*)**

The northern quoll has recently been listed as endangered under the EPBC Act. While little research has been carried out to investigate the impact of 1080 on the northern quoll, studies done elsewhere in Australia have indicated very clearly that quolls can be heavily impacted by this control method.

There has only ever been one study carried out to determine the impact of 1080 on the northern quoll (Dr Scott Burnett pers. comm. April 2005). King (1989) radio-tracked a sample of northern quolls during a 1080 baiting campaign for wild dogs and found that all survived. However, King’s study was only carried out in Western Australia, where populations of the species are likely to have a higher tolerance to fluoroacetate than populations of the same species in eastern Australia. Northern quolls have all but disappeared from Cape York and no studies have been carried out to determine the possibility that 1080 has impacted upon the population in this area.

According to the Cairns and Far North Environment Centre (2005), the most common method of control of feral pigs and dogs in Cape York is aerial baiting with 1080 poison. Baiting for feral pigs requires an extremely high dose of 1080, of 75 mg, and the NSW Department of Primary Industries state, “*a disadvantage of using 1080 is that it carries a high risk of non-target poisoning due to the large doses required to kill feral pigs*”.

Thus the nominator feels that there is a possibility that 1080 baiting may have had an adverse impact on northern quoll populations in northeastern Australia and continue to.

Data on the potential impact of 1080 baiting on this species is limited, so the nominator can not provide any further information.

### **Spotted-tailed quoll or yarri (*Dasyurus maculatus gracilis* – North Queensland subspecies)**

This species is listed as endangered under the EPBC Act. This subspecies species' range is small and occurs around Cairns and Cooktown. No research has been carried out on whether 1080 baiting has an effect on the population, however studies done elsewhere in Australia have indicated that quolls are heavily impacted by this control method. Data on the potential impact of 1080 baiting on this species is limited, so the nominator can not provide any further information.

### **Wedge-tailed eagle (*Aquila audax fleayi* – Tasmanian population)**

The Tasmanian population of this species is listed as endangered under the EPBC Act. It is difficult to determine whether 1080 baiting would cause this species to be eligible for listing in another category representing a higher degree of endangerment under the EPBC Act. However there is evidence to suggest that it is adversely affected by 1080.

Wedge-tailed eagles are known to take several baits at a time (Denny 2001). However, according to Denny (2001) the main difficulty in determining if the taking of the bait leads to death is the interval between ingestion of the bait and the onset of any signs of toxicity. McIlroy (1984) states that for birds the onset of symptoms can take as long as 60 hours, and death may not occur for 11 days. This may lead to incorrectly concluding that the taking of the bait does not lead to death.

There is anecdotal evidence that wedge-tailed eagles have died from eating carcasses of animals poisoned with 1080 (Bell and Mooney 1998). Furthermore, according to Bell and Mooney (1998), indirect harm might occur from the reduction of the prey. According to Garnett and Crowley (2000) wedge-tailed eagles are known to die in Tasmania as non-target species during illegal poisoning of Tasmanian devils and forest ravens. Thus it is evident that 1080 certainly does have the ability to kill individuals.

Data on the potential impact of 1080 baiting on this species is limited, so the nominator can not provide any further information.

### **Australian Pesticides & Veterinary Medicines Authority (APVMA) 1080 Review**

The APVMA (2005a) released preliminary findings from a Review on the use of 1080, in May 2005. According to the APVMA (2005b) the review was undertaken to address concerns over unintended effects on the environment through the poisoning of non-target animals. For example, it recommends the strengthening of label instructions and controls on the use of 1080.

**Note:** the findings from the APVMA Preliminary Review was released for public consultation on 23<sup>rd</sup> May 2005. Following the public consultation period these preliminary findings are being revisited to include assessments of the public submissions received. A final report has not yet been released. The APVMA's recommendations do not have regulatory status at this time.

