Canid Pest Ejector

Controlling foxes & wild dogs.

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ACTA gratefully acknowledges the generous contributions of NSW National Parks and Wildlife Service to the drafting of this booklet about the Canid Pest Ejector device and the sharing of user experience under Australian conditions. ACTA also acknowledges the kind contributions of several scientists and pest control experts who have contributed to this project.

Use of information from these collaborators and their respective departments does not constitute endorsement of this product.

Users should form their own judgement as to the suitability of this technology as part of an integrated program in fox and/or wild dog management.

The majority of photos used in this booklet are kindly provided by NSW National Parks and Wildlife Service, unless otherwise noted.

CPEs are an adjunct to the use of standard poison baits for effective fox and wild dog control.

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Background

Canid Pest Ejectors (CPEs) were first developed in the USA in the1930's as a spring activated device for the control of coyotes. In the USA, the device was first called the '*Humane Coyote Getter (HCG)*' and subsequently known as the '*M-44*'. Over many years they were adapted and improved to achieve the delivery of toxins directly into the mouth of a target animal. The spring activated ejector is not classified as a firearm by any agency.

Features of the device are:

- The firm upward pulling action required to trigger the poison delivery, is easily achieved by foxes and wild dogs, but much less so by most non-target species.
- Target specificity is further enhanced by the use of lure heads that do not attract herbivores.
- The toxin used, sodium fluoroacetate ('1080'), is highly toxic to canid pests (foxes & wild dogs) but has lower toxicity to native species.
- Birds and reptiles are rarely able to trigger the device even if they show interest in the lure.
- The device is staked to the ground by a sturdy metal peg and cannot be easily moved.
- Devices may be set and left in place for extended periods (subject to local regulations) and can thus be used in long-term management programs.

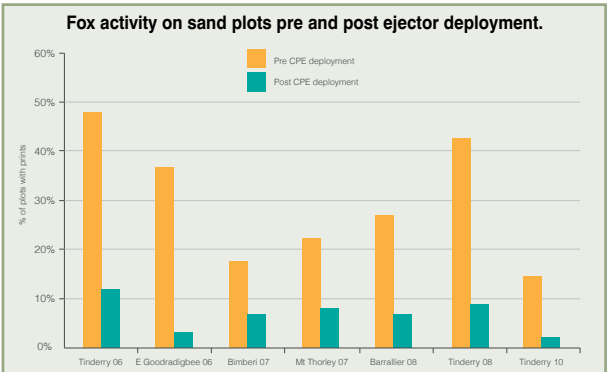
The CPE device has been extensively tested in Victoria, New South Wales and Queensland to deliver a variety of potential toxins.

The first Australian trial was, supervised at the then Armidale Pastures Protection Board in 1955. This trial resulted in the control of 13 wild dogs and 36 foxes. More recently, from 2005-11, an extensive trial of ejectors to deliver 1080 to foxes and wild dogs was conducted under APVMA permits by the NSW Parks and Wildlife Service.

Example trial results in Australia:

The most recent trials have confirmed the effectiveness of the Canid Pest Ejector device as a delivery tool using 1080 to reduce fox and wild dog activity.

Monitoring of 98,299 lethal ejector nights across 7 sampling periods identified consistent sand-plot activity reductions in foxes averaging 78% across all sites, with a maximum of 93% reduction. This is comparable to what is achieved with intensive baiting programs.



Comparative percentage of plots with fox prints pre ejector deployment (orange bars) and post ejector deployment (green bars) showing reduction in sand-plot activity of foxes (Source: OEH report)

Benefits of ejectors:

The field trials also confirmed a number of benefits that make ejectors suitable for use as an additional wild dog and fox control tool:

- Ejector capsules containing 1080 are sealed and protected from the elements so that the 1080 remains viable for extended periods in the field. Therefore the ejector can be set and left in the field for extended periods to provide a sentinel station, so long as the bait head remains attractive to target species.

