

In New South Wales the responsibility for pest animal control falls on the landowners and land managers who occupy both public and private land. All plans for controlling these species should be conducted within the guidelines for humane pest animal controls. It is important that all people involved in pest animal management are aware of the legislative framework in which they operate. A non-exhaustive summary of the more relevant New South Wales legislation is provided here. This information does not constitute legal advice and further information should be obtained from a legal professional.



Local Land Services ACT 2013

- Enables the Minister to proclaim an animal as a pest, via a Pest Control Order. This order may direct control methods in order to minimise the pest impact on either agriculture or the local environment.
- Applies legal obligations to control pests, applicable to owners, occupiers and managers of private and public land.
- Enables Local Land Services biosecurity officers to enter land, with prior notice, in order to assess compliance or undertake necessary work to ensure compliance.

Pesticides Act 1999

- Administered by the Environmental Protection Authority controls the use of pesticides after the point of sale.
- Use of pesticides requires competency based training to AQF 3 level, renewed every five years.
- AQF 3 training details legal obligations e.g. use, storage, records, labels etc.

National Parks and Wildlife Act 1974

- A licence is required to liberate any animal in New South Wales, other than homing pigeons or those native to New South Wales.
- Introduced animals such as foxes, feral cats and goats are listed as unprotected, and occupiers of land are not obliged to control them.

Threatened Species Act 1995

- Lists endangered and vulnerable species, populations and communities and associated threatening processes.
- Pest animal impacts may constitute a threatening process.
- Pest animal control may impact on endangered and vulnerable species, populations and communities.

Prevention of Cruelty to Animals Act 1979

- Intent is to provide for the care, humane treatment and welfare of animals.
- Determines that a person must not set, or possess with the intent to use for animal trapping, a steel jawed trap.
- Use of dogs is not prohibited for detecting, flushing or holding pest animals.

Game and Feral Animal Control Act 2002

- Defines a game animal and associated hunting licence (general or restricted) for private and public land.
- Game animal definition excludes any animal listed as endangered or vulnerable species, populations or communities under the *Threatened Species Act 1995* or protected fauna under the *National Parks and Wildlife Act 1974*.

Further legislation that may be applicable:

- *Companion Animals Act 1998*
- *Deer Act 2006*
- *Environmental Planning and Assessment Act 1979*
- *Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)*
- *Local Government Act 1998*
- *Non-Indigenous Animals Act 1987*
- *Occupational Health and Safety Act 2000*

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- <http://www.epa.nsw.gov.au/pesticides/pesticidesact.htm> accessed January 2017
- <http://southeast.ils.nsw.gov.au/biosecurity/pest-control> accessed January 2017
- <http://riverina.ils.nsw.gov.au/biosecurity/pest-control> accessed January 2017
- <http://www.dpi.nsw.gov.au/hunting> accessed January 2017

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DOMESTIC DOGS AND CATS



Description

Many of us have dogs or cats, but do you know exactly where your pets are now?

Even domestic dogs and cats that are well cared for will instinctively hunt and chase native animals, therefore it is essential to know where your pets are at all times. Dogs and cats will pursue most small animals, with large dogs able to attack and harass kangaroos, wallabies, lambs, sheep, foals and calves. Cats commonly attack birds and reptiles though will also hunt and harass possums. Both dogs and cats often stalk these animals purely for the fun of it, so even if your pet is well fed and has a good temperament, it can cause damage when it is just trying to play.

Unlike native predators, domestic dogs and cats will often leave a carcass uneaten. Dogs commonly attack or break the neck of the animal killed and if a cat catches a bird, then the head is often the only part eaten. In contrast, natural birds of prey will pluck at their victim, leaving a mass of feathers and down.

Both dogs and cats are able to travel many kilometres in one day. Dog activity is more common during the day but can also occur at night; while cat activity is mostly at dawn, dusk or throughout the night. It is essential that domestic dogs and cats are securely confined or monitored during the times when they are likely to prowl. If you live a small distance from bushland your pets should never be allowed to wander freely.



