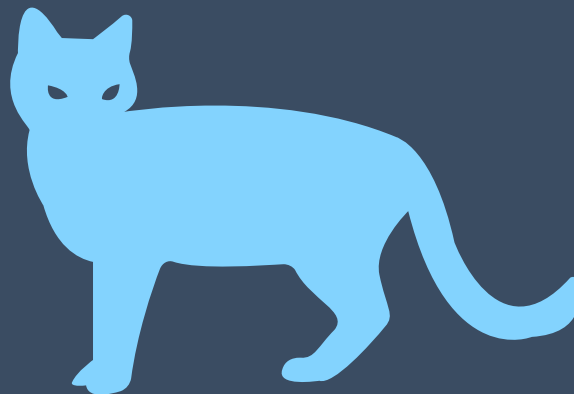




Department of  
Primary Industries

NSW Code of Practice and Standard Operating  
Procedures for the Effective and Humane  
Management of Feral Cats



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## Preface

This document (Code of Practice (COP) and relevant Standard Operating Procedures (SOPs)) provides current information and guidance to government agencies, land managers and pest animal controllers involved in the control of feral cats in NSW. The aim is for control programs to be conducted in a way that reduces the negative impacts of feral cats using the most humane, target-specific, economic and effective techniques available.

Previously published and endorsed COPs and SOPs<sup>1</sup> available via the PestSmart website (<https://www.pestsmart.org.au/>) can provide general guidance for national use, but some of the content may now be out-of-date. This revision of NSW-specific COPs and SOPs<sup>2</sup> has been developed to provide the most relevant and up-to-date information to support best practice pest animal management in NSW. Outdated information has been removed, while new information has been added to reflect the advancements and changes specific to feral cat management within NSW. For ease of use, the COP and SOPs for each species have been consolidated into one document; however, links are provided to allow printing of individual SOPs as required.

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## Introduction

All pest animal management must aim to minimise individual animal suffering while at the same time optimising the population impact of a control program. This requires use of the most humane methods that will achieve the control program's aims. Consideration of animal suffering should occur regardless of the status given to a particular pest species or the extent of the damage or impact they create. While the ecological and economic rationales for the control of pests such as the feral cat are frequently documented, of equal importance is an ethical framework under which these pests are controlled.

A **Code of Practice** (COP) provides overarching context and brings together the SOP procedures in context, and now in one document that specifies humane control options and their implementation. In this way, COPs encompass all aspects of controlling a pest animal species as determined by best practice principles, relevant biological information, guidance on choosing the most humane and appropriate control technique and how to most effectively implement management programs.

This COP provides state-wide guidance and is based on current knowledge and experience in the area of feral cat control. It will be revised as required to take into account advances in knowledge and development of new control techniques and strategies.

**Standard Operating Procedures** (SOPs) ensure that an ethical approach (including the recognition of and attention to the welfare of all animals directly or indirectly affected by control programs) is uniformly applied to each pest animal control option. The SOPs are written in a way that describes the procedures involved and animal welfare issues applicable for each control technique, thus acting as a detailed guide to support best practice control programs.

## Definitions and terms

**Best practice management** – a structured, consistent and adaptive approach to the humane management of pest animals aimed at achieving enduring and cost-effective outcomes. 'Best practice' is defined as the agreed principles and specific techniques at a particular time following consideration of scientific information and accumulated experience<sup>3</sup>.

**Euthanasia** – literally means a 'good death' and usually implies the ending of suffering for an individual; however, when used in regard to animals it usually refers to the means by which an animal is killed rather than the reason for killing it<sup>4,5</sup>.

**Humane** – refers to an absence of (or minimal) pain, suffering and distress (e.g., a relatively more humane euthanasia method will cause less pain, suffering and distress than a relatively less humane euthanasia method).

**Humaneness** – level of welfare impact or welfare cost (e.g., assessing level of humaneness is equivalent to assessing welfare impact or cost).

**Humane killing** – the killing of animals using relatively humane methods in certain situations (e.g., animals used in research or pest management) for reasons other than to reduce their suffering.

**Humane vertebrate pest control** – the development and selection of feasible control programs and techniques that avoid or minimise pain, suffering and distress to target and non-target animals <sup>6</sup>.

**Pest animal** – (also referred to as vertebrate pest) native or introduced, wild or feral, non-human species of animal that is currently troublesome locally, or over a wide area, to one or more persons, either by being a health hazard, a general nuisance, or by destroying food, fibre, or natural resources <sup>7</sup>. Refer to Vertebrate Pesticide Manual <sup>8</sup> for relevant governance and legislation information as applied to the control of vertebrate pests.

**Welfare** – an animals' state as regards its attempts to cope with its environment <sup>9</sup>. Welfare includes the extent of any difficulty in coping or any failure to cope; it is a characteristic of an individual at a particular time and can range from very good to very poor. Pain and suffering are important aspects of poor welfare, whereas good welfare is present when the nutritional, environmental, health, behavioural and mental needs of animals are met. When welfare is good, suffering is absent <sup>10</sup>.

## Best practice in pest animal management

From an animal welfare perspective, it is highly desirable that pest animal control programs are efficient, effective and sustained so that pest populations are reduced to low levels and not allowed to recover, thereby avoiding the need for repeated large-scale killing. Over the last decade, the approach to managing pest animals has changed <sup>3</sup>. Rather than focussing on inputs, it is now realised that like most other aspects of agriculture or nature conservation, pest management needs to be carefully planned and coordinated with the aim of reducing to an acceptable level the damage due to pest animals i.e., the focus is on measurable economic and environmental outcomes. Pest animal control is just one aspect of an integrated approach to the management of production and natural resource systems and management of other factors may also be required to achieve the desired result. For example, for a lamb producer with limited resources, other factors influencing lamb production may include weed control, cover for lambs, ewe nutrition and rams that give a higher twinning rate. Unless pest animal control actions are well planned, collaborative and coordinated at the right temporal and spatial scales, individual control programs are unlikely to have long term benefits. When planning pest animal management, there are some important steps that should be considered (Braysher and Saunders, 2015 <sup>11</sup>):

1. Identify the trigger to undertake pest animal management. Is there a community or political pressure for action on pests and an expectation that pest animals should be controlled? Pest control is unlikely to be effective unless there is strong local or political will to take action and commit the necessary resources.
2. Identify the key group to take responsibility for bringing together those individuals and groups that have a key interest in dealing with the pest issue.
3. Identify the problem. In the past the pest was usually seen as the only problem. We now know that the situation is more complex. First, determine what the problem is. For example, it may be effects on native fauna, reduced levels of agricultural production, and complaints from neighbours or emotional stress from worrying about pest impacts. Several factors impact on each of these problems and control of pests are often only part of the solution.
4. Identify and describe the area of concern. Sometimes it helps to remove agency and property boundaries (nil tenure) so that the problem can be viewed without the

tendency to point blame at individuals, groups or agencies. Property and agency boundaries can be added later once agreement is reached on the best approach.

5. Try to break the area into smaller management units for planning. These smaller units may be determined by water bodies, mountain ranges, fences, vegetation that is unsuitable for a particular pest or other suitable boundaries that managers can work to. While it is best to work to boundaries that restrict the movement of pests, this may not be practicable and jurisdictional boundaries, for example, the border of a Landcare group, may have to be used in combination with physical boundaries. Once the management units are identified:
  - a. Identify as best you can, the pest animal distribution and abundance in each management unit.
  - b. Estimate as far as is practicable, the damage caused by the pest or pests to production and to conservation.
  - c. Gather and assess other relevant planning documents such as Catchment Management Plans, Recovery Plans for threatened species and Property Management Plans. Identify any key constraints that may prevent the plan being put into operation and identify all the key stakeholders.
  - d. Develop the most appropriate pest management plans for each of the management units.

Implementing effective and humane pest animal control programs requires a basic understanding of the ecology and biology of the targeted pest, other species that may be affected directly (non-targets) or indirectly (e.g., prey species) by a control program. Managers should take the time to make themselves aware of such information by reading the recommended texts included in this document.

## **The NSW *Biosecurity Act 2015* and pest animal management**

From 1 July 2018, the management of pest animals in NSW needs to account for the requirements and obligations under the NSW *Biosecurity Act 2015*. Everyone in NSW who deals with pest animals, including land managers (public and private), recreational land users, other community members and even visitors to the state must manage those pest animals where they present a risk to biosecurity in NSW.

There are some specific requirements relating to some pest species outlined under the *Biosecurity Regulation 2017*. For example, under the Biosecurity Regulation, it is illegal for a person to keep, move or release a feral pig, wild rabbit, feral deer or European red fox.

A number of documents are available to help land managers and other community members to understand which pest animals they must manage and how they can be managed. Central to these are the *Regional Strategic Pest Animal Management Plans* that set out the requirements for managing the impacts of pest animals.

Specific members of the Local Land Services' team can investigate if they suspect a person or organisation is not managing pests properly and are able to provide educational material outlining the biosecurity risks presented by the pest animals, and management actions that must be taken to manage the risk posed. If appropriate management action is not taken to manage the pest animals, trained and authorised staff from *Local Land Services* can undertake enforcement action.

## Animal welfare and humaneness

Pest animals continue to cause significant damage and risks to the environment, agricultural production and to public health. Each year hundreds of thousands of pest animals are trapped, poisoned, shot, or otherwise destroyed because of the harm they cause<sup>12</sup>. For most people in today's society the management of pest animals is considered acceptable provided that such management is *humane* and *justified*<sup>13</sup>. However, some deficiencies need to be addressed, inhumane techniques replaced and new, more humane, alternatives developed. For further detail refer to RSPCA [Policy E02 Management of wild animals](#) available at

The humaneness of an individual pest control technique is highly dependent on the way the technique is applied and on the skill of the operator involved. Attention to details such as timing and coordination of control, bait delivery, lethal dose rates, type or calibre of firearm and ammunition have significant effects on animal welfare and target outcomes of control programs. By standardising the way control methods are applied, many of the negative welfare impacts can be reduced or even prevented. This document (COP and SOPs) has been specifically developed to address this issue.

It also contains a summary of the results of humaneness assessments for all individual techniques included as SOPs. The full assessments can be found on the PestSmart website (<https://www.pestsmart.org.au/>) These assessments were carried out using a model developed by Sharp and Saunders (2008, 2011)<sup>14,15</sup>. The model provides a practical, general means of assessment that can be applied to any control technique. The goal of humaneness assessment is to evaluate the impact of a control technique on individual animals and to use this assessment to determine which methods are more or less humane compared to others.