Fox on sand-plot

- CPE devices are pinned to the ground so they cannot easily be moved or cached by foxes, wild dogs or birds.
- Once set, a CPE is only activated by a direct pull on the lure head that activates the spring loaded plunger to propel the contents of the capsule directly into the mouth of the wild dog or fox.
- As the ejector can only be activated by an animal with an upward pull force of >1.6kg, many small non-target animals are excluded from activating ejectors. Researchers in Victoria identified that "*only red foxes, wild dogs and feral cats had been recovered in field trials when cyanide was used as the active agent, suggesting a high level of target specificity*" (*Busana et al. 1998; Marks et al. 2003*).

  NSW Office of Environment and Heritage (OEH) trials used monitored sand plots, remote triggering cameras and carcass collection to assess non-target risks after the use of cyanide (quick kill) capsules on 100,000 exposure nights. Few non-target activations were recorded despite many non-target animals being observed within close proximity to the devices.
- Ejectors can be re-used many times.

Fox on sand-plot approaching ejector

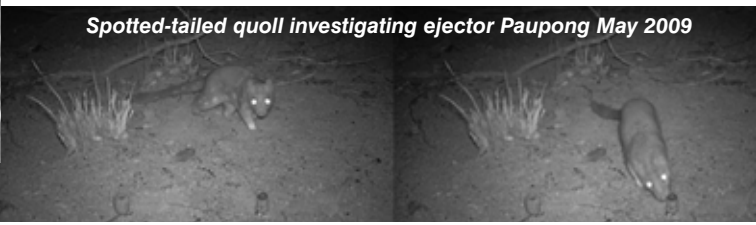
Brush-tail possum at ejector

- Only 5 brush-tail possum carcasses were retrieved despite remote cameras recording 171 occasions where a brush-tail possum was present within 3m of a cyanide ejector during a total of 10,520 cyanide night exposures. Thus only 2.9% of brush-tail possum visits to ejectors resulted in activation. Long-term monitoring of sandplot activity on transects where 1080 ejectors were continually deployed over 5 years, identified brush-tail possum activity remaining stable or increasing. Thus no population impact on this non-target was recorded when using 1080 ejectors.
- Lethal activations were recorded for only one goanna (from 1,050 cyanide exposure nights) and one swamp wallaby (from 3,510 cyanide nights). Remote cameras identified 315 occasions where a swamp wallaby was present within 3m of a cyanide ejector with only one lethal outcome. Neither non-target would be affected by the 1080 dose used for control of foxes or wild dogs.

The combination of a low probability of activating an ejector, low non-target attraction to lure heads and greater tolerance to 1080 suggests that 1080 delivered through the Canid Pest Ejector will have minimal population-level impacts on native species.

- Ejectors and spotted-tailed quolls.

An assessment of risk in known quoll (*Dasyurus maculatus*) habitat in the Paupong area of Kosciuszko National Park was conducted in May 2009. At each of 18 ejector sites spaced at 500 metre intervals 2 ejectors per site were monitored over 28 nights, giving over 1000 ejector-night presentations.



Spotted-tailed quoll investigating ejector Paupong May 2009

As the transect was located within a wild dog and fox control area, the ejector capsules contained 6mg of 1080. Spotted-tailed quolls were identified as being present within 1m of an ejector on 5 occasions at different locations. Despite quolls being strong enough to activate the CPE delivery trigger, no ejector device activations by spotted-tailed quolls occurred when ground dried liver was used as the lure head (*Hunt 2010*). Additional research in northern NSW has shown no adverse impact on quoll populations from 1080 baiting programs even though some baits may be taken by quolls (*Kortner 2007, Claridge and Mills 2007*).