Impacts

All domestic dogs and cats can kill, harass and cause native species to relocate (due to scents). Dogs will chase livestock or species such as kangaroos for the fun, with the stress of the pursuit often resulting in the animal's death. Cats pose a significant threat to many birds, small animals and reptiles.

Domestic animals causing a nuisance can be legally shot in the paddock. If the animals leave the property and can be identified then their owners will likely be fined, the animals removed and put down. It is important for your pets' safety they are confined to your property. There is a significant cost to local councils and hence the taxpayer to police domestic animals and follow-up complaints.

Distribution

Domestic dog and cat activity generally occurs near where their owners live and is common in the Molonglo catchment especially in peri-urban and denser rural settlements.



Case studies

Dog attacks

It is a commonly-held belief by many dog owners that their pet is harmless and would never 'hurt a fly'. However a resident in the Molonglo catchment near Burra Creek, had a harrowing experience when two dogs came onto her property. The dogs killed seven of her alpacas and injured several others, before the dogs in question had to be shot. The attack caused great emotional pain to both the owner of the alpacas and of the dogs. Although this was an extreme case, sadly attacks from dogs are all too frequent.

"I'm pleading with everyone who comes into this valley or any other urban or peri-urban area to lock your dogs up. This was a needless massacre and the dogs are not to blame – it is the irresponsible owners who don't think their animals are capable of this sort of attack. Think again!"

Cats and Wildcare Queanbeyan

Most people are aware of how destructive cats can be to native birds, reptiles and small mammals, but few are aware of how destructive cats can be to the wildlife rescue effort.

Wildcare Queanbeyan is an animal rescue organisation who are all too aware of how damaging cats are to native animals. Wildcare sees many animals that have been attacked by cats, but it's those babies that never get a chance which are really upsetting. Often when wombat, possum or kangaroo hit by a car comes in, there may be a live joey inside the pouch. If the joey is discovered by a cat before it can be rescued, cats have been known to chew through the wall of the pouch and eat the baby before it has a chance. "It's a race against time with cats" says Wildcare, "often we find the baby missing before the mother's body has even gone cold".



What YOU can do

Domestic animals are the responsibility of their owners and it is important that your pets are confined to your property and leashed when walking, particularly through bushland. De-sexing reduces the likelihood of pets wandering. If you see a domestic dog or cat roaming freely contact your local council to arrange for it to be collected.

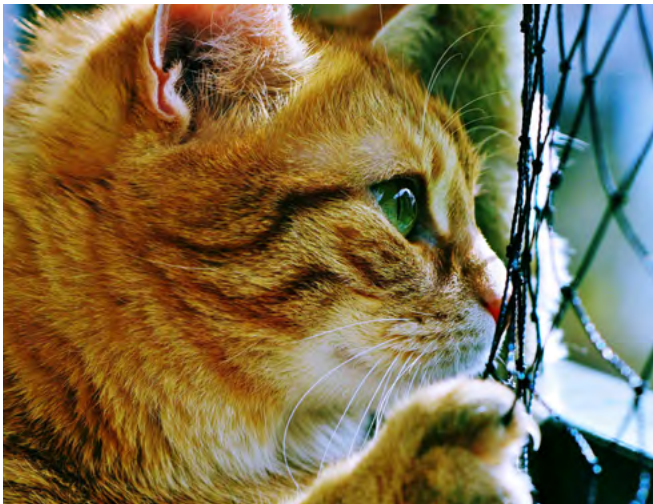
Some ACT suburbs are now declared cat containment areas and it is the responsibility of pet owners to limit the movement of their cats 24 hours a day, or risk fines. You can find out if your suburb is a cat containment area from <http://www.tccs.act.gov.au/city-living/pets/cats/cat-containment>

Some steps you can take are:

- report neglected or straying animals
- don't abandon pets, if you can no longer care for the animal take it to your local RSPCA who will attempt to rehome it
- keep your dog under control at all times
- keep your cat indoors at night, particularly at dawn and dusk. If you live in a cat containment area, take appropriate steps to contain pet cats.