Assessment of humaneness using the Sharp and Saunders model is based on the five domain approach to welfare assessment as developed by Mellor and Reid (1994)<sup>16</sup>. According to this approach, potential or actual welfare compromise is identified in four physical or functional domains and one mental domain:

- 1: Nutrition – water or food deprivation, malnutrition.
- 2: Environmental – exposure to excessive heat or cold.
- 3: Health – disease or physical injury.
- 4: Behaviour – spatial or interactive restriction.
- 5: Mental or Affective State – includes impacts from the first four domains (e.g., thirst hunger, anxiety, fear, nausea, pain, boredom, depression, frustration, loneliness, distress) and any other cognitive awareness of external challenges leading to negative affective states.

When considering the humaneness or welfare impact of a control method, impacts are assessed in relation to nutrition, the animal's environment, its health or functional status, its behavioural needs and its overall mental status. As described by Sharp and Saunders (2008, 2011)<sup>14, 15</sup> and Beausoleil and Mellor (2015)<sup>17</sup> when data is available, actual impacts in each of the four domains are evaluated using a range of quantitatively assessed changes in behaviour and physiology along with pathophysiological indicators of functional disruption.

Compromise in one or all of the physical domains is then used to infer potential negative affective impacts in the fifth domain. As welfare is generally considered to be a state within an animal that most directly relates to what the animal experiences, the overall impact of a control method on the animal's welfare generally reflects impacts in Domain 5. When the



model is applied to a range of different methods, these can be compared, thus allowing an informed decision on control method choice based on relative humaneness.

Humaneness assessment using the Sharp and Saunders model follows a two-part process: Part A examines the impact of a control method on overall welfare and the duration of this impact; and Part B examines the effects of the killing method on welfare (so is only applied to lethal methods). For example, with live trapping followed by shooting, both Part A and Part B are applied, but with fertility control only Part A is applied.

In Part A, overall welfare impact is assessed by looking at the impacts in each of the five domains as described above. In Part B, the killing method is assessed by examining the level of suffering and the duration of suffering based on the time to insensibility based on the criteria described by Broom (1999)<sup>9</sup>. Matrices are then used to determine the score for each part and then the two scores are combined to obtain the overall humaneness score.

## Feral cat management

### Background

Cats (*Felis catus*) have been in Australia since European settlement—possibly longer. They now occupy nearly the entire continent and as a species their impacts are one of the most difficult to effectively reduce. For management purposes, cats are divided into three categories — domestic, stray and feral — although individual cats may move between categories. Domestic cats are owned and cared for, and stray cats are those found roaming cities, towns and some rural holdings. Stray cats are formerly domesticated and have become lost or abandoned. Feral cats, which survive with limited to no human contact or assistance, are the main target of control programs. Feral cats are unowned, unsocialised, have no relationship with or dependence on humans and reproduce in the wild. Feral cats are solitary and predominantly nocturnal, spending most of the day in the safety of a shelter such as a burrow, log or rock pile. Rabbits, when present, have often aided their spread by providing food and burrows for shelter. Males can occupy home ranges of up to ten square kilometres, but this may be even larger if food supplies are scarce. Females have much smaller territories.

Feral cats are carnivores and can survive with limited access to water, as they extract moisture from their food. They generally eat small mammals, but also catch birds, reptiles, amphibians, fish and insects, taking prey up to the size of a brush-tail possum. In pastoral regions, they feed largely on young rabbits, but in other areas feral cats' prey mainly on native animals. From the age of about one-year, feral cats can breed in any season. They have up to two litters of about four kittens each year, but few of the young survive. Feral cats can fall prey to a range of predators.

There is clear evidence that feral cats have had a heavy impact on island fauna. On Macquarie Island, for example, feral cats caused the extinction of a subspecies of the red-fronted parakeet. On the mainland, they have contributed to the extinction of many small to medium sized mammals and ground-nesting birds in the arid zone, and seriously affected bilby, mala and numbat populations. In some instances, feral cats have directly threatened the success of recovery programs for endangered species. Feral cats also carry infectious diseases such as toxoplasmosis and sarcosporidiosis, which can be transmitted to native animals, domestic livestock and humans.

For further information please see:

- NSW Threat Abatement Plan for Predation by Feral Cats: <http://www.environment.gov.au/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats>
- PestSmart: <https://pestsmart.org.au/toolkits/feral-cats/>

## **Primary and supplementary control techniques**

Pest control programs must be cost-effective. The techniques used within a control program need to be complimentary to each other and lead to a maximum population reduction which often requires reducing pest animal densities to low levels over a large scale and maintaining this level of population suppression indefinitely. This leads to a situation where the need for ongoing control is minimised and rates of re-invasion reduced. Follow-up control programs, where the initial reduction is maximised, are also much cheaper to implement as the target population is relatively small. Control techniques can be seen as primary or supplementary based on the following general principles.

Primary techniques are those that can achieve rapid pest population knockdown over large areas in a cost-effective way. Supplementary techniques are generally only effective in helping to maintain pest population suppression once densities have already been reduced to low levels. Unfortunately for feral cats there is no broad-scale primary control technique available in NSW at present. Lethal baiting, if it was to be registered, would potentially fulfil that requirement. Supplementary techniques such as trapping, and shooting could be then used as a follow-up. For effective control, regionally appropriate selection of at least one primary control technique and one supplementary control technique should be utilised to help satisfy general biosecurity duty requirements.

Spatial scale is also important. To achieve cost efficiencies and depending on the movement behaviour of the target pest, the area under control may need to be a collaboration of many adjoining land managers. This is particularly the case for highly mobile pest animals.

Poorly executed control programs can simply become sustained culling operations that do little to achieve long-term successful outcomes. This in turn can lead to sporadic implementation of crisis management programs where pest numbers have become unacceptable, but the outcome usually becomes sub-optimal. A rotation of primary and supplementary techniques can also be important. Pest animals can become familiar to a particular technique e.g., bait aversion that may require switching to another lethal method e.g., shooting. Another factor to consider is timing of control operations. Time of the year can mean targeting a biological weakness in the pest animal e.g., a period of food stress when bait uptake might be maximised. Alternatively, application of control can align with the need for the commodity to be protected when it is most vulnerable.

## Feral cat management methods

Feral cats have been eradicated from a number of offshore Australian islands using conventional control techniques (baiting, trapping and shooting), but their management on the mainland has proved to be more difficult. The current methods used to control feral cats are labour intensive, as feral cats can be quite trap shy, do not take baits readily (although not currently available in NSW: see under lethal baiting) and generally avoid human contact, making them difficult to shoot. Even if an area is treated, it is quickly recolonised by either the offspring of feral populations, or by recruits from peri-urban areas. Exclusion fencing has proved to be the most effective current control technique for feral cats. Unfortunately, the high cost of fencing makes this technique useful only for relatively small areas of land but is very effective in protecting areas of high conservation value. The fences also need regular maintenance to stop cats getting through into the enclosure.

There are two main approaches that can be taken, with current techniques, to reduce feral cat impacts. The first is to use conventional methods to eradicate or suppress feral cats in manageable areas of high conservation value and to eradicate them from small islands. The second approach is preventative – ensuring that feral cats do not become established on islands of high conservation value where they do not presently occur. As a strategy, local eradication of feral cats is applicable only to small islands or small mainland sites that are surrounded by predator exclusion fences. Local eradication is a viable option only for areas which meet strict criteria:

- the chances of reinvasion must be nil or very close to it
- all animals must be accessible and at risk during the control operation; and
- animals must be killed at a rate higher than their ability to replace losses through breeding.

Maintaining an area free from feral cats requires sustained control operations to prevent reinvasion from surrounding areas. Buffer zones may be a necessary component of managing small areas, to reduce the threat from continual reinvasion from surrounding areas replacing cats killed during control operations. Development of such buffer zones will require the active participation of surrounding land managers and a clear identification of the benefits to be obtained by all participants. Significant benefits can be obtained through cooperative implementation of plans across different land tenures.

Where local eradication is not possible there are two broad strategies which can be used for localised management. These are: sustained management, where control is implemented on a continuing and regular basis; and intermittent management, which seeks to apply control at critical periods of the year when damage is greatest and short-term control will reduce impacts to acceptable levels. Sustained control is generally necessary for protecting habitats of endangered species or reintroduction sites. Intermittent control may be effective as a temporary seasonal measure to protect areas such as nesting or resting sites of migratory bird species. It may also be useful when transient feral cats are moving into an area where threatened species have been reintroduced, during periods of drought, prey shortage, disease or other stress when the feral cat population is vulnerable and likely to crash.

To maximise effect and use of resources, feral cat control programs need to be coordinated with other activities that may be taking place, including the on-ground protection of threatened plants and animals and control of other invasive species such as rabbits and foxes. The most commonly used feral cat control techniques - shooting, trapping, lethal baiting

(when available in NSW) and exclusion fencing - can require high skill levels and are generally expensive and labour intensive. They require continuing management effort and can be effective only in limited areas, so researchers are attempting to improve the effectiveness and humaneness of baits and traps. Cost-effectiveness, humaneness and efficacy need to be evaluated in every program. A brief evaluation of the humaneness of control techniques follows:

## **Humaneness of control techniques**

### **Exclusion fencing**

The use of exclusion fencing is generally regarded as a humane, non-lethal alternative to lethal control methods but only after lethal control measures have been employed to remove cats from within the protected area. However, the high costs of establishing and maintaining cat-proof enclosures (including removal of cats from within the enclosure) would limit their use to the management of highly valued threatened species. Exclusion fencing, combined with eradication inside the fences, has proved to be effective for protecting endangered species that are being reintroduced. For example, fences are now used to exclude feral cats and other predators from bilby and numbat colonies in western NSW. Fencing must be adequately maintained and monitored to stop cats breaching the enclosure. If breached, fences actually increase the risk of vulnerability of endangered species by preventing their escape from the predator.

Exclusion fencing can have negative effects on non-target species by altering dispersion and foraging patterns and causing entanglement and electrocution. It can also create a significant hazard to wildlife in the event of a bushfire. Refer to the RSPCA website for further perspectives on the humaneness of exclusion (barrier and cluster) fencing:

- <https://kb.rspca.org.au/knowledge-base/what-are-the-risks-to-wildlife-associated-with-barrier-and-cluster-fencing/>

For further information on pest exclusion fence design, please refer to:

- <https://pestsmart.org.au/resources/>

Similar pest fence designs are also available from the web sites of commercial fencing manufacturers.