Limitations of ejectors:

- Ejector devices are only effective while the bait head is attractive to the target species. If the bait head deteriorates, the ejector is less likely to be activated by a wild dog or fox. It is therefore important to check ejector heads periodically and to refresh any lure heads that are weathered, damaged or eaten by ants.
- **Ejectors are dangerous to working and domestic dogs because of the attractiveness of the baited head. Any unrestrained or roaming working or pet dog in the area may investigate and may activate an ejector.**
- Use of muzzles prevents dogs from activating CPEs.

Trap dogs at work
Brindabella National Park

Who can use Canid Pest Ejectors?

The CPE unit is a mechanical device that is not required to be registered as a chemical product. Therefore the devices and spare parts and lure heads can be purchased without restriction. However, the toxin capsules do contain a regulated poison that is registered by APVMA. Capsules are not available without the purchaser and/or user possessing appropriate accreditation.

Capsules containing 3mg of 1080 (FOX dose capsule) or 6mg 1080 (DOG dose capsule) are available from Animal Control Technologies Australia. (ACTA) or approved 1080 product distributors or government agencies. Procedures are the same for 1080 bait products.

Since 1080 is a Restricted S7 category of poison, the capsules are available to approved purchasers only. Details of who may legally access 1080 capsules vary between states and are summarised on the ACTA web site (*www. animalcontrol.com.au*). For example, in Victoria users must have a 1080 endorsed Agricultural Chemical User Permit (ACUP) or be a licensed 1080 contractor. In New South Wales users must complete a CPE training course delivered by relevant agencies (eg LLS or NSW NPWS).

In all states, existing 1080 Authorised Officers of State and Territory agencies can purchase and use Canid Pest Ejectors and capsules under the same conditions as they access baits containing 1080.

Handling, Usage and Disposal of the capsules must strictly follow directions on the approved label.

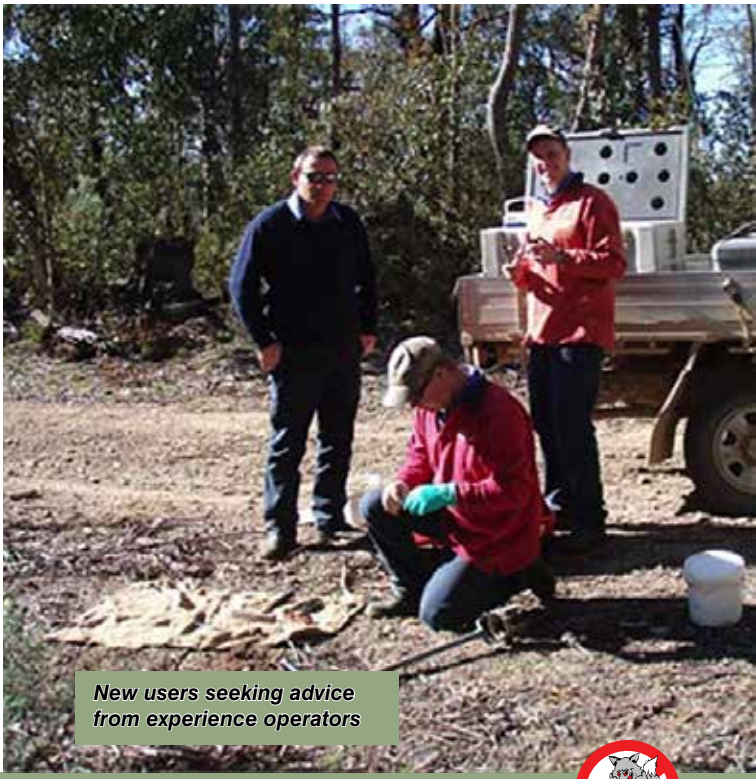
Marking sites of Ejector deployment

It is recommended that, where possible, sites of deployment are marked by placing marker tape or spray marker nearby or, preferably, by using the Global Positioning System (GPS location). This assists in subsequent checking of ejectors during a program and in the recovery of all ejectors at the conclusion of the program. In order to minimise unauthorised tampering with ejectors it is recommended that the marker is not placed directly on the ejector itself.