These simple steps will reduce the potential of your pet becoming involved in an incident. It could save their life as well as that of the victim.





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More information

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<https://www.environment.gov.au/biodiversity/invasive-species/feral-animals-australia>

<http://www.dpi.nsw.gov.au/biosecurity/vertebrate-pests>





Description

Foxes are usually solitary and most active at night but activity during the day is not uncommon, especially when adults are feeding cubs. The fox is largely a carnivorous animal, but it is an opportunistic predator and scavenger who will eat a wide variety of plant material, human refuse, vertebrate and invertebrate prey, including sheep, lambs and small native mammals.



They are highly adaptable, possibly preferring fragmented habitats offering a wide range of shelter and food. Fox tracks and scats are similar to those of smaller dogs, with their tracks being slightly narrower and more oval. Additionally the track pattern is very narrow, often overlapping and can be in a single straight line.

Breeding occurs during winter, with gestation lasting 51–53 days when three to five cubs are born. These cubs leave the den usually by 10–12 weeks in late spring and are independent by six months. They are able to breed the following winter.

A fox can travel 25 kilometres in search of food. Population densities in temperate grazing lands, as occurs in the Molonglo catchment, are known to be as high as seven foxes per square kilometre.

Impacts

Predation by foxes has been listed as a key threatening process which is defined as something that "threatens or may threaten the survival, abundance or evolutionary development of a native species or ecological community" (Department of the Environment and Energy).

Foxes have contributed to the decline of much of Australia's native fauna, particularly ground-dwelling birds, medium-sized ground-dwelling and semi-arboreal mammals. The average fox requires 136 kilograms of food a year. Across Australia if only 1 per cent of this is met by eating birds this would account for 9.5 million kilograms or 190 million birds per year. Their presence has also had a huge impact on native predators such as the Spotted-tail quoll. Due to their large numbers and efficient hunting and scavenging foxes are able to out-compete native predators for resources.

This has been a factor in the decline in populations of species such as the Spotted-tail quoll and its subsequent listing as a threatened species. The impact on ground-nesting birds has also been devastating because these birds are an easy target for foxes. Predation by foxes has been a factor in the decline in ground-nesting species such as the Plains-wanderer and Bush stone curlew.

The fox is also a vector for weed dispersal (such as blackberries), a major predator of lambs and poultry, will damage drip irrigation systems and horticultural crops and significantly reduce biodiversity. The negative impact of foxes comes at a considerable cost to the environment and the Australian economy which includes management and control programs, rehabilitation of degraded sites and increased costs to food production. The following table highlights the annual costs of managing foxes in Australia.

COST OF FOXES (PEST ANIMAL CONTROL CRC, 2004)

Cost component	Control	Loss
Sheep production	-	\$17.5 million
Environmental impact	-	\$190.0 million
Management	\$16 million	-
Research	\$4 million	-
Total	\$20 million	\$207.5 million

Distribution

Foxes occur throughout most of Australia, and are found in all parts of New South Wales and the ACT. This includes both rural and urban areas, and they are commonly found in the suburbs of most large cities. Foxes have become established throughout the entire Molonglo catchment, occurring at particularly high population densities on fringe of urban areas and farmland, although less so in higher timbered areas.





Case study

Huon, a local landowner from Forbes Creek has had considerable trouble managing fox problems on his land for many years, now having a significant cost to the farm in terms of time and resources. He believes their population density would surprise many people, due to their nocturnal lifestyle and shy nature they are not always seen, but their presence is certainly felt. "Once again I have lost quite a few lambs to foxes this year. It is time to re-introduce a \$10 bounty for each fox tail, to get the local community unified and motivated to deal with this national pest once and for all". The loss of livestock to foxes is not an isolated event, it is a story repeated many times over in the Molonglo catchment.

