

15 AERIAL FARMING & POISON, POST-1946

I do not like indefinite poisoning and [aerial baiting] is the most indefinite ever undertaken. No one has a clue about what percentage of the baits are eaten or what is eating them, yet secretaries and presidents and treasurers are delighted to be photographed in the act of loading the meat into aeroplanes (Rolls, 1969, p. 455).

15.1 Introduction

The concept of aerial farming was born in New Zealand in 1906 when inventor/farmer John Chaytor took to the air in a hot air balloon and threw out seed over his North Island farm (Bridges & Downs, 2014), but it was, in fact, illegal to throw anything out of aircraft (bombs excepted), until after World War II.

The Australians were the pioneers in the application of aerial pest control. Demobilized pilots found work broadcasting poison baits from the air to address the super-abundance dingoes that had taken over landholdings during the war years (*Aerial war against Queensland dingoes*, 1946).

In 1946 landholders were struggling to maintain production and profitability in the face of increasing dingo and rabbit populations (*Poison baits for dingoes*, 1946). As a result, a multi-faceted approach was taken towards rejuvenating the agricultural industry, optimistically preceding the end of a ten-year drought (1937 to 1947). The

national sheep flock had dropped from 130 million to 98 million in the decade to 1945 (Table 1, p. 208), and cattle had reduced to 40% over the course of the preceding drought years (ABARES, 2014). The cost of wild dog destruction of stock during war years 1938-1945 was estimated at £1,000,000 (*One fence: 600 miles*, 1947). As a result, plans were drafted to repair the deteriorating dingo barrier fences, and government funding increased support for ground baiting, traps and bounty schemes (*One fence: 600 miles*, 1947 p. 1) – the fence history is covered separately in Chapter 15. The main innovation in dingo control at this time, was aerial eradication campaigns, and the Queensland and Western-Australian Governments implemented the first programs in 1946.

It was the R.A.A.F.'s involvement from the first test flight, that made aerial baiting a reality, 18 July 1946 (*Successful test with dingo baits from air* 1946, p. 1):

Civil Aviation refused to waive the regulation forbidding the throwing of any object from a civil plane. Qantas officials were able to get last minute help from the R.A.A.F. at Amberley. A service Liberator and a flying crew were made available for the experiment.

The dispersal of non-poisoned brisket fat from the air at various altitudes was trialed, and announced a success by the Minister for Lands, paving the way for further trials. *The Canberra Times* reported in June (*Aerial war against Queensland dingoes*, 1946):

Arrangements are being made for millions of tablets, each containing a grain of strychnine, to be flown from England to Queensland within the next month. The tablets will be inserted in the baits as they arrive and aerial dropping will then begin.

Before the first major operation began, there was outspoken condemnation of the campaign from the graziers themselves published in the press (*Dingo baiting criticism*, 1946):

As anyone knows who has laid out many of these baits, the dingoes soon get shy of them, and won't pick them up, much less eat them. Though this method may get a few inexperienced dingoes, it will also surely get innumerable pest-eating bird, such as magpies, small hawks, butcher birds, crows, and probably curlews and ibis.

Farmers wrote in claiming that they had *never* known a dingo to be poisoned by the

Government brisket baits with strychnine tablets inside – one grazier reported distributing over 200 baits, yet could not attribute to them the destruction of a single dog (*Dingo Poisoning Campaign*, 1947).

E. D. Wells, Rockhampton (*Dingo baiting criticism*, 1946) wrote:

Why waste time and money on them? The baits were first introduced to make it easy for the grazier to fulfill conditions. We were subject to a fine not exceeding £100, for not taking steps to destroy dingoes, etc.

Dozens of letters had been sent in from ‘hard-headed graziers’ to the Lands Department, claiming that the aerial baiting scheme was a waste of money. The papers published an interview with grazier W.H. Edwards, stating (*Graziers critical of dingo baiting plan*, 1946):

Dropping baits over thousands of square miles “willy nilly” must result in great waste of poison and wholesale slaughter of bird life, with an ultimate increase in insect pests.

