

Effect of a synthetic lure on site visitation and bait uptake by foxes (*Vulpes vulpes*) and wild dogs (*Canis lupus dingo/Canis lupus familiaris*).

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ABSTRACT

In the United States the use of organic and synthetic scents to lure coyotes to control points has been well documented with work undertaken in Australia identifying the potential use of synthetic lures for canids under local conditions. The benefits of synthetic scents include extended shelf life, batch-to-batch uniformity, capacity for large-scale production and convenience of handling.

Field trials were established with bait stations containing unpoisoned commercial fox bait (Fox-Off[®]) being alternately treated with or without an aerosol delivered synthetic canid lure to identify any preference for site visitation and bait uptake by wild dogs and foxes. Application of a formulation of Synthetic Fermented Egg (SFE) to the surface of bait stations significantly increased site visitation by wild dogs and foxes when compared to the use of buried commercial baits alone.

The increase in bait uptake by foxes to SFE treated bait stations was highly significant when compared to bait uptake at untreated stations, although this effect diminished with time, possibly due to the use of non-lethal baits leading to the discovery of all bait stations and the habituation of animals to sites of reward.

Bait uptake by wild dogs, although limited, occurred only at those Fox-Off[®] bait stations treated with SFE and was statistically significant. The utilisation of an aerosol based canid lure allowed the volatile ingredients of SFE to be kept in a stable medium whilst ensuring an easily administered and consistent dose was applied safely by the operator.

In collaboration with Australian Wool Innovation Ltd, this experimental formulation of SFE has now been developed for release as a commercial product in Australia, under the trade-name 'FeralMone'[™].

Introduction

Wild dogs (*Canis lupus dingo-Canis lupus familiaris* and hybrids of the two) and European red foxes (*Vulpes vulpes*) are controlled by private and public land managers across Australia in an attempt to address their longstanding impact upon domestic stock and native wildlife (Saunders *et al.* 1995; Fleming *et al.* 2001). The most widespread control method utilises lethal baits treated with sodium monofluoroacetate (1080) (Saunders *et al.* 1995; Fleming *et al.* 2001). Land managers involved in long-term lethal canid control programs have expressed concern over continuing medium to high levels of recorded wild dog and fox activity on sand plots (Catling and Reid 2004), despite a significant increase in the presentation of 1080 baits using the buried bait technique (poisoned baits buried 10-15cm below surface

level within an earth mound). Issues related to long term bait palatability (von Polanan Petel *et al.* 2001) and/or development of bait aversion or 'bait shyness' associated with the ingestion of sub-lethal doses by the target species (Saunders *et al.* 1999) have been raised during the implementation of cross tenure wild dog and fox control programs in south east NSW. The objective of this study was to identify any benefit to land managers undertaking canid control programs by using a synthetic scent to attract target species to bait stations.

Materials and methods

This study was conducted in northern Kosciuszko National Park in New South Wales and Namadgi National Park in the Australian Capital Territory from February to June 2004. These areas were chosen for their remoteness from existing lethal canid (fox and wild dog) control programs and their accessibility via a system of forest trails. Anecdotal evidence and canid monitoring studies have consistently identified a resident population of wild dogs and foxes across the selected sites.

To confirm and monitor the presence of wild dogs and foxes sand plots were constructed at the Currango and Namadgi study sites. Sandplots were constructed at 1 km intervals (n = 21 per transect) with one transect established at each of the study sites (Namadgi and Currango). These transects were then checked for 10 consecutive days to give a relative percentage abundance rating for each period of bait presentation (Catling & Burt 1994).