What can be done?

There are a number of options for fox control on your property. A good place to start is to contact the South East Local Land Services or NSW National Parks and Wildlife Service. These agencies can provide you with advice and assistance on control measures, including your legal obligations and any ethical issues. It is important to undertake pest animal control in a humane manner, minimising pain and suffering to the animals involved. Additionally, when planning a control strategy, engage your neighbours as their assistance will be essential to any program's success.

Control methods

- **POISONING.** There are significant legal restrictions that apply to signage while baiting, number of baits supplied, clearance distances between baits, use in small properties and in urban or closely-settled areas. Baits can also impact non-target species. For use and information on controlled pesticides you must contact your local governing authority.
- **FUMIGATION.** This requires both a specialist operator and equipment. The operator needs to have extensive knowledge of native mammals that may use also warrens to avoid the death of non-target species.





- **SHOOTING.** This is target specific and effective in the removal of a small number of foxes. It is often used at night with a spotlight, a fox whistle and around dens or animal carcasses. A small calibre, high velocity rifle with proficient operator can be effective both day and night. Under the *Game and Feral Animal Control Act 2002*, a R-licence issued by the Game Council of NSW is required to hunt foxes on public lands in New South Wales.
- **TRAPPING.** This can be effective in dealing with small numbers of foxes, but may impact non-target species. It requires an experienced and competent person to be effective and humane. Steel jaw traps are illegal, as is the use of big soft jawed traps within town or village boundaries. All traps should be used in accordance with the code of practice and standard operating procedures. Traps should be cleared and deactivated as soon as possible after dawn to avoid excess suffering and capture of non-target species.

Consider a control program that tackles all your pest animal issues as the reduction in one species may lead to an increase in another. Pest animal control is also a part of controlling your weeds as they often create opportunity for weed establishment or act as a vector for weeds. It may be useful to consult the Molonglo Catchment Group's weed information pack to identify the weeds that pest animals are bringing onto your land.

What YOU can do

The Molonglo Catchment Group is always interested to hear from you regarding any pest animal activity in your area. If possible, record the GPS coordinates of the location of a sighting. If this is not possible, a description of the location will suffice.

Your help will enable us to build up a picture of the distribution of this pest species in our catchment.

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RABBITS



Description

Rabbits are commonly observed animals that use open ground. They are especially active in the late afternoon to early morning, but less so if it is raining or windy. However, they can be seen any time of the day if they are undisturbed and in high numbers

They are herbivorous, eating a wide range of plants including crops, roots, pastures and young trees, the latter making them a particular nuisance for revegetation projects. Their presence can be identified from heavily grazed areas (rabbit lawns), tracks, droppings, scrapes, burrows, warrens and damage to seedlings. Their small round pelleted droppings are often deposited at dung sites which can be recognised as small mounds or elevated areas used to mark territory. The sites have a fibrous texture and smell of grasses or herbs.

Rabbits prefer short-grassed areas, especially grazing land, with adjacent shelter such as logs, warrens, bushes including blackberries. Generally they move within 200 metres of their warren and are territorial during breeding, after which the young disperse to less densely populated or vacant warrens.

Female rabbits, or does, will breed from three to four months old, gestate for 28 to 30 days, will mate again within hours of giving birth and can have up to eight litters a year of up to eight kittens. Hence one doe can produce over 100 rabbits a year!

A fox preying on rabbits is an example of how the abundance of one pest species can benefit another, with the overall result being a decline in biodiversity. In areas densely populated by rabbits, predation by a range of native and introduced fauna has little effect.

Impacts

The impacts of rabbits on the environment have been so severe that their grazing and competition with native animals has been listed as a key threatening process, which is defined as something that "threatens or may threaten the survival, abundance, or evolutionary development of a native species or ecological community" (Department of the Environment and Energy).

