Aerial baiting for wild dogs on NPWS Estate: From 0 to 40 and all year round

G Eccles1, A Claridge2, R Hunt2

1 NSW National Parks and Wildlife Service, Sydney, NSW

2 NSW National Parks and Wildlife Service, Queanbeyan, NSW

Why does NPWS undertake aerial baiting for wild dogs?

The primary reason NPWS undertakes wild dog control is for the protection of livestock as part of integrated programs with the community.

But what about Dingoes?

Where wild dogs, including dingoes, are impacting on livestock or have a high likelihood to impact on livestock, NPWS will put controls in place to remove those dogs.

Resources are not put into controlling wild dog where they are not likely to have a negative impact.

Aerial baiting, a very useful primary technique

Very effective and efficient when bait application rates are high

However, **to be clear,** aerial baiting is never used in isolation.

Overall success of wild dog control programs demands that aerial baiting needs to be augmented by other techniques such as; ground baiting and trapping

Brief history of aerial baiting

- Aerial baiting was introduced to areas of NSW in the 1960's
- Up until 1979 lack of quality control in all aspects
  - Baits mixed in cement mixers, no dye
  - Up to 50mg of 1080 per bait
  - Baits all different sizes
  - Baits per kilometre varied greatly
  - Mostly in aeroplanes
  - Of course, no GPS
- Aerial baiting on NPWS estate has being undertaken since the 1970's
- NPWS established in 1967
- Areas being transferred from other tenures into NPWS estate
- Changes in management regime when land was transferred

Brief history of aerial baiting

- Most aerial baiting programs on NPWS estate were suspended in 1995 due to Review of Environmental Impact Statements not being approved, for fear of harmful impacts on non-target animals such as quolls

Brief history of aerial baiting

- During the period of 1996 to 2005 the practice was suspended all together;
- While operations were ceased, it was nevertheless an active time for research into non-target impacts of aerial baiting.

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www.publish.csiro.au/journals/wr
Wildlife Research, 2004, 31, 639–644

Potential impact of aerial baiting for wild dogs on a population of spotted-tailed quolls (*Dasyurus maculatus*)

Andrew J. Murray[A,B] *and Robert N. Poore*[A]

[A]Department of Sustainability and Environment, PO Box 260, Orbost, Vic. 3888, Australia.
[B]Corresponding author. Email: andrew.murray@dse.vic.gov.au

Abstract. The spotted-tailed quoll (*Dasyurus maculatus*) is a threatened marsupial that inhabits forests in eastern Australia. In many of these forests the species is sympatric with populations of wild dogs (*Canis lupus dingo*, *Canis familiaris* and hybrids of the two), which are subject to poison-baiting programs. Many of these programs involve dropping meat baits injected with 6 mg of 1080 from helicopters. To date, the effect of this method on populations of spotted-tailed quolls has not been quantified. We carried out a simulated aerial baiting program using meat baits injected with a non-toxic baitmarker, Rhodamine B, which is laid down in the vibrissae of mammals ingesting baits. Of the 16 spotted-tailed quolls subsequently captured, 10 had Rhodamine B in their vibrissae. The potential impact that this level of bait uptake might have on a population of quolls is discussed.

Introduction

The spotted-tailed quoll (*Dasyurus maculatus*) is a threatened marsupial carnivore confined to forested habitats in south-eastern Australia and Tasmania (Mansergh 1984). It is the largest extant dasyurid in mainland Australia (Settle 1978) and the only surviving species of *Dasyurus* in south-eastern mainland Australia (Jones *et al.* 2003). The species has suffered a decline, both in distribution and abundance (Mansergh 1984). Several factors have been implicated in this decline, including loss and fragmentation of habitat (Mansergh 1984; Maxwell *et al.* 1996), competition with introduced predators (Fleay 1932; Mansergh 1984; Mansergh and Belcher 1992; Watt 1993), and the direct persecution of quolls (Fleay 1948; Rolls 1969). In addition, several authors (Wood-Jones 1923; Fleay 1932; Troughton 1962; Wakefield 1967; Caughley 1980) have discussed the possibility that during the first quarter of the 20th century an epidemic disease devastated populations of the larger marsupial carnivores.