### **Lethal baiting**

Lethal baiting of feral cats, while recognised as the most cost-effective means of control, is not widely used on the mainland. No bait is currently registered for use in NSW with no Pesticide Control Order in place. A sausage bait containing 1080 (Eradicat®) is registered for use in Western Australia but its use in the eastern states has been prohibited to date because of concerns over non-target susceptibility. Recent research indicates that para-aminopropiophenone (PAPP) (Curiosity®) may be a more target-specific toxin for feral cats, yet this depends on the wildlife species present in the targeted location. PAPP is incorporated in these baits via an encapsulated pellet which prevents the toxin from spreading throughout the bait. Development and testing of a suitable bait has been completed and application made for registration.

## 1080

In cats, poisoning from sodium fluoroacetate (1080) is typified by severe central nervous system disturbance, hyperexcitability, convulsions and ultimately respiratory failure, or occasionally, ventricular fibrillation. It is thought that during the initial onset of signs (e.g., incoordination, salivation, vomiting, retching, incontinence and hyperpnea); the animal is likely to be conscious and capable of suffering. However, during the latter stages, when the animal shows signs of central nervous system disturbance including collapse, convulsions and tetanic spasms, suffering may not occur.

### *Para-aminopropiophenone (PAPP)*

Mammalian carnivores and monitors (*Varanus sp.*) are more susceptible to PAPP than other species. Once absorbed into the bloodstream via the stomach PAPP induces the rapid oxidation of haemoglobin to methaemoglobin, which is not effective at transporting oxygen in the blood. This causes a deficit of oxygen to the heart and brain (hypoxia), resulting in lethargy and uncoordinated movement and ultimately loss of consciousness and death, which usually occurs within two hours after a lethal dose. PAPP has the advantage of an antidote (methylene blue) for use with non-target animals such as pet dogs and cats, but this needs to be administered by a veterinarian within 30 minutes of ingestion<sup>18</sup>.

Non-target animals including native species, working dogs and livestock can also be exposed to poisons either directly by eating baits intended for pest animals (primary poisoning) or through the scavenging of tissues from a poisoned animal (secondary poisoning).

## **Shooting**

Shooting is a relatively humane control method of killing feral cats when it is carried out by competent, accurate and responsible shooters; the correct combination of firearm and ammunition and optimum shot placement are used; the target animal can be clearly seen and is within range; and all wounded animals are promptly located and euthanased humanely. However, this method is seldom used in forested environments where it is a supplementary method. Dependent young will experience significant negative welfare impacts if they are not euthanased humanely after their mother is shot. If lactating females are shot, reasonable efforts should be made to find dependent kittens and kill them quickly and humanely either by shooting (with a single shot to the brain) or manually applied concussive blow to the head.

## **Trapping**

### *Conventional traps*

All traps have the potential to cause injury and some degree of suffering and distress. Traps that contain an animal (e.g., cage or box traps) cause fewer significant injuries and less stress

than traps that restrain an animal (e.g., foot-hold traps<sup>1</sup>). Feral cats caught in a cage trap are likely to experience injuries, especially to the face because they will make frantic attempts to escape. Importantly, non-target animals that are caught in cage traps can usually be released unharmed. Foot-hold traps can cause serious injuries to both target and non-target animals such as swelling and lacerations to the foot from pressure of the trap jaws and dislocation of a limb if the animal struggles to escape. If foot-hold traps are used, they must have a rubber-like padding<sup>2</sup> on each jaw which cushions the initial impact and provides friction thus preventing the captured foot from sliding along or out of the jaws. Toothed<sup>3</sup>, steel-jaws traps are prohibited for use on feral cats as they cause significant injury, pain and distress.

Treadle snares are a humane alternative to the toothed, steel-jaw trap but they can be difficult to set, are bulky to carry and may miss more target animals. Soft-net traps comprise a flexible metal frame and netting which collapses over the animal when it is triggered entangling the animal within the net. This trap reportedly causes fewer injuries to the trapped animal compared to foot-hold devices.

As well as injuries, trapped animals can suffer from exposure, thirst, starvation, shock, capture myopathy and predation. Therefore, traps should be placed in a suitable area protected from extremes of weather and must be inspected at least once daily. Traps should not be set where there is a risk of entanglement with fences or thick vegetation as this can also cause injury to the cat.

Trap alerts or remote notification of a trapped animal or activation of a trap may improve animal welfare outcomes; however, the technology is still under development.

### *Dealing with trapped animals*

Trapped animals should be approached carefully and quietly to minimise panic, further stress and risk of injury. Trapped live feral cats must be euthanased as quickly and humanely as possible with a single rifle shot to the brain.

For feral cats in foot-hold traps this should be done with a single rifle shot to the brain. Captive bolt guns for stunning/euthanasia of conscious cats could provide an alternative to shooting, however, research is required to determine efficacy, suitable methods of restraint, and positions for accurate bolt placement.

Feral cats in cage traps should be euthanased with a shot to the brain, although an overdose of barbiturate (usually post-sedation) can be given by, or under the direction of, a veterinarian or other authorised person.

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<sup>1</sup> *Leg-hold* refers to a trap with two hinged jaws held open by a trigger mechanism that when stepped on, closes the jaws, by spring action, around the foot or leg, this catching and restraining the animal.

<sup>2</sup> *Padding* is used to refer to traps that have a non-abrasive surface and durable cushioning material firmly fixed to the jaws i.e. commercially manufactured traps and after-market modifications.

<sup>3</sup> *Toothed* includes any jaws that are not smooth i.e. have metal teeth, serrations or spikes.

If lactating females are caught in a trap, efforts should be made to find dependent kittens and kill them quickly and humanely either by shooting (with a single shot to the brain) or manually applied concussive blow to the head.

Non-target animals that are caught but not severely injured should be released at the trap site. If they are injured, but may respond to veterinary treatment, such treatment should be sought. Severely injured non-target animals must be euthanased quickly and humanely using an appropriate method (see *GEN001 Methods of Euthanasia*).

#### *Grooming traps*

Grooming traps are being developed which spray a toxin on to the fur of feral cats<sup>19</sup>. The cat then ingests the toxin as it grooms itself. This approach could potentially be more efficient than conventional trapping as it eliminates the need to check traps daily, is more target specific and is less likely to elicit aversive behaviour as in cage trapping for example. Grooming traps are currently not registered for operational use in NSW<sup>20</sup>. For further detail see: <https://pestsmart.org.au/toolkit-resource/felixer-feral-cat-grooming-traps-under-development/>

### **Fertility control**

Fertility control (in concept) is seen as a preferred method of broad scale cat control as it offers a potential humane and target specific alternative to lethal methods. However, no effective fertility control agents are currently available for broad scale use against cats in Australia, and recent research suggests that contraception delivered by bait is much less effective than lethal baiting<sup>19</sup>.



Table 1: Humaneness, Efficacy, Cost-effectiveness and Target Specificity of Feral Cat Control Methods

Control technique	Acceptability regarding humaneness* and Relative humaneness score (Part A [1-8], Part B [A-H]**)	Efficacy regarding population reduction	Cost-effectiveness	Target Specificity	Comments
Exclusion fencing <i>Primary</i>	Acceptable Score: NA	Limited	Expensive	Can be in certain situations	Useful for protection of threatened wildlife species and other valuable animals. Expensive, therefore impractical for broad scale application.
Baiting with 1080 <i>Not available</i>	Acceptable Score: NA	Relatively ineffective	Cost-effective	Significant potential risk of poisoning non-target animals. This is because cat baits are smaller, softer and moister than those used for other species. Also, the baits are not buried.	Successful baiting of feral cats is difficult as they do not take baits readily. Ingestion of 1080 can also kill non-target animals including native species, domestic cats, dogs and livestock. 1080 is toxic to humans; operators need to take precautions to safeguard against exposure.
Baiting with PAPP <i>Not available</i>	Acceptable Score: 1C - 1D	Relatively ineffective	Unknown	Significant potential risk of poisoning non-target animals	PAPP is highly toxic for domestic dogs and cats and may also pose a risk to native species, particularly varanids (goannas).
Ground shooting <i>Supplementary</i>	Acceptable Score: 1A (head), 1C (chest)	Limited effectiveness	Not cost-effective	Target specific	Labour intensive, best suited to smaller, isolated areas such as islands. May be effective if applied for an extended period.



Control technique	Acceptability regarding humaneness* and Relative humaneness score (Part A [1-8], Part B [A-H]**)	Efficacy regarding population reduction	Cost-effectiveness	Target Specificity	Comments
Cage traps <i>Supplementary</i>	Acceptable Score: 4B (shooting), 4D (lethal injection), 5B (transport – shooting), 5D (transport – lethal injection)	Relatively ineffective	Not cost-effective	May catch non-target animals but they can usually be released unharmed	Labour intensive, therefore, not suitable for broadscale control. May be useful in small areas where eradication is the objective and in semi-rural/urban areas for problem animals.
Soft net traps <i>Supplementary</i>	Acceptable Score: NA	Relatively ineffective	Not cost-effective	May catch non-target animals but they can usually be released unharmed	Labour intensive, therefore, not suitable for broadscale control. May be useful in small areas where eradication is the objective and in semi-rural/urban areas for problem animals.
Padded-jaw traps <i>Supplementary</i>	Acceptable Score: 5B	Relatively ineffective	Not cost-effective	Risk of catching non-target animals	Labour intensive. May be useful for problem animals but are inefficient for general control. Effectiveness depends on skill of operator
Treadle snares <i>Supplementary</i>	Acceptable Score: NA	Ineffective	Not cost-effective	Risk of catching non-target animals	Cats have been found to react too quickly for treadle snares, so they are therefore ineffective.
Toothed, steel-jaw traps <i>Not available</i>	Not acceptable Score: NA			Risk of catching and causing severe injury and distress to non-target animals	Inhumane and should not be used Alternatives are available

## Notes for Table 1.

\* Acceptable methods are those that are relatively humane when used correctly in accordance with the applicable Standard Operating Procedure. Conditionally acceptable methods are those that, by the nature of the technique, may not be consistently humane. There may be a period of poor welfare before death.

Methods that are not acceptable are considered to be inhumane – the welfare of the animal is very poor before death, often for a prolonged period

\*\* From assessments conducted using a model to assess the relative humaneness of pest animal control methods (Sharp and Saunders 2011)<sup>14</sup>. Humaneness score (AB) consists of Part A - welfare impact prior to death, scale of 1 – 8, less suffering to more suffering and Part B - mode of death, scale of A – H, less suffering to more suffering. For assessment worksheets and matrix of relative humaneness scores see: <https://pestsmart.org.au/toolkit-resource/feral-cat-humaneness-matrix/>

N/A = Humaneness score not available.