While we appreciate the APVMA Preliminary Review's attempt to provide a greater margin of safety to minimise non-target species damage, we do not agree with the message expressed in the media that the Preliminary Review has determined that 1080 is 'safe for the environment'. The APVMA (2005b) does claim "*The initial review findings have highlighted that, with certain improvements, the APVMA can be satisfied that the continued use of 1080 is safe for the*

*environment.*” But the nominator has examined the Review and sees no substantiated evidence presented in it, to back up the conclusion that 1080 is ‘safe for the environment’. The Review merely provides recommendations such as, “*meat baits need to be placed with great care in spotted-tailed quoll habitat as these animals are sensitive to 1080 and may be negatively impacted by poisoning*”.

As mentioned in this nomination the Review recommends meat baits to be placed at a rate of 2 baits per km in tiger quoll habitat. However, studies have indicated that quolls will easily cover almost twice this range in one night. Glenn and Dickman (2003b) observed quolls taking 3-4 baits in one night from bait stations 400m apart (see previous section on tiger quoll in this nomination).

Besides this point, it is evident that 1080 baiting campaigns are in fact not carried out in line with this and many other guidelines proposed in the APVMA Preliminary Review. The nominator has detailed above a number of 1080 baiting campaigns in NSW that have deployed 30-40 baits per km in areas important for the endangered tiger quoll. While the APVMA Preliminary Review does not have any regulatory status at this time, it still provides initial review findings.

The APVMA (2005a) also proposes that carrot baits “*should not be laid in areas where the presence of [potoroos] raises concerns*”. However the nominator is aware that carrot baits are used in areas containing potoroo species particularly in Tasmanian and the southeast mainland. Indeed the listed long-nosed potoroo is known to be killed by 1080 baiting (██████ ██████ unpub. and APVMA 2005a).

The APVMA (2005a) states that baits for pigs are “*likely to be hazardous to birds of prey and goanas*”, due to their high concentration. It states that baits must be “*laid in the evening and recovered the next morning in order to avoid exposure of these diurnal feeders*”. Aerial baiting for pigs is carried out in seasonally inaccessible areas on Cape York Peninsula and rugged parts of the Blue Mountains (APVMA 2005a). It is reasonable to say that in such inaccessible and rugged areas these baits would not be sufficiently monitored.

Considering that in many cases these guidelines and recommendations are not followed, the APVMA cannot come to the conclusion that 1080 baiting is “safe for the environment”.

## **Recent 1080 baiting trials carried out by the NSW Department of Environment & Conservation and the Queensland Department of Natural Resources & Mines**

The NSW Department of Environment and Conservation (DEC) and the Queensland Department of Natural Resources and Mines (DNRM) concurrently carried out studies on the impact of 1080 baiting on the tiger quoll. The DEC conducted field experiments in northern NSW in 2004 and 2005 and in southern NSW in 2005 (see Kortner and Watson 2005), and the DNRM carried out their studies in southern Queensland between 2002 and 2005.

The preliminary results of this research have been discussed by the DEC (2005). In NSW at least one quoll was found to have died of 1080 poisoning and in the Queensland at least two quolls died of 1080 poisoning. The DEC (2005) notes that further analysis is needed and admits that “*even a few deaths caused by aerial baiting may have a significant impact on a small population of quolls that has already been weakened by factors such as drought, habitat fragmentation or disease. It is also possible that 1080 may have other impacts on quolls that survive after eating baits – such as infertility and birth defects.*”

Despite this, the NSW Government has been using these preliminary results to justify the reintroduction of large-scale 1080 aerial baiting in Kosciusko in the Adaminaby and Yaouk areas in 2004 and 2005, without any environment assessment.

The nominator believes it is highly premature to use these results to conclude that 1080 has a low impact on the tiger quoll.

### **Inquiry into the impact on agriculture of pest animals, House of Representatives Standing Committee on Agriculture, Fisheries & Forestry**

In 2005, the House of Representatives Standing Committee on Agriculture, Fisheries & Forestry conducted a Parliamentary Inquiry into the impact on agriculture of pest animals. The Inquiry touched on the issue of 1080 baiting in the control of pest animals. A final report on the Inquiry was released in November 2005 (House of Representatives Standing Committee on Agriculture, Fisheries & Forestry 2005) (the report).