With legal protection, a decline in the rural human population, improvements in the manner in which poultry is housed, and greater community sensitivity towards native wildlife, it is likely that the risk to quolls posed by intentional persecution has declined. However, quolls may still be at risk from baiting programs for feral predators that fail to take the risk posed to non-target species into account. Aspects of these baiting programs that could put quolls at risk include: the amount of poison (1080) contained within baits, the type of bait used, the method by which baits are deployed, the habitat in which baits are deployed, and the intensity of baiting.

Although spotted-tailed quolls are adept at hunting and killing prey (Fleay 1948; Troughton 1962; Settle 1978), like many carnivorous species they will also scavenge for food (Fleay 1948; Sharland 1963; Belcher 1995; Mansergh 1995). The suggestion that quolls could be attracted to large meat baits that are used to poison wild dogs (*Canis familiaris*) and dingoes (*Canis lupus dingo*) has been made by several authors (Rolls 1969; Breckwoldt 1984). In this paper we use the nomenclature used by Fleming *et al.* (2001) with reference to 'wild dogs', meaning all wild-living dogs, including dingoes and their hybrids.

Aerial baiting, in which poison meat baits are deployed from helicopters, is widely used for wild-dog control in the forested freehold areas encompassed by the Cooma, Bombala and the Braidwood Rural Lands Protection Boards (RLPBs) in south-eastern New South Wales. The method is considered an important component of wild-dog control in the areas encompassed by these boards. Many other RLPBs, in both the north-east of New South Wales (in areas inhabited by spotted-tailed quolls), as well as in more arid areas in the west of the State (which lack suitable forest to support populations of spotted-tailed quolls), also carry out similar aerial baiting programs.

There has been little research into the effects of aerial baiting on rare or cryptic non-target species (McIlroy 1992). As McIlroy (1992) points out, one of the critical reasons that few field studies have investigated the impact of 1080-poisoning program on animal populations is the difficulty in obtaining sufficient data to evaluate the effects of such programs due to the low population density of many potentially affected native species. The few field studies in mountain forest areas of south-eastern Australia that have been published suggest that poisoning campaigns carried out to control dingoes with unburied baits had no significant effect on populations of reasonably common small mammals and birds (McIlroy 1982, 1992; McIlroy *et al.* 1986).

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10.1071/WR03067 1035-3712/04/060639

Brief history of aerial baiting

- Research undertaken by NPWS and NSW DPI in 2004-2005 concluded that aerial baiting at 10 baits per kilometre in the autumn with a fresh 250gm meat baits had no obvious population impact on quolls

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Wildlife Research, 2007, **34**, 116–124 www.publish.csiro.au/journals/wr

Aerial baiting for wild dogs has no observable impact on spotted-tailed quolls (*Dasyurus maculatus*) in a rainshadow woodland

Andrew W. Claridge[A,B] *and Douglas J. Mills*[A]

[A]Department of Environment and Conservation, Parks and Wildlife Division, Reserve Conservation Unit, Southern Branch, PO Box 2115, Queanbeyan, NSW 2620, Australia.
[B]Corresponding author. Email: andrew.claridge@environment.nsw.gov.au