Training ejector operators (photo: Matt Hudson)

Ejector use:

It is recommended that novice users of the Canid Pest Ejectors seek advice from an existing experienced user on the best method for setting the ejector prior to deployment of toxin capsules. If an experienced person is not available follow the following advice closely.



New users seeking advice from experience operators

Ejector Components:

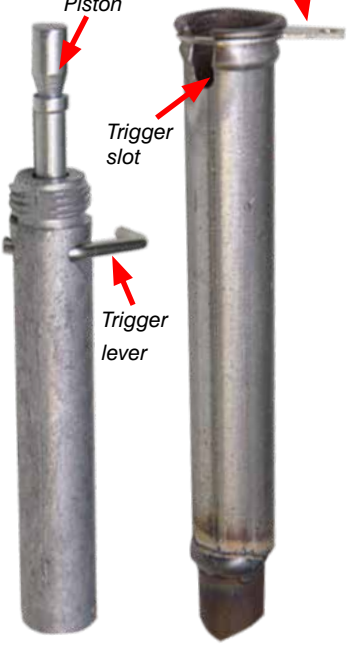
Lure head carrier

Locking ring

Piston

Setting pliers

Trigger slot



Trigger lever

Dog and fox dosed 1080 capsules are sold seperately

Ejector unit with trigger

Ground stake

ACTA stocks a full range of spare parts for the Ejector devices

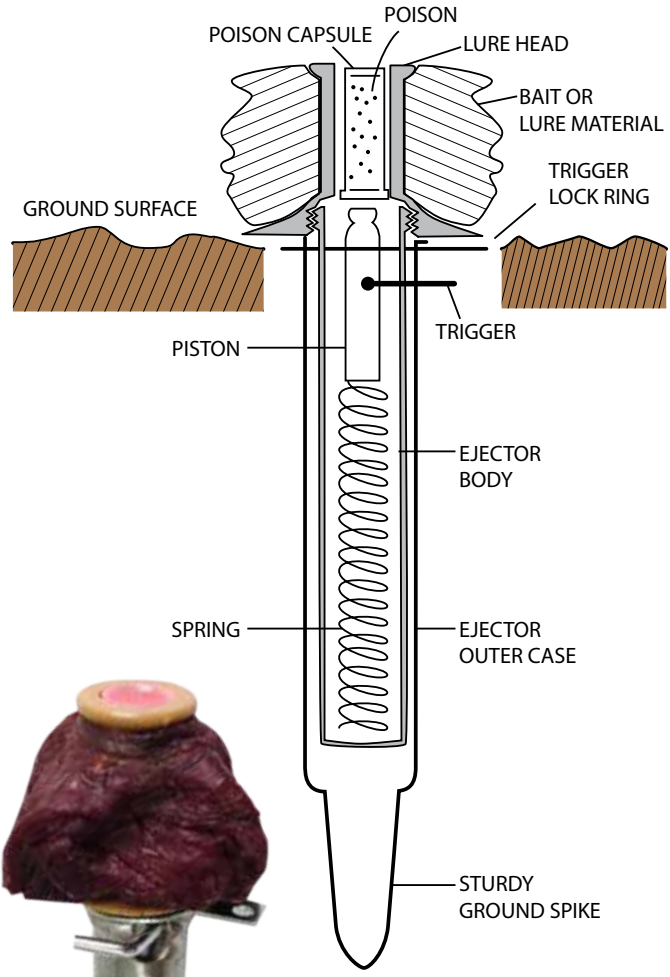
Spring

Plunger Piston

Trigger

Plunger 'O' Ring

Trigger Lock Ring



Complete
CPE unit

Schematic of assembled CPE

Ready-made lure heads:

Ready-made lure heads are available from ACTA using fresh meat dried on to the spiked lure head. ACTA CPE lure heads are made from dried kangaroo meat. In the ACTA process the meat is pre-treated with antibacterial and antimould agents to provide a long-life lure-head.