It seems folly, Mr. Edwards states, to embark upon any scheme of dingo destruction in any part of Australia while animals are sprawling in death in thousands, as is the case at the moment

[Here, Edwards is referring to the animals lost to the long running drought that were providing ample feed for the dingo population]. The continuation of trials by the Queensland Government suggests that those managing the program had either ignored or rejected the criticism in the media. The first “Test Aerial Bombardment to Combat the Dingo Menace” commenced significantly on Remembrance Day, 11 November, 1946 (*D-day for the dingoes*, 1946, p. 2). 367,000 strychnine baits were dropped from planes, in a ‘bombardment’ that lasted 21 days, covering 156,000 square kilometers of dingo breeding territory in the north-western corner of Queensland.

The land minister stated the “Costs of dropping baits from the air would be little in excess of the wages of one dogger for 12 months.” equating to around 2 shillings per mile (*Aerial war against Queensland dingoes*, 1946).

The campaign was considered a victory, despite only recovering one dingo carcass during the trial—there were far fewer dingo tracks after the baiting than before. This was taken as an indication that the dingo had been effectively eradicated (or had relocated) (Tomlinson, 1954)

In October 1947 the Dalrymple Shire in north-east Queensland commenced an aerial baiting campaign to deliver three times the previous year's poison tally – the Superintendent for Stock Routes arranged for the distribution of 1.5 million baits in the remote dingo breeding areas, west of the sheep country (*Dingo Poisoning Campaign*, 1947) announcing the planes would cover an area:

... to the borders of the State, north to the 19th parallel of latitude and across to the Great Dividing Range for an average depth of 160 to 180 miles.

A Dragon Rapide aircraft on charter from Qantas was fitted out with a purpose built poison dispenser: an electrically driven machine designed to distribute the baits at 60-70 baits per mile (*Dingo Poisoning Campaign*, 1947). The campaign was conducted over 81 days, involved 94 flights, covered an aggregate distance of 45,500 kilometres and 64 million hectares. Landholders were notified and 488 cases of meat baits were consigned to the Charters Towers Shire Council for the project.

The following year, *The Argus* announced (*Record Air Raid on Dingoes*, 1948, p. 1):

Two and a quarter million baits will be dropped by plane over more than 200 million acres of Queensland and Northern Territory between July and August in a record aerial campaign against dingoes.

Trials were also started in 1948 in the Barkly Tablelands, Northern Territory, with 194,950 baits dropped at a cost of £1,800 – it was again a cheap and widespread campaign. In a review of aerial baiting published in 1969, Stephens reported on the trial:

It was localised and not followed up by a ground drive or survey, so no clear picture of its effect was obtained.

By 1950, both the United Gaziers Association and the Queensland Local Government Association in Australia had spoken out publically condemning aerial baiting, claiming the project a waste of money – mainly because they believed the birds and ants beat the dingoes to the baits (*It will be of breathtaking size—Australia's new Dingo Cage*, 1955).

Trappers also did not support the project. They claimed that the dingo was 'extraordinarily intelligent', and given the difficulty that they often had in catching them with traps, guns or bait, aerial baiting would be ineffective. One trapper wrote

the following account (*The Bulletin*, 1959):

I have been after dingoes' scalps for over 50 years, and I agree that aerial baiting is not generally successful. It's impossible to estimate how many dingoes would be killed by this method ...

I have laid baits and set traps, using all the wiles I know. The dingo comes along, sniffs the bait or trap, lifts his leg and fouls it, then turns and kicks some dirt over it – just to let you know that he has passed that way

In 1948 the Western Australian Government had commenced a research project, gathering data from aerial baiting programs to set the graziers fears to rest. The Tomlinson report, published in 1954, detailed the distribution techniques and quantities of baits deployed from 1948 to 1953, and the results including the number of dingo carcasses recovered. The target zones were described as mainly areas surrounding water-sources (Tomlinson, 1954, p. 42):

In the dry season campaigns, the baits are dropped on water-holes, soaks, junctions of dried water courses, gorges in hills and all places where dogs must travel or gather in their search for water and game and in their movements with pups from the breeding areas.

Analysis of the data in the Tomlinson report, (1948 to 1953), showed that on average 14,941 baits were dispensed for every dingo carcass recovered. Early rains had compromised the results, but on the first test drop 300 dog carcasses were found – however, this was attributed to the lack of experience of the planners who had dropped baits near station properties and settlements, much to the distress of the communities who lost their domestic and working dogs as a result (Table 2).

In the conclusion to the project, the use of poison baits was considered successful. Distribution from the air reduced costs, making dispersal of the baits between 3 to 8 times cheaper than distributing them on the ground. It was, however, considered less effective than ground control, and the final recommendations were for both aerial and ground baiting be done simultaneously to obtain the best results (Tomlinson, 1954, p. 49).