Abstract. The short-term impact of 1080 aerial baiting for wild dogs (*Canis lupus dingo*, *Canis lupus familiaris* and hybrids of the two) on spotted-tailed quolls (*Dasyurus maculatus*) was investigated at a rainshadow woodland site in southern New South Wales, Australia. Sixteen quolls were trapped and fitted with radio-transmitters containing mortality sensors. Three feral cats were also opportunistically trapped and radio-collared. One week after trapping ceased, meat baits nominally containing 6 mg of 1080 poison and 50 mg of the biomarker rhodamine B were deployed aerially over a 10-km transect across the study area. Following bait deployment, collared quolls and cats were monitored daily over four weeks for evidence of mortality. During this time, one quoll and two cats died. The quoll did not die from 1080 but both cats showed clear signs of poisoning. Whisker samples were obtained from trapped quolls 5–8 weeks after baiting to determine whether they had been exposed to baits. Of the 15 remaining collared quolls, 12 were retrapped. Four of these tested positive for rhodamine B. Three individuals originally collared were not retrapped but confirmed alive at least seven weeks after bait deployment. A further six non-collared quolls were also trapped, with two of these positive for rhodamine B. Of the 19 quolls from which whisker samples were tested for rhodamine B then, 13 (68%) were negative and six (32%) were positive. Aerial baiting had no observable impact on the local radio-collared quoll population, a finding consistent with results from a similar study recently conducted in northern New South Wales.

Introduction

Considerable attention has been focused on the potential non-target impact of 1080 poison baiting for canids on a range of native mammals, particularly at-risk carnivores such as the spotted-tailed quoll (*Dasyurus maculatus*) (e.g. Belcher 2003; Glen and Dickman 2003*a*, 2003*b*; Körtner *et al.* 2004; Körtner and Watson 2005). This attention is warranted given the widespread nature of 1080 baiting across Australia, particularly for wild dogs that are known to kill and maim domestic stock (Fleming *et al.* 2001). Most recently, this has led to the development of the 'buried-baiting' technique, in which baits are covered, either within mounds of soil or sand, or buried below the surface of the ground (Glen and Dickman 2003*a*, 2003*b*). Doing this reduces uptake by quolls since they are less inclined to dig for food than are introduced canids (Belcher 1998; Glen and Dickman 2003*b*). Buried-baiting programs work best when there is a good system of access roads where bait stations can be systematically prepared and maintained. In forests with no tracks and trails, 1080 baits used for wild dog control are instead typically deployed from the air. This method results in baits resting on the surface of the ground, increasing risk of exposure to spotted-tailed quolls. Murray and Poore (2004) unequivocally demonstrated that a large proportion (65%) of a trappable population of quolls ate non-toxic baits loaded with the biomarker rhodamine B that were deployed aerially across a forested study site in southern New South Wales. More recent related studies by Claridge *et al.* (2006), in a different environment, illustrated similarly high exposure rates (47–60%) of quolls to non-toxic baits at lower baiting rates than that used by Murray and Poore (2004).

Although the simulated trials described above are instructive in assessing the potential risk that quolls face from aerial baiting programs for wild dogs, they do not provide information on mortality rates of animals if toxic baits were used (Claridge *et al.* 2006). Evidence for deleterious impact of 1080 baiting on spotted-tailed quolls in the wild is equivocal. Belcher (2003) reported significant declines among three separate populations of the species in southern New South Wales and far-east Gippsland, Victoria. He speculated that these declines were likely due to a combination of aerial baiting and illegal hand-baiting activities for wild dogs, or fox and rabbit baiting, respectively, that occurred before a crash in his study populations. In contrast, field trials with surface-laid and buried fresh meat baits showed a low impact on a quoll population in southern Queensland, with two confirmed 1080-related deaths among 76 radio-collared quolls (P. Cremasco, pers. comm. 2005).

Most recently, Körtner and Watson (2005) radio-collared a local population of quolls on the New England Tablelands in northern New South Wales ahead of a routine aerial baiting program on private and state forest tenures. Baits, injected with a nominal dose of 6 mg of 1080, as well as the biomarker

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10.1071/WR06151 1035-3712/07/020116

Brief history of aerial baiting

- In 2006, on the back of research findings, the practice was reintroduced but at a maximum of 10 baits per kilometre.