Before drying

After drying

ACTA lure heads are cryovac packed with 10 heads per bag.

Preparing ejector heads:

Users may also chose to prepare their own lure heads. ACTA provides bait head holders for this purpose if required.

A number of meat based lure heads can be used by coring out fresh meat and slow drying it onto the lure heads.

Lambs tongues being cored and trimmed ready for drying.

Lambs tongues and beef heads drying in a dehydrator.

Warning Signs:

Canid Pest Ejector signs are available from ACTA. These are on sturdy corflute with waterproof and UV resistant printing for long life and re-use.

Ensure all 1080 warning signs are set up and notifications have been completed according to 1080 capsule label directions before deploying loaded ejectors in the field

Personal Protective Equipment (PPE):

PPE is required to safely set, disarm and check ejectors. This includes wrist length non-permeable gloves and eye protection.

Setting ejectors:

The following components are required:

1. Hammer for driving ejector stake into ground
2. Gloves and eye protection
3. Ejector setting pliers
4. Driving bolt for driving ejector stake into ground
5. Ejector stake and ejector unit
6. Ejector lure head
7. Ejector capsule - containing toxicant
8. Warning signs

Using the driving bolt, hammer the ejector stake into the ground until the top of the ejector stake is flush with the ground surface or in a shallow hole.
New ejectors should be oiled and test triggered a few times against a rubber block or within the setting pliers to test ejector performance before being set in the field.

Ejectors should not be dry fired as casing may crack.

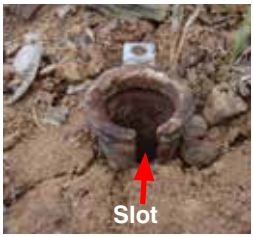
Caution: Do Not hammer the ejector stake directly as the locking ring mechanism will be damaged. Use steel bolt. (See photo top right)

Using the setting pliers, depress the piston into the ejector as far as possible whilst raising the trigger lever up to 90 degrees where it will hold the tension of the spring.

Place ejector capsule into ejector head with flared end facing backwards.

Attach lure head to the cocked ejector by screwing the head firmly onto the ejector.

CAUTION: ejector is now loaded and may fire contents of capsule if trigger is depressed or bumped accidentally. Always point loaded ejector in a safe direction.



Place baited ejector into ground stake aligning ejector trigger into open slot.

Once ejector trigger is in slot, rotate locking ring to secure ejector into ground stake.

Checking ejectors:

Check cocked ejector from the side wearing gloves and eye protection.

Activated ejector showing piston in fired position.

Arrows show top & bottom caps from fired ejector capsule with meat lure head removed.

To remove ejector body from soil:

Once ejector has been disarmed, use a hand auger or small spade to loosen soil around ejector. Insert driving bolt and wriggle to loosen ejector stake in ground.

Removing fired capsules:

Rotate the trigger lock ring to remove the ejector and lure head as one. Pull the ejector out of the head at an angle so capsule remains on the ejector piston. With the empty 1080 capsule on the end of the ejector wedge the capsule under the lid of a jar and remove the ejector. Clearly label the jar as containing used 1080 capsules. Dispose of capsules as required by the capsule label.

Disarming ejectors:

There are 2 ways to safely disarm ejectors in the field. Simply reverse the setting procedure by turning the locking ring to open the trigger notch. Then carefully lift the ejector from the ground stake. Wear a glove and eye protection. Unscrew the lure head from the ejector while pointing the ejector in a safe direction and remove capsule.
Alternatively, the ejector can be disarmed by unscrewing the head whilst pushing down at the same time. Significant upward pressure may activate the ejector. Continue to push down whilst unscrewing the head until the lure head, with capsule, separates from the ejector.