Control techniques are classified as primary (maximum effect), supplementary (follow-up) or 'not available'. In some situations, techniques can alternate between primary and supplementary.

## Relevant legislation

All those involved in vertebrate pest control should familiarise themselves with relevant aspects of the appropriate federal and state legislation. The table below lists relevant legislation. This list is by no means exhaustive and was current at the time of writing.

Commonwealth	<i>Agricultural and Veterinary Chemicals Code Act 1994</i> <i>Environment Protection and Biodiversity Conservation Act 1999</i>
New South Wales	<i>Biodiversity Conservation Act 2016</i> <i>Biosecurity Act 2015</i> <i>Companion Animals Act 1998</i> <i>Game and Feral Animal Control Act 2002</i> <i>Local Government Act 1993</i> <i>Local Land Services Act 2013</i> <i>National Parks and Wildlife Act 1974</i> <i>Pesticides Act 1999</i> <i>Prevention of Cruelty to Animals Act 1979</i>
Other relevant legislation	<i>Civil Aviation Act 1988</i> <i>Civil Aviation (Carriers' Liability) Act 1967</i> <i>Dangerous Goods (Road and Rail Transport) Act 2008</i> <i>Firearms Act 1996</i> <i>Work Health and Safety Act 2011 and Regulation 2017</i>

**Note: copies of the above legislation and relevant regulations may be obtained from federal and state publishing services.**

## Further information

Local Land Services	<a href="https://www.lls.nsw.gov.au/biosecurity/pestplan">https://www.lls.nsw.gov.au/biosecurity/pestplan</a>
NSW National Parks and Wildlife Service	<a href="https://www.environment.nsw.gov.au/topics/animals-and-plants/pest-animals-and-weeds/pest-animals">https://www.environment.nsw.gov.au/topics/animals-and-plants/pest-animals-and-weeds/pest-animals</a>
NSW Department of Primary Industries	<a href="https://www.dpi.nsw.gov.au/biosecurity/vertebrate-pests">https://www.dpi.nsw.gov.au/biosecurity/vertebrate-pests</a>
NSW Environment Protection Authority	<a href="https://www.epa.nsw.gov.au/your-environment/pesticides/pesticides-nsw-overview/pesticide-control-orders">https://www.epa.nsw.gov.au/your-environment/pesticides/pesticides-nsw-overview/pesticide-control-orders</a>
PestSmart Connect	<a href="https://www.pestsmart.org.au/">https://www.pestsmart.org.au/</a>

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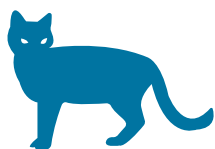
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## Standard Operating Procedures

- Ground shooting of feral cats (NSWCAT SOP1)
- Trapping of feral cats using cage traps (NSWCAT SOP2)
- Trapping of feral cats using padded-jaw traps (NSWCAT SOP3)

For guidance on regional application of control techniques, contact your nearest Local Land Services office <https://www.lls.nsw.gov.au/>

Where dealing with pesticides refer to the NSW DPI Vertebrate Pesticide Manual: <https://www.dpi.nsw.gov.au/biosecurity/vertebrate-pests/publications/nsw-vertebrate-pesticide-manual>



# NSWCAT SOP1

## Ground shooting of feral cats

### Background

Shooting is one of the main methods of control currently used for feral cats, but it is labour intensive and not considered an effective broad-scale control method. It may be of use in reducing the local number of feral cats or targeting problem animals. Shooting is usually done at night from a vehicle with the aid of a spotlight or thermal detection device but can also be conducted during the day. Drives or 'battues', using a line of beaters often with trained dogs, are sometimes used to flush feral cats out from vegetation.

Shooting can be a humane method of destroying feral cats when it is carried out by experienced, skilled and responsible shooters; the animal can be clearly seen and is within range; and, the correct firearm, ammunition and shot placement is used.

This standard operating procedure (SOP) is a guide only; it does not replace or override the relevant legislation that applies in NSW. The SOP should only be used subject to the applicable legal requirements (including WHS) operating in the relevant jurisdiction.

Individual Standard Operating Procedures should be read in conjunction with the overarching Code of Practice for that species to help ensure that the most appropriate control techniques are selected and that they are deployed in a strategic way, usually in combination with other control techniques, to achieve rapid and sustained reduction of pest animal populations and impacts.

### Application

- Shooting should only be used in a strategic manner as part of a co-ordinated program designed to achieve sustained effective control.
- Although shooting can result in a localised reduction in feral cat numbers, it is ineffective in significantly reducing feral cat populations, particularly over the longer-term. Feral cats generally avoid human contact making them difficult to shoot.
- Shooting is more successful in areas with flat topography and open vegetation. It is not as effective where dense cover exists and is not suitable in the vicinity of human habitation.
- Before shooting a cat, first establish that it is a feral cat, rather than a domestic pet or stray cat. Cats wearing collars should not be shot. It is recommended that landholders and neighbours be notified before commencement of a feral cat shooting operation so that they can take action to protect their domestic cats.
- Shooting of feral cats should only be performed by skilled operators who have the necessary experience with firearms and who hold the appropriate licences and accreditation.



- Storage and transportation of firearms and ammunition must comply with relevant legislation requirements (See *Firearms Act 1996*, *Firearms Regulation 2017* ).

## Animal welfare implications

### Target animals

- Humaneness of shooting as a control technique depends almost entirely on the skill and judgement of the shooter. If properly carried out, it is one of the most humane methods of destroying feral cats. On the other hand, if inexpertly carried out, shooting can result in wounding which may cause considerable pain and suffering.
- Shooting must be conducted in a manner which aims to cause immediate insensibility and painless death. The appropriate firearms and ammunition must always be used.
- Shooters should not shoot at an animal unless it is clearly visible, and they are confident of killing it with a single shot. A solid rest or support should be utilised to ensure accurate shot placement.
- Only head (brain) or chest (heart-lung) shots must be used. A well-placed shot to the head to destroy the brain will result in instantaneous insensibility and a quicker death compared to a well-placed shot to the chest. Chest shots to destroy the heart can present challenges for accurate placement and may not always result in rapid death. For this reason, under ideal conditions, head shots are preferred over chest shots, however in some situations (e.g., where close approach is not possible; the head is obstructed or cannot be targeted; the animal is already wounded; or a second 'follow-up' shot can be quickly taken), because the chest is a larger target, a chest shot may be the most suitable option. Shooting at other parts of the body is unacceptable.
- Correctly placed head shots cause brain function to cease and insensibility will be immediate. Death from a shot to the chest is due to massive tissue damage and haemorrhage from major blood vessels. Insensibility will occur sometime after, from a few seconds to a minute or more. If a shot stops the heart functioning, the animal will lose consciousness very rapidly.
- The shooter must be satisfied that each animal is dead before another is targeted.
- Wounded cats must be located and killed as quickly and humanely as possible with a second shot preferably directed to the head. If left, wounded animals can suffer from the disabling effects of the injury, from sickness due to infection of the wound, from pain created by the wound or from thirst or starvation if unable to drink or capture food.
- To minimise the animal welfare implications of leaving dependent kittens to die a slow death from starvation, it is preferable not to undertake shooting when females are lactating e.g., September to March in non-urban habitats. There is a high probability that any female cat over six months old that is caught during this time will be pregnant or lactating.
- If lactating females are shot, reasonable efforts should be made to find dependent kittens and kill them quickly and humanely either by shooting (with a single shot to the brain) or manually applied concussive blow to the head. Litters may be found nearby, for example in the base of hollow tree trunks, among boulders etc.



## Non-target animals

- Shooting is relatively target specific and does not usually impact on other species. However, there is always a risk of injuring or killing non-target animals, including livestock, if shots are taken at movement, colour, shape, sound or, when spotlighting, eye reflection ('eye shine').
- Only shoot at the target animal once it has been positively identified and never shoot over the top of hills or ridges as other animals or people may be out of sight beyond the hill in the danger zone.

## Workplace health and safety considerations

- Firearms are hazardous. Everyone should stand well behind the shooter when an animal is being shot. The line of fire must be chosen to prevent accidents or injury from stray bullets or ricochets.
- Shooting from a vehicle is potentially dangerous. An agreed safety procedure between the shooter and others in the vehicle must be in place to ensure that people do not enter the field of fire or disturb the taking of a shot.
- Firearm users must strictly observe all relevant safety guidelines relating to firearm ownership, possession and use.
- Firearms must be securely stored in a compartment that meets state legal requirements. Ammunition must be stored in a locked container separate from firearms.
- The shooter and others in the immediate vicinity should wear adequate hearing protection to prevent irreversible hearing damage, and safety glasses to protect eyes from gases, metal fragments and other particles.
- Warm, comfortable clothing and stout footwear is recommended, especially when shooting at night.
- Care must be taken when handling feral cat carcasses as they may carry diseases such as toxoplasmosis, ringworm and sarcosporidiosis that can affect humans and other animals. Routinely wash hands after handling all carcasses.

## Equipment required

### Firearms and ammunition

- Centrefire rifles are preferred since they provide the advantage of a flatter trajectory and higher projectile energy, however the .17HMR rimfire is also suitable as it delivers enough energy at the target for smaller animals, is flat shooting and accurate out to around 80 metres.

- The minimum firearm and ammunition requirements for the ground shooting of feral cats are:
  - calibre: .172 inches
  - bullet weight: 17 grain
  - muzzle energy: 245 ft-lbs
- Examples of acceptable firearm and ammunition combinations with maximum shooting distances are included in the table below:

Cartridge	Bullet weight (gr)	Muzzle velocity (ft/sec)	Muzzle energy (ft-lbs)	Maximum distance (metres)
.17HMR	17	2550	245	80
.22 Hornet	45	2665	710	100
.222 Rem	50	3345	1242	200
.223	55	3240	1282	200
.22/250	55	3680	1654	200

Source: <https://press.hornady.com/assets/pcthumbs/tmp/1410995911-2019-Standard-Ballistics-Chart.pdf>

- Rifle bullets must be of an expanding type designed to deform in a predictable manner e.g., hollow point, soft-point, polymer tip.
- 12-gauge shotguns with heavy shot sizes of No. 2, SSG, BB or AAA can also be used at closer ranges, up to 20 metres from the target animal.
- The accuracy and precision of firearms should be tested against inanimate targets prior to the commencement of any shooting operation.