NEW SOUTH WALES

ATTORNEY GENERAL
MINISTER FOR THE ENVIRONMENT

NEWS RELEASE

13 September 2005

Aerial Baiting Moratorium Lifted in NSW

New areas of NSW will be re-opened to aerial baiting as part of the State Government's $4 million annual commitment to wild dog control in national parks, NSW Environment Bob Debus announced today.

Mr Debus said research results released today show aerial baiting with lethal 1080 is unlikely to have a significant impact on endangered quolls.

Aerial baiting will sit along side other ways of eradicating wild dogs, including wide-scale trapping, shooting, ground baiting and exclusion fencing.

These are already widely used in and around national parks across NSW.

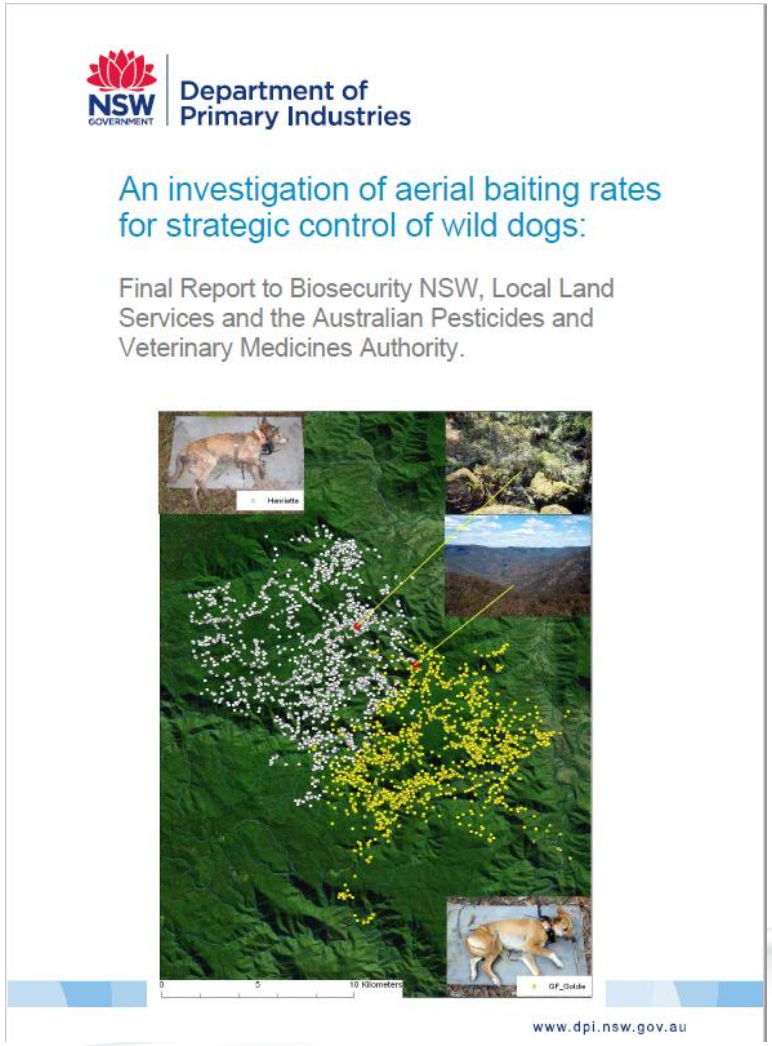
Mr Debus said a two year study of quoll populations in NSW found negligible mortality rates among native animals from aerial baiting.

"New aerial baiting runs will now be considered on a case by case basis, in areas where rugged terrain makes the use of existing techniques extremely difficult, or where stock losses are continuing at unacceptably high levels," he said.

"Final decisions will be made in consultation with local farmers and other landholders, as well as rural lands protection boards.

Brief history of aerial baiting

- In 2014, NSW DPI publishes research that baiting at 40 baits per kilometres was 90.6% effective for wild dogs compared to 10 baits per kilometre which was only 55.3% effective.