Tomlinson's findings were not without their critics. N.W.G. Macintosh at Sydney

University was conducting behavioural experiments on dingoes over this time, and concluded that most of the money spent on eradication programs, including aerial baiting and barrier fencing (see Chapter 16), had been wasted. Macintosh claimed at the time (Reading & Macintosh, 1954):

After the rabbit, the dingo is Australia's greatest pastoral pest ... The conventional dog-proof fence is not high enough; poisoned baits dropped from the air do not tempt the dingo.

Table 2 Research data results from the aerial baiting program 1948 to 1953, collated from the Tomlinson 1954 report.

Year	Number of baits	Total number of dingo carcasses recovered	Number of baits per each carcass recovered
1948	285,000	300 *note this included domestic and farm dogs killed when baits were mistakenly dropped near settlements	950 (not included in final total)
1949	455,000	25	18200
1950	590,000	27	21852
1951	130,000	38	3421
1952	507,000	20	25350
1953	350,000	26	13461
TOTAL	2,032,000	136	14941

15.2 Myxomatosis

The development and release of the myxomatosis virus finally brought an end to the sheep and rabbit wars. The virus escaped during trials (as did the later calicivirus, 1995) by the Commonwealth Scientific and Industrial Research Organization in 1950

(Olsen, 1998) (see Rolls, 1969, p. 233-246), and within three years the sheep industry was reaping the profits. The *Townsville Daily Bulletin*, 6 October 1953, announced under the heading *Wool Means More Than Rabbit Fur*:

The use of myxomatosis as a rabbit killer had added an estimated £30,000,000 to the value of Australia's sheep and wool industry for 1952-53, said Mr Ewen Waterman, Chairman of the International Wool Secretariat, London.

The Victorian Fur Skin Buyers Association was protesting that myxomatosis had practically wiped out the export trade in rabbit fur, which was received with disregard by the wool exporters (*Wool Means More Than Rabbit Fur*, 1953):

Mr Waterman said he had shed crocodile tears when he read the complaint. The large scale use of myxomatosis was one of the most important developments in the history of grazing in Australia and its effect would be cumulative. The economy of Australia, Mr. Waterman pointed out, rested heavily on the sheep and wool industry not on the rabbit fur trade industry.

The rabbit industry continued in a much smaller capacity until the early 1970s, sourcing rabbits from central desert regions where the virus could not spread; the conditions were too dry for the mosquito disease vectors (Watson, 1996). From the 1960s, chicken meat consumption replaced rabbit, as rabbit prices escalated. The intake of chicken per capital was estimated to have risen from 4.4 to 32.9 kilograms per annum over that decade (Insch & Bowden, 2003). The industrialization of chicken farming practices was been so efficient that eventually it was cheaper to raise and slaughter a chicken for consumption than go out and shoot a wild rabbit. Today the iconic Australian Akubra hat company source their rabbit pelts from overseas, as harvesting Australian rabbits is not cost efficient (Edwards, 2014).

15.3 The Efficacy Of Dingo Controls

There was very little research conducted on the efficacy of the government dingo control programs until the late 1960s. A paper by Stephens, 1969, titled *Dingoes, a relentless war*, reviewed a large co-operative pest elimination scheme in the Kimberly of Western Australia, using both ground baiting and aerial baiting. The results from the distribution of 300,000 baits, turned up 9 dingo carcasses in the week following the

baiting. The baits had been dropped along each side of all major rivers and creeks, with concentrations in breeding areas of rough basalt country that was otherwise inaccessible. This terrain made evaluation of the results of the baiting “particularly difficult” Stephens noted (p. 139). The results, reviewed in *Nature Walkabout*, state (*Dingo Bait*, 1969):

Results showed clearly that baiting was not effective, Dingo numbers fell insignificantly on six properties, including two of the three unbaited properties used as controls, but rose on all others and almost trebled on the property with the most dingoes.

This data is important to include in the assessment of the impact of dingo management in Australia, to comprehend the forces that shaped environmental policy, and the political motivations behind transforming valuable economic assets such as the rabbit, into a waste products.

15.4 Diet And Dingo Predation

Stephens (1969) included data from the inspection of dingo stomach contents in the evaluation, and found that their diet consisted mainly of lizards, rodents, rabbits, wallabies, dried hide and carrion – in addition to donkeys, pigs, brumbies and camels.