CAUTION: Never position your head over an ejector - even if you think it has been activated: always wear eye protection

Handy hints:

- In sandy soil use a stake and hose clamp or weld a steel bar to extend ejector stakes for firmer fixing.
- Use 12.5mm dowel blanks to stop dirt filling ejector stakes when ejectors are removed from the ejector stakes for short periods of time.
- The pointed tip handle of the pliers is designed to rotate locking ring.
- Use gloves that allow a fine level of feel or touch. Bulky chemical gloves are clumsy.
- A spare pair of ejector pliers, driving bolt and hammer can be good insurance against misplaced gear in the field.

Wooden dowel prevents dirt filling CPE stake

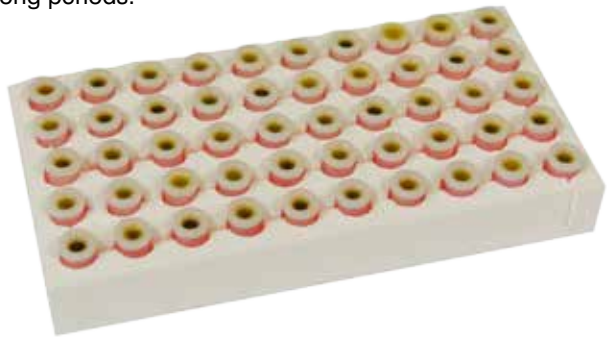
Setting pliers can be used to rotate trigger ring

Pliers handle can be used to remove spent capsule

Canid Pest Ejector 1080 Capsules

ACTA produces 3mg (fox dose) and 6mg (wild dog dose) capsules for use **only** with the CPE device.

Boxes of 50 capsules are available and are stable for long periods.



Capsules contain a small quantity of rhodamine dye. Empty capsules cannot be re-used.

Capsule loaded into lure head carrier.

Capsules are available from ACTA and from existing approved 1080 bait product distributors in all states. The APVMA approved label and MSDS is available from the ACTA website (www.animalcontrol.com.au)

Maintenance of ejectors:

Use light oil to lubricate ejectors before use and when checking. Drip oil around piston shaft to lubricate.

A pre-prepared kangaroo meat Ejector Lure head is available from ACTA and saves considerable time in lure head preparation.

Ejectors on agricultural lands:

Ejectors may be set on private lands in accordance with the approved label for **Canid Pest Ejector 1080 Fox Capsules** or **Canid Pest Ejector 1080 Wild Dog Capsules** and in accordance with distance restrictions and neighbour notification, as is normal for other 1080 products.

Non-target species on farmland

Cattle may occasionally investigate and activate an ejector. The dose of 1080 in a single 1080 fox or dog capsule is well below the dose required to kill a cow or calf. However, as some cattle are inquisitive it is best, where possible, to reduce risk by excluding cattle from areas where ejectors are deployed. Ejectors may be placed in fenced off paddock corners, in existing fenced wind breaks to prevent access by cattle. Some users have set ejectors within an auger hole reinforced with poly pipe to minimise access by cattle.

Ejectors set within an auger hole to deter grazing stock from activating ejector.

Capsule dose rates:

1080 dose rates for ejector capsules are the same as for wild dog and fox baits. Fox capsules contain 3mg and wild dog capsules contain 6mg.

These doses are highly effective but provide minimum risk to many non-target animals in Australia.

(Photo: Daryl Panther)

1080 Poisoning:

Safety directions can be found on the:

- Material Safety Data Sheet (MSDS) for 1080 Capsules
- Ejector capsule container labels

First Aid:

1080 is a metabolic poison that blocks a critical enzyme for conversion of sugars into energy in all cells. Heart, brain and diaphragm are most affected, but all metabolism is impeded. Contamination on the skin can be washed clean with soap and water. Wild dogs and foxes are highly susceptible.

Speed in treatment is essential. If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26.

Working dogs:

The time-lag between a dog becoming exposed to 1080 and showing signs of being poisoned is typically several hours, during which an animal behaves normally.

If a bait is taken or a CPE is activated by a working dog immediate action is needed and it is important not to wait until obvious signs of poisoning such as spasms or hypersensitivity occur. Take the dog to the nearest vet immediately.