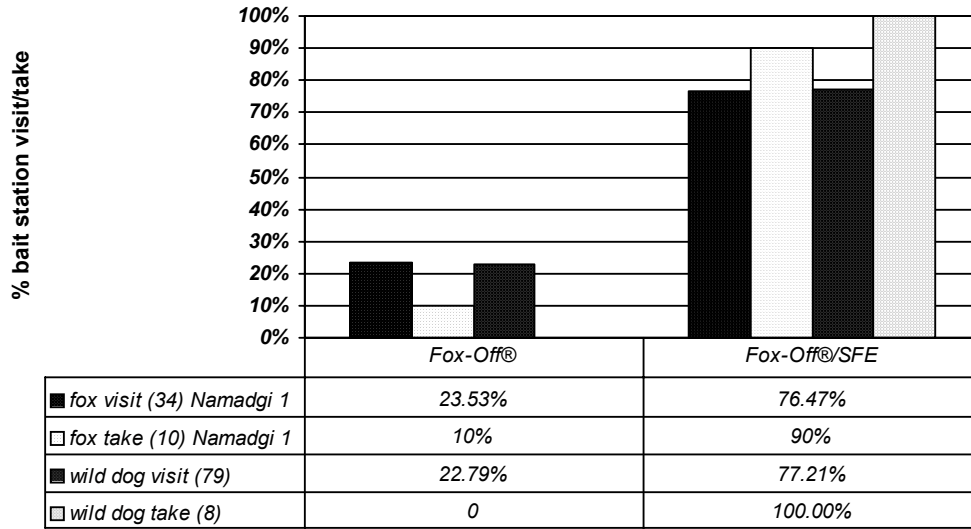
Alternate bait stations were treated with SFE applied to the surface of the bait station. Synthetic Fermented Egg consists primarily of short-chain fatty acids which are also found in canid anal sacs and decaying animal tissue (Mitchell and Kelly 1992, Lapidge 2004). The chemical composition of SFE DRC-6503 was provided to NSW National Parks and Yass Rural Lands Protection Board staff as part of an international canid management exchange with US Department of Agriculture (Hunt and McDougall 2002), with the Australian National University, Chemical Department providing laboratory expertise for the initial production of the scent.

Transects were checked daily for 10 days with lure treatments refreshed after 5 days (Linhart *et al.* 1977). Each transect was monitored twice giving a total of 1600 station nights (800 treated/800 untreated).

Results

Monitoring of takes and visits to untreated Fox-Off[®] and treated Fox-Off[®] bait stations by wild dogs and foxes identified trends in site visits and bait uptake for each bait station treatment. The visit and take data was analysed using a generalised linear mixed model (McCulloch and Searle 2001). The application of a formulation of SFE to Fox-Off[®] bait stations significantly increased fox visitation ($P = 0.03$) and was highly significant in increasing bait uptake ($P = 0.002$) although the size of this effect significantly decreased with time. Wild dogs showed significantly increased site visits to SFE-treated Fox-Off[®] stations as compared to bait stations containing Fox-Off[®] alone ($P < 10^{-6}$). All 8 bait takes by wild dogs occurred at SFE-treated bait stations. Although the data are too sparse to allow for rigorous statistical analysis, from binominal theory the probability of this occurring by chance if there were no significant differences between the stations is significant ($P = 0.004$). No baits were taken from unscented Fox-Off[®] stations by wild dogs.

Table 1. Percentage of total bait station visit/take per treatment



Discussion

The application of SFE to bait stations has been shown here to significantly increase site visitation by both wild dogs and foxes. This result alone may be sufficient to increase trap success, however, it is only the first stage of the bait uptake process. The increase in fox bait uptake on SFE bait stations is encouraging, however it is possible that many of those baits were cached, as has been shown in previous studies (Saunders *et al.* 1999, von Polanan Petel *et al.* 2001, Thomson and Kok 2002).

The ability to safely and effectively administer a standard dose of SFE to bait stations via an aerosol can is a significant achievement in the field of canid control and management. The ease of application, consistent scent quality, high level of operator safety and extended shelf-life of synthetic scents will ultimately benefit the effectiveness of canid management operations. Further benefit may be achieved if this material can be linked with further research on bait palatability and pre-baiting.

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