The general consensus from scientific studies into the diet of the dingo, is that only 4% of their diet consists of sheep – noting that some of this could be carrion (Stephens, 1969; Corbett, 1995). There is no doubt that dingoes have preyed on sheep, and at times cause great harm to flocks, however the actual impact of the dingo population in numbers on a national herd that carried between 100 million to 180 million sheep for most of the 20th century, was negligible if compared to the impacts of economic downturns, climate, drought, floods and fire (Forsyth et al., 2014) see Table 3.

The national herd size of 180 million in 1970 was reduced by 40% to 70 million in 2015 due to multiple factors including long-term drought (see rangeland conditions, illustrated in Figure 15-1) and global demand. The dingo’s actual contribution to the decline in the national herd was arguably so small as to be insignificant (Forsyth *et al.*, 2014) - this is discussed further in Chapter 16.

Table 3 Sheep numbers, beef numbers and crop areas (ABARES, 2006).

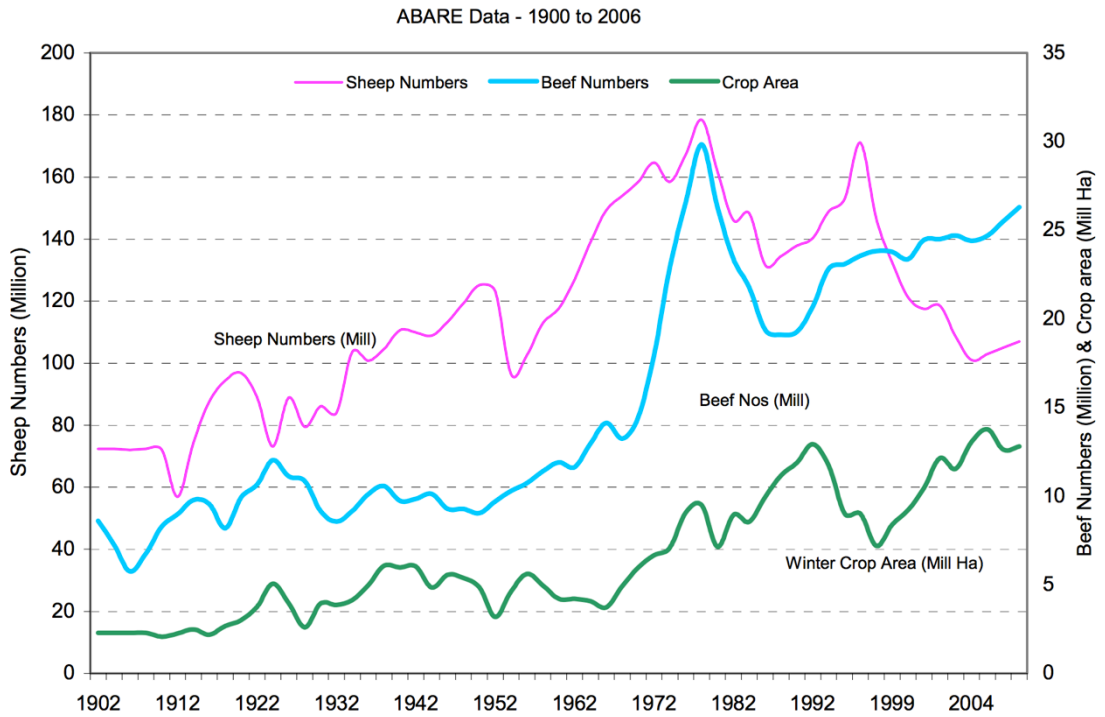


Figure 15-1 Sheep walk a fence line in search of food Ulonga Station, One Tree, New South Wales 2002.
PHOTO: Andrew Lachlan Chapman

15.5 Testing Of Aerial Baiting Campaigns, Commencing 1968

Twenty-one years after the aerial campaigns first began, the CSIRO commenced the first comprehensive, four year long study, testing the effectiveness of aerial baiting, finding the Tomlinson 1954 report far from conclusive. The CSIRO report, published in 1972, stated (Newsome et. al., 1972, p. 3):

No previous evidence has been obtained on the baiting campaigns anywhere in Australia ... The effectiveness of aerial baiting is usually assessed on circumstantial evidence of declines both in scalp bonuses paid afterwards, and in killing of stock.