### Other equipment

- If shooting at night, a handheld spotlight, or a helmet or headband mounted spotlight
- Thermal scope or thermal detection device with 640 x 480 resolution and 50mm lens where possible
- First aid kit.
- Lockable firearm box.
- Lockable ammunition box.
- Personal protective equipment (hearing and eye protection).
- Communication devices (e.g., 2-way radio/ mobile phone/ satellite phone) are recommended for safety reasons.

## Procedures

### Identification of feral cats

- Feral cats, which survive with limited to no human contact or assistance, are the main target of control programs. Feral cats are unowned, unsocialised, have no relationship with or dependence on humans and reproduce in the wild. Feral cats are solitary and predominantly nocturnal, spending most of the day in the safety of a shelter such as a burrow, log or rock pile.
- Domestic cats may be quite docile and easily handled, but some will become anxious and distressed in cage traps and their behaviour will resemble that of feral cats unless they can be identified with a collar and tag.

### Shooting at night

- Most shooting of feral cats is done at night from a vehicle with the aid of a spotlight or thermal device. This method relies on the ability of the shooter to approach the animal until it is within shooting range. Some shooters have had success luring feral cats into range using whistles that mimic rabbit distress calls.
- When illuminated by the spotlight, cats have a distinctive brilliant green eye reflection ('eye shine').
- Feral cats must NOT be shot from a moving vehicle. Ensure you are in a firm, safe and stable position before taking a shot.
- Spotlights and thermal devices should be used to identify hazards.
- It is recommended that during daylight hours shooters familiarise themselves with the terrain they are to cover. Take note of potential hazards and also any landmarks that may help with navigation.
- Shooting over the top of hills or ridges produces unacceptable risk. Be aware that the spotlight only illuminates a small portion of the danger zone and only a fraction of the projectile's range.

### Shooting in the day

- Feral cats are most active at night, so shooting during the day is less effective than shooting at night with a spotlight or thermal device.
- Daylight drives or 'battues' may be effective. These involve the use of unarmed beaters, often with trained dogs, to drive feral cats either into a line of people waiting with firearms or up into trees where they are shot. This method requires the use of many people and only small areas can be covered.
- If dogs are used to flush feral cats out from vegetation and/or up into trees, they must be adequately controlled to prevent them from attacking cats. Dogs should only be trained to drive cats from cover, not to capture or attack them. For further information on the use of dogs refer to [GEN002 The care and management of dogs used for pest animal control](#).
- Daylight drives are not selective, so there is a risk of encountering other animals, including pet cats, which can be mistaken for a feral cat and shot. Also, if dogs are used,

they may pursue and sometimes catch non-target animals. Capture of feral cats or non-target species by dogs is unacceptable on animal welfare grounds.

## Target animal and shot placement

- The objective is to fire at the closest range practicable in order to reduce the risk of non-lethal wounding. Accuracy is important to achieve a humane death. One shot should ensure instantaneous loss of consciousness and rapid death without resumption of consciousness.
- A feral cat should only be shot at when:
  - it can be clearly seen and recognised
  - it is within the effective range of the firearm and ammunition being used
  - a humane kill is highly probable. If in doubt, do NOT shoot.
- The vital areas targeted for clean killing of a feral cat are small. Shooters should be highly skilled and experienced at shooting and be able to accurately judge distance, wind direction and speed and have a thorough knowledge of the firearm and ammunition being used.
- The shooter must aim either at the head, to destroy the major centres at the back of the brain near the spinal cord or, at the chest, to destroy the heart, lungs and great blood vessels. This can be achieved by one of the following methods (*see diagrams in Appendix*):

### Head Shot (this is the preferred shot placement)

Placement for head and chest shots are detailed below and in Figure 1.

#### *Frontal position (front view)*

- The firearm is aimed at the centre of the head slightly below a line drawn midway between the ears.

#### *Temporal position (side view)*

- Aim horizontally from the side of the head at a point midway between the eye and the base of the ear.

### Chest Shot

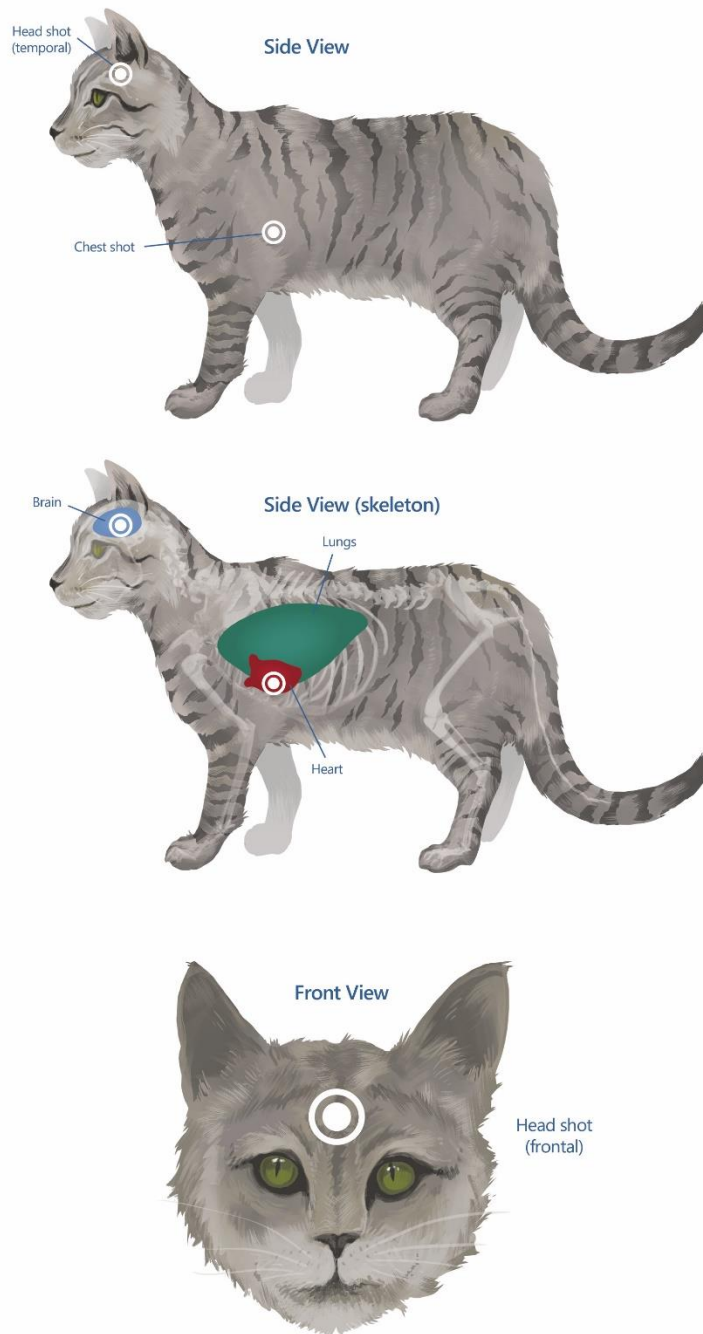
#### Side view

- The firearm is aimed horizontally at the centre of a line encircling the minimum girth of the animal, immediately behind the forelegs. The shot should be taken slightly to the rear of the shoulder blade (scapula). This angle is taken because the scapula provides partial protection of the heart from a direct side-on shot.
- When using a rifle, the target animal must be stationary and within a range that permits accurate placement of the shot. Shots to the head are preferred over chest shots.
- When using a shotgun, the target animal may be stationary or mobile, but must be no more than 20 metres from the shooter. The pattern of shot should be centred on the head or chest. It is essential that the distance to the target animal is accurately judged. To

achieve adequate penetration of shot, the animal must be in range. It is recommended that shooters practice estimating distances before a shooting operation.

- The target animal should be checked to ensure it is dead before moving on to the next animal. When targeting multiple cats in a group e.g., mother and sub-adult offspring, a number of animals will need to be shot in rapid succession. In this case, the animals in the group should be checked to ensure they are dead before moving on to the next group.
- Death of shot animals should always be confirmed by observing a combination of the following:
  - no heartbeat
  - no breathing
  - no corneal reflex (no blinking when eyeball is touched)
  - no response to a toe pinch (a firm squeeze of the pad or large toe).
- If death cannot be verified, a second shot to the head should be taken immediately.

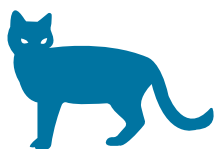
Figure 1: Shot placement for feral cats



**Note that shooting an animal from above or below the horizontal level as depicted here will influence the direction of the bullet through the body. Adjustment to the point of aim on the external surface of the body may need to be made to ensure that the angled bullet path causes extensive (and therefore fatal) damage to the main organs in the target areas.**

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## NSWCAT SOP2

# Trapping of feral cats using cage traps

### Background

Although cage trapping is considered an ineffective tool for large areas, it may be useful in urban/residential areas where domestic cats are present, or where populations have already been reduced and individual cats need to be targeted.

In urban/residential areas, cage traps are preferred over foot hold traps as fewer injuries are sustained, non-target animals can be released unharmed and trapped feral cats can be transported away from the area for euthanasia. Soft net traps may also be useful for capturing individual problem animals in similar situations - refer to [GEN003 Trapping using soft net traps](#). Padded-jaw, foot-hold traps should only be used at sites where the animal can be killed by shooting whilst still held in the trap. Foot-hold traps may be more effective than cage traps for hard-to-catch cats that have had minimal exposure to humans. Refer to [NSWCAT SOP3 Trapping of Feral Cats using Padded-Jaw Traps](#).

This standard operating procedure (SOP) is a guide only; it does not replace or override the relevant legislation that applies in NSW. The SOP should only be used subject to the applicable legal requirements (including WHS) operating in the relevant jurisdiction.

Individual Standard Operating Procedures should be read in conjunction with the overarching Code of Practice for that species to help ensure that the most appropriate control techniques are selected and that they are deployed in a strategic way, usually in combination with other control techniques, to achieve rapid and sustained reduction of pest animal populations and impacts.

### Application

- Trapping is time-consuming and labour intensive and is therefore an inefficient method for large-scale feral cat control in Australia. It can be effective in controlling problem individuals in urban and semi-urban areas.
- Cats are naturally cautious animals and can be reluctant to enter the enclosed space of a cage trap. Also, if food sources are readily available, they may not be hungry enough to approach a baited trap.
- Trapping in non-urban areas should be restricted to late autumn and early winter when food availability is generally low, and the likelihood of non-target species capture is reduced.
- Traps have the potential to cause significant suffering and distress so should only be used when there is no suitable alternative.
- Selection of appropriate traps and trap sites will maximise chance of capture and minimise the distress caused to target and non-target animals.