Aerial baiting, part the year round

- NPWS conducts a Conservation Risk Assessment (CRA) in relation to baiting 40 baits per kilometre
- An unknown risk identified
  - What was the effect on females quolls carrying pouch young?

Brief history of aerial baiting

- As a result of a the CRA and the NSW DPI research, NPWS undertakes 40 baits per kilometre, but only in the autumn
  - Baiting was still restricted to 10 baits per kilometre from July to February

Aerial baiting part the year round

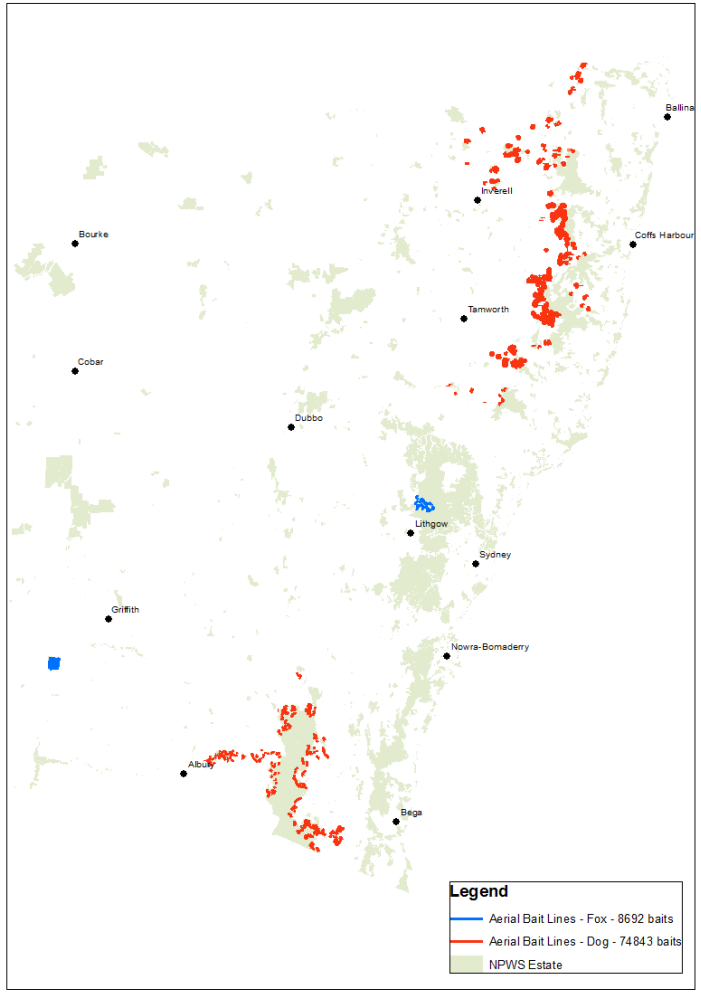
- To address the unknown risk, NPWS and NSW DPI undertake further research in 2016
- Consistent with previous research, no detrimental impacts on quolls were determined

Aerial baiting now?

Using sound policy and procedures backed by peer reviewed research, NPWS now permits wild dog baiting up to 40 baits per kilometre across different seasons on NPWS estate.