The project commenced in 1968, and the first test involved dropping 175,000 brisket baits containing tablets of strychnine in a central Australian region. The conclusion was that the baits were found unpalatable to dingoes, and were mainly eaten by ants – in fact the number of dingoes increased over the course of the study.

The researchers also trialed feeding the baits to a captive population of dingoes and recorded the following results, confirming Macintosh's statement that "poisoned baits dropped from the air do not tempt the dingo" (Reading & Macintosh, 1954) and the graziers and trappers concerns published in the 1940s (Newsome et. al., 1972 p. 9, author's emphasis):

Six dingoes from the CSIRO kennels and two mongrels from Alice Springs pound, weighing from 17 to 44lb were deprived of food for a day and then presented with baits. *The animals did not treat the baits as food.* They played with them, tossed them around, rolled on them, and even urinated on them ... Two of them, a mongrel and a dingo, did eventually eat baits, but the others had to be given the strychnine tablets inside fresh meat ... All died, but the time taken to do so varied enormously.

It took from 0.75 hours to 12 hours for the canines to die from the poison. The baits were still toxic after 14 weeks. The scientists concluded (p. 10-11, author's emphasis):

There is no doubt that this aerial baiting campaign against dingoes was a failure, just as earlier campaigns using similar baits in the Northern Territory appear to have been (Stephens, 1969). Excellent seasons and unpalatable baits are the most likely causes of the failure ...

It is important to emphasize that, though this aerial baiting campaign was a

failure, such a conclusion does not necessarily apply to any other campaign.

A second research project was running concurrently in New England, New South Wales, looking at dingo movements and diet. The results of this research also tested assumptions about the dingoes' behavior and the severity of their threat to livestock. The results, published in 1973, found very little evidence that dingoes preyed on domestic stock, and they did not range widely as was assumed (hence the broad-scale of aerial baiting up until that time). Bill Harden, the researcher, expressed alarm at his findings (Harden in *[The] Good Side Of Dingoes* 1973, p. 9):

How, he asks, could a civilized highly developed country like Australia have permitted the broad use of aerial baiting without a thorough test of its suitability?

Harden raised concerns, that the continued persecution of the dingo would reduce their numbers to the point where harmful ecological changes would occur. Evidence had indicated from his study, that the removal of dingoes led to a prevalence of wallabies and other herbivores. Harden warned that the resulting overgrazing and habitat damage could have serious impacts on water catchments (*[The] Good Side Of Dingoes* 1973, p. 9). This echoes the concerns of naturalists and scientists as far back as the mid -1800s. Dublin born director of the National Museum of Australia, and President of the Royal Society of Victoria, Frederick McCoy, had noted the superabundance of herbivores in the absence of the dingo, writing in 1866 (cited in Smyth, 1878, p. 18):

The native dog has been almost exterminated in the more open parts of Victoria; and other animals formerly his prey hare multiplied exceedingly. I have seen mobs of kangaroos in the Western district so large as to defy even an attempt to make an approximation to the numbers.

More testing was conducted in the 1980s, with improved techniques, resulting in as few as 750 baits distributed for each dingo carcass recovered. This was considered a cost effective and successful outcome (Thomson, 1986). Based on this scientific data, aerial baiting is still used in broad-scale environmental interventions today.

15.6 Discussion

There are a number of ethical problems with ground and aerial baiting, not limited to the infliction of extreme suffering on the target vertebrate species as described by Newsome et. al., 1972 (see p. 220 this thesis). The effects of this level of environmental intervention remain uncertain, and the reports of BACI analysis (before-after, control-impact) have been inconclusive. This has been stated repeatedly in the reports of Eric Rolls (1969 p. 149-185); Stephens (1969); Newsome et. al., (1972); Harden (1973). Wildlife researcher's, Reddiex & Forsyth wrote (2006, p. 716):

Knowledge of the ecological effects of pest control will thus remain unreliable until study designs that include treatment and non-treatment areas, replication, randomization, and monitoring of changes in the abundance of both pests and resources, are adopted.