- Every effort must be made to avoid target and non-target deaths from factors such as exposure or shock.
- Before euthanasing a trapped cat, it must first be established that it is a feral cat, rather than a domestic pet or stray cat e.g., look for a collar and identification/ registration tag and scan for a microchip.
- It is recommended that the public be notified before commencement of a feral cat trapping program so that they can take action to protect their domestic cats. Trapping is most effective at night, so, if cat owners follow recommendations to keep their cats confined between dusk and dawn, the chance of trapping owned cats will be minimised.
- Once it has been established that the trapped cat is feral, it should be euthanased in a humane manner. This can be performed either by an authorised person at an animal shelter, council pound or veterinarian or by shooting while still in the cage at an appropriate site away from urban/residential areas.
- Traps must be used in accordance with relevant NSW legislation (*Prevention of Cruelty to Animals Act 1979*). In NSW, use of steel-jaw traps is prohibited. Trapping with padded-jaw traps, cage traps and treadle snares is permitted.
- Shooting of feral cats should only be performed by skilled operators who have the necessary experience with firearms and who hold the appropriate licences and accreditation. Storage and transportation of firearms and ammunition must comply with relevant legislation requirements.

## Animal welfare implications

### Target animals

- Feral cats are likely to suffer distress from being confined in a cage trap and they can sometimes be injured while trying to escape. Facial injuries are common.
- Traps must be inspected daily to prevent suffering and possible death from exposure, dehydration, starvation and/or shock.
- It is preferable to set up traps at sites where vegetation can provide shade and shelter.
- Shade cloth or hessian can be used for protection during extremes of weather. In hot weather, water should be provided and in cold weather bedding should be available inside the cage. Where possible, trapping should be avoided when adverse weather conditions threaten the welfare of trapped animals.
- Captured animals must be approached carefully and quietly to reduce panic, further stress and risk of injury.
- Trapped feral cats must be killed as quickly and humanely as possible.
- If transporting a trapped cat away from the capture site to be euthanased, the cage should be covered with hessian or a blanket to provide shelter from direct sunlight, wind and rain and to minimise stress from visual threats. Cats must not be transported in enclosed car boots.
- To minimise the animal welfare implications of leaving dependant kittens to die a slow death from starvation, it is preferable not to undertake trapping when females are lactating e.g., September to March in non-urban habitats. There is a high probability that

any female cat over six months old that is caught during this time will be pregnant or lactating.

- If lactating females are caught in a trap, reasonable efforts should be made to find dependent kittens and kill them quickly and humanely either by shooting (with a single shot to the brain) or manually applied concussive blow to the head. Litters may be found near to the trap site in the base of hollow tree trunks, among boulders etc.

## Non-target animals

- Traps are not target specific, therefore other species such as birds and reptiles may be caught.
- Traps must not be set near areas that are regularly frequented by non-target species.
- Live non-target animals caught in traps must be examined for injuries and signs of illness or distress and dealt with as follows:
  - Animals which are unharmed or have only received minimal injuries such as minor cuts or abrasions should be immediately released at the site of capture.
  - Animals which have more severe injuries, or which are suffering from thermal stress should receive appropriate attention. An animal suffering from thermal stress can initially be placed in a suitable quiet holding area which provides warmth or shade to allow recovery before release. Animals with treatable injuries that cannot be immediately released or those failing to recover from thermal stress should be presented to a veterinarian or a registered wildlife carer for treatment.
  - Animals that have injuries which are untreatable, or which would compromise their survival in the wild should be euthanased using a technique that is suitable for the species. For more information on euthanasia techniques refer to [GEN001 Methods of Euthanasia](#).
- If a domestic pet is caught, it should be taken to the nearest animal shelter, council pound or veterinarian where it can be scanned for a microchip and the owner contacted or assessed as to suitability for re-homing.
- If wild dogs or foxes are caught in the trap they must be euthanased quickly and humanely (refer to *NSWDOG SOP2 Trapping of wild dogs using cage traps* and *NSWFOX SOP5 Trapping of foxes using padded-jaw traps*).

## Workplace health and safety considerations

- Trapped feral cats can be dangerous to handle. They will be nervous and aggressive and can inflict serious injuries with teeth and claws. If these cats are killed whilst still in the cage, there should be no need to handle them directly. However, if handling is necessary, leather gloves and a catching pole, or a crush should be used. Operators must be protected by tetanus immunisation in case of infection of scratches and bites. Bite wounds often result in serious infections and should be treated by a doctor.
- Firearms are hazardous. All people should stand well behind the shooter when a cat is being shot. The line of fire must be chosen to prevent accidents or injury from stray bullets or ricochets.
- Firearm users must strictly observe all relevant safety guidelines relating to firearm ownership, possession and use.

- Firearms must be securely stored in a compartment that meets state legal requirements. Ammunition must be stored in a locked container separate from firearms.
- The shooter and others in the immediate vicinity should wear adequate hearing protection to prevent irreversible hearing damage, and safety glasses to protect eyes from gases, metal fragments and other particles.
- Care must be taken when handling live cats and carcasses as they may carry diseases such as toxoplasmosis, ringworm and sarcosporidiosis that can affect humans and other animals. Routinely wash hands after handling all carcasses.

## Equipment required

### Traps

- Wire mesh cage traps are used. These can be obtained from commercial suppliers and are available in a variety of sizes (e.g., 740 x 310 x 310 mm, made of 2.5 mm welded wire with a mesh size of 12.5 x 25 mm). The traps have a spring door that is activated either by a treadle plate or hook mechanism. Only traps with treadle plates are recommended for catching cats as the hook mechanism can cause injuries to the trapped cat and handling and/or transferring of the cat is easier through the rear plate of the cage.

### Lures

- A variety of olfactory, visual or auditory stimuli may be used to lure cats into the trap. Olfactory lures include synthetic fermented egg, catnip, tuna oil, cat urine and anal gland preparation and also soiled cat litter from a cattery. Visual lures such as bird feathers and cotton wool can be used, although these may not be needed if the trap is clearly visible, or the meat bait has a strong odour. Cat calling machines or 'felid attraction phonic' devices, which emit a cat meowing sound, can also be used as a lure.
- The attractiveness of lures will vary with season and location.

### Meat baits

- A handful of meat bait is placed at the rear of the cage.
- Rabbit, chicken (including fried), beef, fish, lamb, kangaroo, tinned cat food, sardines and tuna have all been successfully used as bait.
- Capture efficiency may be improved by using bait that reflects the cat's staple prey for the area rather than being novel.
- Attractiveness and palatability of the bait will vary with season and location.

### Firearms and ammunition

- Where shooting is the most appropriate means of euthanasia, smaller calibre rifles such as a .22 rimfire, with hollow- or soft-point ammunition, are suitable for euthanasia at short range (from 5-25cm away).
- The accuracy and precision of firearms should be tested against inanimate targets prior to the commencement of any shooting operation.

## Procedures

### Selection of trap sites

- Traps should be set in areas where cats are known to be active and may be placed under bushes, beside vehicle tracks and at rabbit warrens.
- The location of all trap sites must be accurately recorded. This information should be readily available to others in case the trapper is unable to return to check the traps.
- Do not place traps in areas where they may be interfered with/damaged by large stock or humans.

### Placing and setting the trap

- Before setting each trap ensure that it is functioning properly.
- It may be useful to partially enclose the trap in a large hessian bag to prevent the cats from attempting to take the bait through the side or back of the trap. This also helps to reduce the visibility of bait to non-target species such as raptors and corvids.
- Cage traps should be set squarely on the ground and the doors of the trap bent upward to increase the openness of the trap space.
- The trap should be pegged to the ground to prevent the cat or some other animal from tipping it over and injuring itself and/or releasing the trap door.
- Place meat baits inside the trap and lures in suitable positions inside and outside of the trap.
- Cage traps should be clear of vegetation so that the cat can walk completely around the trap before entering.
- It is preferable to set traps at the end of each day and check early each morning. When traps are open during the day there is a greater risk of birds, such as magpies and currawongs, entering and triggering the trap.
- If traps need to be left open during the day, they should be checked again in late afternoon.

### Identification of feral cats

- Feral cats, which survive with limited to no human contact or assistance, are the main target of control programs. Feral cats are unowned, unsocialised, have no relationship with or dependence on humans and reproduce in the wild. Feral cats are solitary and predominantly nocturnal, spending most of the day in the safety of a shelter such as a burrow, log or rock pile.
- Domestic cats may be quite docile and easily handled, but some will become anxious and distressed in cage traps and their behaviour will resemble that of feral cats unless they can be identified with a collar and tag.

## Euthanasia of feral cats

Trapped feral cats can be killed humanely using one of the following methods:

### Overdose of barbiturate

- These procedures can only be performed by, or under the direction of, a veterinarian or other authorised person.
- An intramuscular or subcutaneous injection of a sedative (ketamine at 20 mg/kg or xylazine at 1-2 mg/kg) is usually necessary to restrain the animal before euthanasing. The injection can be administered through the wire mesh without the cat being handled using an extendable pole syringe (or 'jabstick'). A cage with a 'crush' or 'squeeze-back' is also useful to restrain the cat at one end of the cage.
- Once the cat is sedated it is euthanased with an intravenous or intraperitoneal injection of pentobarbitone sodium (approximately 150mg/kg).
- If the cat cannot be sedated with an injection, anaesthetic gas (e.g., halothane or methoxyflurane) or carbon dioxide can be introduced into a plastic bag that has been placed around the cage. The animal will become unconscious quickly and quietly, followed by death after a short period depending on the gas used and its concentration. If preferred, once the animal is unconscious, it may be removed from the cage and euthanased with an intravenous or intraperitoneal injection of pentobarbitone sodium.