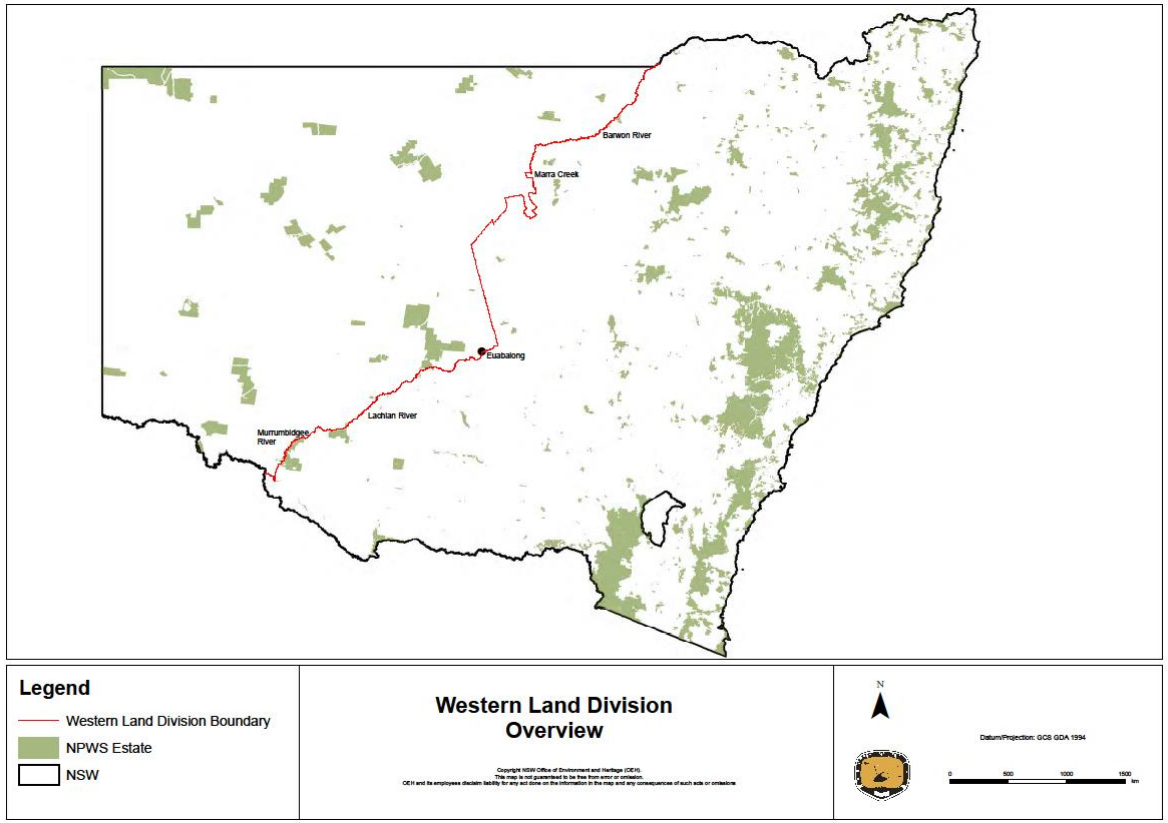
Aerial baiting on NPWS Estate 2017-2018

- ~74,800 wild dog baits
- ~8,600 fox baits



What next ? Fixed wing aerial baiting in the eastern division

Currently NPWS undertakes aerial baiting in the Western Division of NSW in a fixed wing aircraft



What next ? Fixed wing aerial baiting in the eastern division

- Under a trial, NPWS planning to undertake aerial baiting in a fixed wing on NPWS estate in the eastern division

- **Why?**

To improve efficiency and effectiveness of control

How will NPWS do it?

- Current aircraft
- Cessna 206
- Limited capacity-when you have a payload, plus three people, plus fuel
- The payload only allows approx. 90kgs of baits
- Top speed- approx. 135 knots

How will NPWS do it?

- New aircraft-Park Air 6
- Cessna caravan
- Large capacity- approximately 900 kg payload, plus four people, plus fuel
- Top speed- approx. 185 knots
- Much greater range

The Caravan

Technology to ensure safety and accuracy

Ample space for four passengers and payload

Aerial Baiting Caravan

Negative

- Wont be able to replace helicopters in all areas as the helicopter will be needed for specific topography

Positives

- Based out of a regional airport
- No need to chase the helicopter around with fuel and baits
- Increase in efficiency due to pay load, speed and range of aircraft

Aerial Baiting Caravan, next steps

- Put procedures together
- Trials
- Report back to the EPA
- Where applicable, make it normal business

Aerial Baiting into the future….

- Continue to learn and improve
- Continual updating of policies and management backed by peer-reviewed research