The report notes that views are opposing on whether 1080 impacts on non-target species. It then refers in relative detail to limited evidence that might indicate that 1080 does not have an impact on quolls, but fails to mention in similar detail, the greater number of studies that have indicated that 1080 has an impact on quolls and several other native species. The nominator considers the report partial to the use of 1080 poison in the control of pest animals.

The report makes particular note of preliminary findings from research carried out by the NSW DEC and the Queensland DNRM, whereby “*quoll mortality rates from 1080 are much lower than previously thought*”. As discussed above, the nominator believes it is premature to use these preliminary findings to conclude that 1080 has a low impact on quolls, particularly when the south east mainland population of the tiger quoll is becoming increasingly threatened.

The report discusses the APVMA 1080 Review (2005a) and states “*The review found that, although 1080 can have an impact on individual non-target animals, it does not have an impact at the population level.*” This comment is highly misleading. Nowhere in the APVMA Review is the statement that 1080 does not have an impact at the population level. Rather, the APVMA Review (2005a) admits that 1080 can in fact have an impact on populations and states “*...trapping results indicate substantial reductions in tiger quoll populations after aerial wild dog baiting.*” As a result of the APVMA Review’s findings, they stress, “*Do NOT exceed 2 baits per km in locations where carnivorous native mammals are active*”.

In the report the Committee recommends that 1080 must remain available to landholders to control pest animals despite stating that there are unresolved issues in terms of opposing conclusions in relation to its impact on non-target species. It also recommends that the Australian Government reconsider its commitment to phasing out the use of 1080 poison in Tasmania.

The nominator utterly rejects the report’s recommendations. The recommendations rely heavily on the insistence by landholders and organisations that 1080 is a convenient method of pest animal control. The report does not adequately address the environmental concerns surrounding 1080 use and does not provide any scientific assessment or analysis on whether 1080 has an impact on non-target species. Nor does it consider the precautionary principle. While the report discusses other methods of feral animal control, such as trapping and fencing, it does not consider alternatives to

substitute the use of 1080 baiting.

## **New 1080 baiting code of practice in Tasmania**

The Tasmanian Government recently released a range of tighter controls on the use of 1080 in a new Code of Practice.

Under the new Code of Practice, there will be further requirements for land managers to demonstrate the need to use 1080; applicants must have property based game management plans in place before a permit can be issued; a system of on-site inspections to document crop damage will be developed; and there will be further requirements to investigate alternative control methods (Jackson, Media Release December 2005).

While these tightened controls are a positive step, the Code of Practice still allows individual land managers to handle and distribute 1080 poison for all vertebrates and the impact on non-target wildlife, including threatened species will be measured with self-assessments by land managers (Tasmanian Conservation Trust, Media Release December 2005). The nominees are concerned the Code relies too heavily on self regulation and self assessment by landholders with vested interests in continuing their 1080 use and is unenforceable. Under this new Code of Practice 1080 baiting is still a threat to wildlife in Tasmania.

The federal Government's 2004 election commitment to phase out 1080 use on private land in Tasmania by 2005 has not been complied with.

### **Conclusion:**

The nominator has presented evidence to indicate that a number of native species are impacted on by 1080 baiting campaigns. However, information on the potential impact of 1080 baiting on a number of species identified in this nomination is limited because it has been poorly researched.

The nominator considered excising Western Australia from the nomination because native species in that state have an inherited tolerance, but the dingo does not share this tolerance and it is a species targeted in 1080 programs in Western Australia. Therefore, we recommend the TSSC consider the threat the poison poses in Western Australia solely in relation to the dingo.

The nominator has presented sufficient evidence that indicates that 1080 baiting would cause the tiger quoll, spot-tailed quoll, spotted-tail quoll (*Dasyurus maculatus maculatus* – south east mainland population) to be listed in a higher category of endangerment and is a contributing factor in the endangerment of the dingo in the eastern states, such that it qualifies for listing as a key threatening process.

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