### Shooting

- Trapped live feral cats can be euthanased by shooting whilst still held in the cage trap.
- It can be difficult to shoot feral cats humanely as they become very nervous and agitated when restrained and in the presence of people. Unnecessary people should keep away from the area. The shooter should approach the animal in a calm and quiet manner.
- Never fire when the cat is moving its head, be patient and wait until the cat is motionless before shooting. Accuracy is important to achieve a humane death. One shot to the head should ensure instantaneous loss of consciousness and rapid death without resumption of consciousness.
- To maximise the impact of the shot and to minimise the risk of misdirection the range should be as short as possible i.e., 5 to 25 cm from the head.
- Effectiveness of shooting is dependent upon the destruction of major centres at the back of the brain near the spinal cord. This can be achieved by one of the following methods (*See also Figure 2*):

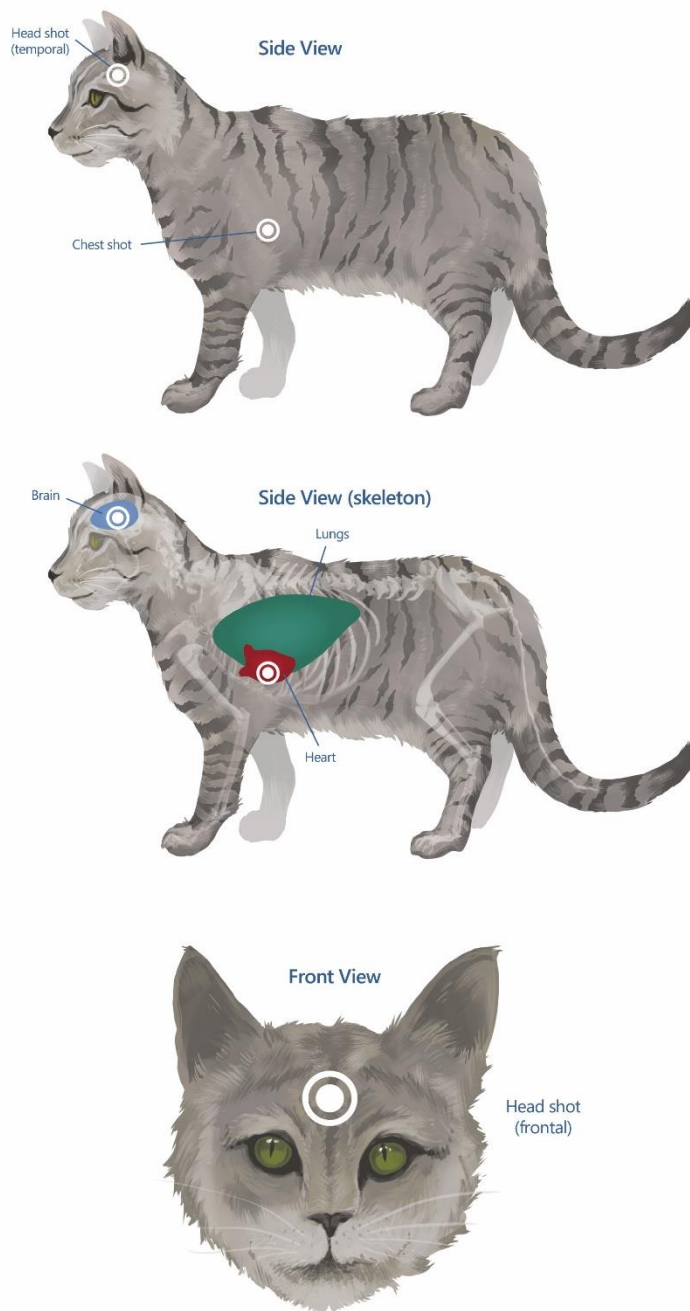
#### *Frontal position (front view)*

- The firearm is aimed at the centre of the head slightly below a line drawn midway between the ears.

*Temporal position (side view)*

- Shoot from the side aiming behind the ear so that the shot will pass through the brain towards the opposite eye.
- Death of shot animals should always be confirmed by observing a combination of the following:
  - no heartbeat
  - no breathing
  - no corneal reflex (no blinking when eyeball is touched)
  - no response to a toe pinch (a firm squeeze of the pad or large toe).
- If death cannot be verified, a second shot to the head should be taken immediately.

Figure 2: Shot placement for feral cats



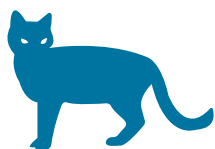
**Head shots (temporal or frontal) should be used for shooting feral cats caught in traps. See text for details.**

**Note that shooting an animal from above or below the horizontal level as depicted here will influence the direction of the bullet through the body. Adjustment to the point of aim on the external surface of the body may need to be made to ensure that the angled bullet path causes extensive (and therefore fatal) damage to the main organs in the target areas.**

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- Department of the Environment. (2015). *Threat abatement plan for predation by feral cats*. Australian Government, Department of the Environment. Available at: <http://www.environment.gov.au/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats>
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## NSWCAT SOP3

# Trapping of feral cats using padded foot-hold traps

### Background

Although trapping is considered an ineffective tool for large areas, it may be useful in urban/residential areas where domestic cats are present, or in areas where populations have already been reduced and individual cats need to be targeted.

Live trapping followed by euthanasia is one of the main methods of control currently used. In urban/residential areas, cage traps or soft net traps are preferred over foot hold traps as fewer injuries are sustained, non-target animals can be released unharmed and trapped feral cats can be transported away from the area for euthanasia. Refer to *NSWCAT SOP2 Trapping of Feral Cats using Cage Traps* and [GEN003 Trapping using soft net traps](#). Foot-hold (padded-jaw) traps should only be used at sites where the animal can be killed by shooting whilst still held in the trap. Foot-hold traps may be more effective than cage traps for hard-to-catch cats that have had minimal exposure to humans.

This standard operating procedure (SOP) is a guide only; it does not replace or override the relevant legislation that applies in NSW. The SOP should only be used subject to the applicable legal requirements (including WHS) operating in the relevant jurisdiction.

Individual Standard Operating Procedures should be read in conjunction with the overarching Code of Practice for that species to help ensure that the most appropriate control techniques are selected and that they are deployed in a strategic way, usually in combination with other control techniques, to achieve rapid and sustained reduction of pest animal populations and impacts.

### Application

- Trapping is time-consuming and labour intensive and is therefore an inefficient method for large-scale feral cat control in Australia.
- Traps have the potential to cause significant injuries, suffering and distress so should only be used when there is no suitable alternative.
- Humane and successful trapping requires extensive training and experience. Trapping by inexperienced operators can result in 'trap-shy' cats that are difficult to catch because they have previously escaped from a carelessly prepared and presented trap. Similarly, poor technique can result in greater rates of injuries and non-target captures.
- Selection of appropriate traps and trap sites will maximise the chance of capture and minimise the distress caused to target and non-target animals.
- Every effort must be made to avoid target and non-target deaths from factors such as exposure, shock, capture myopathy and predation.

- Before euthanasing a trapped cat, first establish that it is a feral cat, rather than a domestic pet or stray cat. Trapped cats that appear to be domesticated/owned i.e. wearing a collar or have a friendly temperament, should be taken to the nearest council pound for assessment. It is recommended that the public be notified before commencement of a feral cat trapping program.
- Once trapped, feral cats are euthanased by shooting whilst still held by the trap.
- Traps must be used in accordance with relevant NSW legislation (*Prevention of Cruelty to Animals Act 1979*). In NSW, use of steel-jaw traps is prohibited. Trapping with padded-jaw traps, cage traps and treadle snares is permitted.
- Shooting of feral cats should only be performed by skilled operators who have the necessary experience with firearms and who hold the appropriate licences and accreditation. Storage and transportation of firearms and ammunition must comply with relevant legislation requirements.

## Animal welfare implications

### Target animals

- Foot-hold traps cause pain and distress in two ways, pressure of the trap jaws on the captured limb and restraint of the animal. These range from swelling of the foot and lacerations to dislocations and fractures.
- To reduce capture distress, trapped feral cats must be killed as quickly and humanely as possible following capture.
- Traps must be inspected daily to prevent suffering and possible death from exposure, thirst, starvation and/or shock.
- It is preferable to set up traps at sites where vegetation can provide shade and shelter. However, sites should be avoided where there is a risk of the trapped animal becoming entangled in understorey vegetation, which could result in dislocation of the limb.
- Where possible, trapping should be avoided when adverse weather conditions threaten the welfare of trapped animals.
- Captured animals must be approached carefully and quietly to reduce panic, further stress and risk of injury.
- To minimise the animal welfare implications of leaving dependant kittens to die a slow death from starvation, it is preferable not to undertake trapping when females are lactating e.g., September to March in non-urban habitats. There is a high probability that any female cat over six months old that is caught during this time will be pregnant or lactating.
- If lactating females are caught in a trap, efforts should be made to find dependent kittens and kill them quickly and humanely either by shooting (with a single shot to the brain) or manually applied concussive blow to the head. Litters may be found near to the trap site in the base of hollow tree trunks, among boulders etc.

## Non-target animals

- Traps are not target specific, so a wide range of non-target species may be caught. These can include birds (e.g., ravens, magpies, pied currawongs), kangaroos, wallabies, rabbits, hares, echidnas, goannas, wombats, possums, bandicoots, quolls and sheep.
- Different groups of non-target animals suffer different levels of injury and distress. For example:
  - Wallabies often experience serious injuries e.g., dislocations, due to the morphology of their limbs and because they become very agitated when restrained.
  - Goannas e.g., lace monitors also suffer from dislocations and can die from hyperthermia.
  - Birds, rabbits and hares can be preyed upon by foxes, cats and wild dogs while caught in traps.
- Traps must not be set near areas such as waterholes or gully crossings that are regularly frequented by non-target species.
- Non-target animals caught in traps must be examined for injuries and signs of illness or distress and dealt with as follows:
  - Animals which are unharmed or have only received minimal injuries such as minor cuts or abrasions should be immediately released at the site of capture.
  - Animals which have more severe injuries, or which are suffering from thermal stress should receive appropriate attention. An animal suffering from thermal stress can initially be placed in a suitable quiet holding area which provides warmth or shade to allow recovery before release. Animals with treatable injuries that cannot be immediately released or those failing to recover from thermal stress should be presented to a veterinarian or a registered wildlife carer for treatment.
  - Animals that have injuries which are untreatable, or which would compromise their survival in the wild should be euthanased using a technique that is suitable for the species. For more information on euthanasia techniques refer to [GEN001 Methods of Euthanasia](#).
- If a domestic pet is caught, it should be taken to the nearest animal shelter, council pound or veterinarian where it can be examined for injuries, scanned for a microchip and the owner contacted, or assessed for suitability for re-homing.
- If wild dogs or foxes are caught in the trap they must be euthanased quickly and humanely (refer to *NSWDOG SOP2 Trapping of wild dogs using cage traps* and *NSWFOX SOP5 Trapping of foxes using padded-jaw traps*).

## Workplace health and safety considerations

- Trapped cats can be dangerous to handle. They will be nervous and aggressive and can inflict serious injuries with teeth and claws. If feral cats are killed at the site of capture, there should be no need to handle them directly. However, if handling is necessary, leather gloves and a catching pole should be used. Operators must be protected by tetanus immunisation in case of infection of scratches and bites. Bite wounds often result in serious infections and should be treated by a doctor.