Baiting has been used increasingly across National Parks as well as private land. The aim has been to eradicate 'alien' species from the parks (see Table 4, pp. 241-42), and prevent their predation on vulnerable native wildlife. This also addresses concerns about predators straying out of protected areas, onto grazing lands. The extent of these interventions has not been documented, including the nationwide cost, number of poisons distributed per annum, total areas treated etc, (see Hughes, 2008). Arian Wallach notes (personal correspondence, 2016):

National parks poison bait up to fortnightly in areas with threatened species (e.g. malleefowl nesting sites), and 4 times a year is normal (e.g. Flinders Ranges). Farms will normally bait 1-2 times a year, and sometimes less. Farms, including large stations (thousands of square km), are usually managed by only 1-2 people, and so it is simply too costly to poison bait more often. National parks, particularly the high profile ones, get government funding to do this.

In a study *Non-target impacts of poison baiting for predator control in Australia* Glen, Gentle & Dickman concluded (2007, p. 191):

Baiting operations should not be assumed to be harmless in the absence of proof to the contrary. The difficulty of obtaining such proof means that it is unlikely to be available in most cases, even where a negative impact may exist. Therefore, a precautionary approach is required. The possibility of a population-level impact cannot be dismissed without

rigorous trials.

In *Nativism and Nature: Rethinking Biological Invasion* (1998, p. 184-185) Peretti interrogated the science of ‘invasion biology’. Peretti questioned the judgment foundational to the whole project; that being, “who belongs and who does not” in the environment:

The task of identifying and eliminating alien species, has become a major branch of conservation biology ... Distinctions are arbitrary and unscientific. These factors suggest that the study of biological invasion does not rest on a rigorous scientific foundation.

Without legally binding international codes for the use of vertebrate pesticides, marginalized animals are vulnerable to the sentiments and priorities of their respective human communities. There are inconsistent regulations, regarding the safe handling, distribution, dose rate, bait size etc. of poisons, even within individual Australian jurisdictions. This suggests that more independently funded research is required in this area (see Olsen, 1998).

15.7 Conclusion

Pest management is greatly influenced by cultural, political and economic factors. The target species such as dingoes, rabbits and rodents, have been held responsible for impacting on agricultural production, causing environmental degradation, and threatening biodiversity. The impact of their removal from the environment has rarely been considered in assessments of eradication projects, and the BACI data (before-after, control-impact) is clearly not sufficiently monitored in the cases cited. This is partly due to the fact that the impacts of both ground and aerial baiting projects are difficult to assess, and would be time consuming and expensive to investigate. As a consequence, issues such as the wider impact of the species removal on ecosystem function, the trauma suffered by animal communities as a consequence of lethal control methods etc. have only been touched upon speculatively and have been neither researched nor debated in any detail. Hughes (2008) reviewed the use of 1080 poison in pest control, and concluded that though the poison has been used since the 1950s, there were no standard protocols for its application, and evidence of the impact on non-target species was “largely anecdotal”. Hughes wrote that the negative impacts were “potentially great and mortality of individuals has been recorded”. However,

Hughes supported continued baiting programs, concluding (2008):

there is currently no substantive evidence that, in NSW:

- (a) it adversely affects threatened species, populations or ecological communities, or
- (b) could cause species, populations or ecological communities that are not threatened to become threatened.

Methods of pest control move in and out of favor over time (eg. bounty schemes, trapping regulations, poison controls etc.). The editor of *Nature Walkabout* wrote a review of the Stephens paper on dingo control in 1969, stating that “the philosophy of the quick dollar should not be allowed to ruin the environment” (*Dingo Bait*, 1969), and addressing underlying economic and political powers at play in the field of pest management (*Dingo Bait*, 1969):

Years ago when I asked a politician friend why they kept on paying bonuses on “vermin” when it had been proved that such methods were useless, his reply was “useless for controlling pests, but marvelous for controlling votes”.

Eric Rolls (1969, p. 173) also investigated the dangers of baiting, reviewing historical accounts and his own experiences on the land. Rolls quotes Sir Frederick McMaster of Cassilis, who had used the horse-drawn poison carts clear his 36,000 acres property in 1918 (targeting rabbits) stating:

... he had once had eight carts laying trails on one netted area of a thousand acres. “Four months we persisted and certainly killed many thousands but we could never get them all. Nature saved sufficient virile stock to re-infest the whole area in a single season. The slaughter of bird life was so tragic that I hate to contemplate it now. Poisoning is the worst of all methods”.

Baiting is discussed further in Chapter 16 in the context of more general areas and concerns of pest management. The following chapter looks at another contentious area of dingo control, the history and function of the longest fence in the world, the Dingo Barrier Fence (DBF).