If there is a delay in getting your dog to the vet, try to induce vomiting to remove as much poison from the gut as possible.

Suitable emetics include;

- Table salt (2 teaspoons of salt in a cup of water)
- 3-5 washing soda (sodium carbonate) crystals
  Do not use laundry detergents or powders

If you are not having success in inducing vomiting, seek immediate vet attention rather than wasting time making repeated attempts.

A 1080 first aid booklet is published on the *www.pestsmart.org.au* website

Neighbour Notification & Distance Requirements:

As for using poison bait products, there are specific requirements for notifying neighbours, placing warning signs and distance restrictions related to the use of Canid Pest Ejectors. **These are detailed on the 1080 capsule product label.**

Fox with blue dye on tongue from activated ejector at front feet.

Photo: Rob Hunt

Fox walking past surveillance sensor with bandicoot! Foxes are one of the primary causes of the destruction of wildlife in Australia where we have a poor record for species extinction since animals like foxes were introduced. Small mammals such as bandicoots are at particular risk.

Monitoring techniques:

Monitoring the effectiveness of ejectors is undertaken using sand plots and/or remote cameras. An area of raked or swept sand can be established along trails and checked daily. Animal tracks on the sand indicate wild dog or fox activity in the area. Ejector programs can be run over weeks or months with sand-plots being checked to identify reductions in wild dog and fox activity.

Wild dog on sand-plot

Fox on sand-plot

Wild dog pulling an ejector

Capsule storage and disposal:

Directions for storage and disposal and safety directions for handling poison capsules are provided on the capsule container label. Storage in a locked area is required.

Do not leave capsules in locked box on back of vehicle for long periods in summer. Capsules exposed to very high temperatures for extended periods may leak.

References

Busana, F., Gigliotti, F. and Marks, C.A. (1998). Modified M-44 cyanide ejector for the baiting of red foxes (*Vulpes vulpes*). *Wildlife Research*, 25: 209-215.

Claridge, A. & D. Mills (2007). Aerial baiting for wild dogs has no observable impact on spotted-tailed quolls (*Dasyurus maculatus)* in a rainshadow woodland. *Wildlife Research*. 34:116-124.

Hunt, R. (2010) 1080 Ejector Training Manual: Department of Environment, Climate Change and Water, Parks and Wildlife Group, Pest Management Unit, New South Wales.

Körtner, G. (2007). 1080 aerial baiting for the control of wild dogs and its impact on spotted-tailed quoll populations in eastern Australia. *Wildlife Research*. 34:48-53.

Marks, C.A., Gigliotti F. and Busana, F. (2003). Field performance of the M-44 ejector for red fox (*Vulpes vulpes*) control. *Australian Wildlife Research* 30: 601-609.

Stocked locally by:

Other ACTA products for large-scale pest animal management available through agencies and/or leading rural merchant stores:

FOXOFF®
Fox Bait
For the control of foxes

SLUGGOFF®
Slug & Snail Bait
For the control of snails & slugs in the home garden

FOXSHIELD®
Fox Bait
Fish based bait for fox control

DEN-CO-FUME®
Fumigation Cartridges
For the control of foxes in natal dens

DOGGONE®
Wild Dog Bait
For the control of wild dogs

RABBAIT®
1080 Oat Bait
For the control of rabbits

RABBAIT®
Pindone Oat Bait
For the control of rabbits

MOUSEOFF®
Zinc Phosphide Bait
For the control of mice in crops

MOUSEOFF®
Bromadiolone Grain Bait
For the control of rats and mice

RATTOFF®
Zinc Phosphide Bait Sachets
Reducing rat populations in sugarcane crops

MOUSEOFF®
Bromadiolone Rodent Block
For the control of mice and rats in domestic, commercial & industrial buildings

PIGOUT®
Feral Pig Bait
For reductions in feral pig populations

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