- Care must be taken when handling feral cat carcasses as they may carry diseases such as toxoplasmosis, ringworm and sarcosporidiosis that can affect humans and other animals. Routinely wash hands after handling all carcasses.
- Operators should be wary of the risks of injury when placing and setting traps. Suitable protective clothing will help prevent injuries and limit disease risk.
- Firearms are hazardous. All people should stand well behind the shooter when an animal is being shot. The line of fire must be chosen to prevent accidents or injury from stray bullets or ricochets.
- Firearm users must strictly observe all relevant safety guidelines relating to firearm ownership, possession and use.
- Firearms must be securely stored in a compartment that meets state legal requirements. Ammunition must be stored in a locked container separate from firearms.
- The shooter and others in the immediate vicinity should wear adequate hearing protection to prevent irreversible hearing damage, and safety glasses to protect eyes from gases, metal fragments and other particles.

## Equipment required

### Traps

- Approved foot-hold traps suitable for catching feral cats must be used e.g., Victor Soft-Catch® trap.
- Traps must have the following characteristics:
  - The jaws have no teeth.
  - The jaws are offset to increase the space between them when closed. (i.e. a gap (minimum 6mm) remains when the jaws are closed).
  - Each jaw has a rubber-like pad to cushion the impact of the jaws on the limb and to prevent the limb sliding out. The padding fills the offset gap when the jaws are closed.
- All traps should be checked for damage, sharp surfaces and malfunctions e.g., loose rubber pads, before they are taken into the field.
- Traps should be handled in a way that eliminates contamination with human related scents. Gloves should also be used when handling and setting traps.
- Traps should also have:
  - A spring placed in the anchor chain to act as a shock absorber, reducing the chance of dislocation of the captured limb. Swivels are located on both ends of the anchor chain allowing the trap to twist as the animal struggles to escape.
  - Pan tension adjusted to suit the target species so that an appropriate force is required to depress the pan and trigger the trap. This minimises the chance of non-target animals setting off the trap.

### Lures

- A variety of olfactory, visual or auditory stimuli may be used to lure cats into trap sets. Olfactory lures include synthetic fermented egg, catnip, tuna oil, cat urine and anal gland preparation and also soiled cat litter from a cattery. Visual lures such as bird feathers and

cotton wool can be used, although these may not be needed if the trap is clearly visible or the meat bait has a strong odour. Cat calling machines or 'felid attraction phonic' devices, which emit a cat meowing sound, can also be used as a lure.

- The attractiveness of lures will vary with season and location. Choose lures that do not attract localised non-targets e.g., avoid meat-based lures where quolls or goannas are present.

### **Meat baits**

- A handful of meat bait is placed near the trap. Rabbit, chicken, beef, fish, lamb, kangaroo, tinned cat food, sardines and tuna have all been used as bait.
- Capture efficiency may be improved by using bait that reflects the cat's staple prey for the area rather than being novel.
- Attractiveness and palatability of the bait will vary with season and location.

### **Firearms and ammunition**

- Where shooting is the most appropriate means of euthanasia, smaller calibre rifles such as a .22 rimfire, with hollow- or soft-point ammunition, are suitable for euthanasia at short range (from 5-25cm away).
- 12-gauge shotguns with shot sizes of BB or AAA may also be used.
- The accuracy and precision of firearms should be tested against inanimate targets prior to the commencement of any shooting operation.

## **Procedures**

### **Selection of trap sites**

- Traps should be set in areas where cats are known to be active and may be placed under bushes, beside vehicle tracks and at rabbit warrens. They can be set at the entrance to fallen hollow logs so as to provide cover for the trapped cat and also to allow the bait to be hidden from view of non-target bird species. Do not set traps near fences and other objects such as small trees, bushes etc. in which the trapped cat (or non-target) may become entangled.
- Do not set traps where non-target captures (including livestock) are likely.
- The location (GPS coordinates) of all trap sites must be accurately recorded and marked. This information should be readily available to others in case the trapper is unable to return to check the traps.
- The recording of target and non-target captures as well as injuries can also be valuable in the constant improvement of trapping technique.
- On-line apps such as FeralScan may assist in these processes:  
<https://www.feralscan.org.au/>.
- Signage should be deployed on public lands to advise that traps are being used in the area.

## Placing and setting of traps

- Traps should be set at the end of each day and checked early each morning. If traps are left set during the day, they should be checked again in late afternoon.
- Before setting each trap ensure that it is functioning properly.
- Traps should only be anchored to stakes or fixed objects if there is a shock absorbing device such as a spring fitted to the anchor chain and a swivel attaching the chain to the trap. It is recommended to use a short length of chain (approx. 30-50 cm). Alternatively, the trap can be tied to 'drags', objects such as solid pieces of steel or timber that will move when the cat pulls against the trap. The drag may need to be sufficient to restrain larger predators such as dogs. Use of drags should be minimised as they can potentially have greater welfare concerns than anchor points.
- Set the trap and place into position in the hole in the ground. Ensure that surrounding shrubs or debris will not interfere with the spring mechanism.
- Carefully camouflage the area around the trap with leaves, grass debris etc. but leave a slightly cleared area (10-15 cm) over the area of the plate.
- Place the meat bait approximately 10-15 cm behind the plate of the trap. Lures should be placed in suitable positions around the trap.

## Identification of feral cats

- Feral cats, which survive with limited to no human contact or assistance, are the main target of control programs. Feral cats are unowned, unsocialised, have no relationship with or dependence on humans and reproduce in the wild. Feral cats are solitary and predominantly nocturnal, spending most of the day in the safety of a shelter such as a burrow, log or rock pile.
- Domestic cats may be quite docile and easily handled, but some will become anxious and distressed in cage traps and their behaviour will resemble that of feral cats unless they can be identified with a collar and tag.

## Shooting of feral cats

- Trapped feral cats should be euthanased by shooting whilst still held by the trap.
- It can be difficult to shoot feral cats humanely as they become very nervous and agitated when restrained and in the presence of people. Unnecessary people should keep away from the area. The shooter should approach the animal in a calm and quiet manner.
- Never fire when the cat is moving its head, be patient and wait until the cat is motionless before shooting. Accuracy is important to achieve a humane death. One shot to the head should ensure instantaneous loss of consciousness and rapid death without resumption of consciousness.
- To maximise the impact of the shot and to minimise the risk of misdirection the range should be as short as possible e.g., 5-25 cm from the head if using a rifle, or 1-2 metres if using a shotgun.
- Effectiveness of shooting is dependent upon the destruction of major centres at the back of the brain near the spinal cord. This can be achieved by one of the following methods (See also Figure 3).

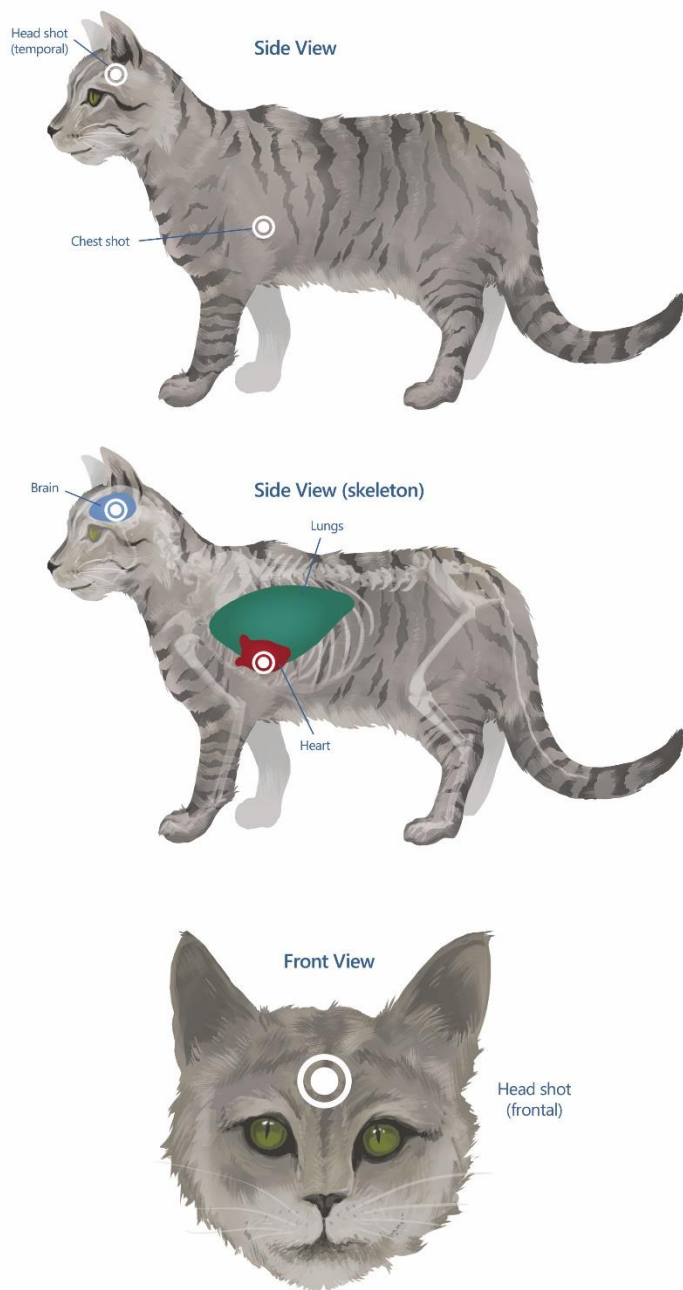
### **Frontal position (front view)**

- The firearm is aimed at the centre of the head slightly below a line drawn midway between the ears.

### **Temporal position (side view)**

- Shoot from the side aiming behind the ear so that the shot will pass through the brain towards the opposite eye.
- Death of shot animals should always be confirmed by observing the following:
  - no heartbeat
  - no breathing
  - no corneal reflex (no blinking when eyeball is touched)
  - no response to a toe pinch (a firm squeeze of the pad or large toe).
- If death cannot be verified, a second shot to the head should be taken immediately.

Figure 3: Shot placement for feral cats



**Head shots (temporal or frontal) should be used for shooting feral cats caught in traps. See text for details.**

**Note that shooting an animal from above or below the horizontal level as depicted here will influence the direction of the bullet through the body. Adjustment to the point of aim on the external surface of the body may need to be made to ensure that the angled bullet path causes extensive (and therefore fatal) damage to the main organs in the target areas.**



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