Rabbit grazing will slow or stop natural and planned revegetation, remove food sources for other animals (native and domestic), damage crops and reduce biodiversity and ecosystem resilience. Their grazing habits are known to reduce the survival and recruitment of several threatened flora species and impact on the structure and composition of several endangered ecological communities.

Through their grazing habits, rabbits remove vital groundcover which increases the risks of soil erosion via wind and water. Furthermore, this disturbance of groundcover provides the opportunity for weed recruitment. Rabbits are a particular nuisance to Landcare groups because they will often graze on saplings that have been planted as part of revegetation projects.

The average intake of one rabbit is 100–150 grams of feed per day, however can consume up to 500 grams. This makes the intake of just nine rabbits roughly equivalent to one sheep! Considering how prolifically the species breeds, the extent of the problem becomes evident.



The negative impacts of rabbits comes at a considerable cost to the environment and the Australian economy. These include management and control programs, rehabilitation of degraded sites and increased costs to food production. The following table shows the annual costs of managing rabbits in Australia.

COST OF RABBITS (PEST ANIMAL CONTROL CRC, 2004)

Cost component	Control	Loss
Sheep production	–	\$35.40 million
Cattle production	–	\$34.39 million
Cropping industries	–	\$18.33 million
Management	\$20 million	–
Research	\$5 million	–
Total	\$25 million	\$88.11 million

Distribution

Rabbits occur throughout most of Australia and are found in large numbers in the majority of New South Wales. The Molonglo catchment is no exception with extensive populations present, although less so in higher timbered areas.

Case study

The extent of the problem for environmental groups is typified by the struggle of the Friends of Mount Majura Parkcare Group against an extensive rabbit population. In a concerted effort to revegetate and assist the natural regeneration of Mount Majura, a nature reserve on the fringe of north-east Canberra, the group has undertaken a number of regeneration projects. Some have turned out to be disappointingly futile due to the destructive appetite of local populations. The group convener said "the impact of rabbits on the native groundcover of Mount Majura has been immense. At present we are fighting a losing battle on the weeds and erosion since we are unable to re-establish grasses due to the sheer extent of the rabbit population. The rabbits prevent the recruitment of many palatable native trees and shrub species such as Drooping she-oak. They find a way through our tree guards to eat our plantings and their burrowing creates a haven for weeds. Rabbits are truly a menace".



What can be done?

There are a number of options for rabbit control on your property. A good place to start is to contact the South East Local Land Services or NSW National Parks and Wildlife Service. These agencies can provide you with advice and assistance on control measures, including your legal obligations and any ethical issues. It is important to undertake pest animal control in a humane manner, minimising pain and suffering to the animals involved. Additionally, when planning a control strategy, engage your neighbours as their assistance will be essential to any program's success.

In areas where wombat or other mammal burrows are adjacent to rabbit warrens the following techniques may not be appropriate. You should consult your local agency for more information before conducting work. These methods also have the potential to disturb soils, impact vegetation, introduce weeds or cause erosion, hence sowing of native or other grasses over the disturbed area can be appropriate to minimise negative impacts.

Control methods

- **RIPPING.** This process is used to destroy warrens, though its success will vary with local conditions such as soil, weather and obstacles.
- **BLASTING.** This is usually used for the initial knockdown of warrens where ripping is impractical. It requires a special licence for the use, storage and transport of explosives.
- **FUMIGATION.** This is a good technique in more inaccessible areas, such as creeks, fence lines and rocky outcrops or sensitive areas where soil and vegetation disturbance is not appropriate. All burrows must be sealed and it requires a trained operator to apply a static dose of tablet or liquid to the burrow. For use and information on controlled pesticides you must contact your local agency.
- **POISONING.** There are significant legal restrictions that apply to signage while baiting, number of baits supplied, clearance distances between baits, use in small properties and in urban or closely-settled areas. Baits can also impact non-target species. For use and information on controlled pesticides you must contact your local governing authority.

- **LPG IGNITION.** This is usually a follow-up technique or is used in more inaccessible areas for initial knockdown. It requires sealing of all burrows and a specialist operator to conduct the process due to potential risks, including fire. Rabbits die from concussion, hypoxia or suffocation.
- **FLOODING.** This is only applicable when water supply readily available and requires sealing of all burrows after flooding.
- **DISEASE.** This is limited largely to the introduced diseases of myxomatosis and various RHDV (calicivirus) strains, requiring mosquitoes, fleas or similar vectors to transmit. Outbreaks can be used in conjunction with other control methods, particularly to capitalise on a stressed and reduced population. Contact your local agency.
- **SHOOTING.** This is effective in the removal of small numbers of rabbits, especially at night with a spotlight. Under the *Game and Feral Animal Control Act 2002*, a R-licence issued by the Game Council of NSW is required to hunt rabbits on public lands in New South Wales.
- **TRAPPING.** This can be effective in dealing with small numbers of rabbits, but may also impact non-target species. Requires experienced and competent person to be effective and humane. Traps must be cleared and deactivated as soon as possible after dawn to avoid excess suffering and capture of non-target animals.

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More information

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<http://www.dpi.nsw.gov.au/biosecurity/vertebrate-pests>



Description

There are six species of deer in Australia – Fallow, Red, Hog, Chital, Rusa and Sambar and they have been identified as the most important emerging pest animal threat in New South Wales. Most deer are nocturnal or semi-nocturnal, sheltering by day in forests or woodlands and emerging to graze from late afternoon to early morning in native grassland, improved pasture, cropping or other agricultural land. However, it is not uncommon to see deer during the day. Deer feed on a combination of shrubs, understorey and grasses depending on availability and consume a wide variety of native plant species.

Red deer favour undulating grazing country interspersed with numerous watercourses through to steeply wooded hills; while Sambar, Rusa, Chital and Fallow prefer more open forest, woodland and grassland. Hog deer prefer coastal scrub, swampy woodland and river flats. Fallow deer are the most common species in the catchment and occur as solitary males or in herds of 30 or more, dominated by a single female. They are seasonal breeders, most often in April, with females breeding from about 16 months old. The gestation period is eight to nine months with a single offspring produced; twins are known to occur but only rarely. During the breeding season bulls become territorial.

Case study

A local landowner near Kowen Forest is frustrated by the presence of Fallow deer on his property. With the number of deer ranging into the thousands on properties not far from the catchment boundaries, it was just a matter of time before they encroached on local properties, and caused the scale of problems usually only attributed to pest animals such as rabbits. "I can see why deer are being labelled as the next major pest animal to cause destruction in Australia, it's pretty clear that we have a major problem on our hands." In an attempt to rehabilitate a creek running through his property, he has undertaken an extensive weed removal and native revegetation project, however, the deer have eaten the tubestock and destabilised river banks with their hooves, allowing for blackberries, willows and other weeds to re-infest the area.



Impacts

The grazing habits and environmental degradation caused by feral deer are considered so severe that they have been listed as a key threatening process (Department of the Environment and Energy). Deer will graze and browse young plants, disturb soil and damage the bark of trees by rubbing their antlers on tree trunks, particularly in Autumn. Deer activity can impede natural and planned revegetation and often results in the establishment of weeds which occurs when deer browse on young plants and damage groundcover with their hooves. Consequently, the reduction in groundcover can lead to a decline in soil stability, water quality, habitat for ground-dwelling species, foraging animals and reduced biodiversity.

The average daily intake of one deer can be up to the equivalent of five sheep, which impacts heavily on valuable grazing land where they compete with livestock for limited resources. Deer will also damage crops and can be a vector for weeds and diseases.

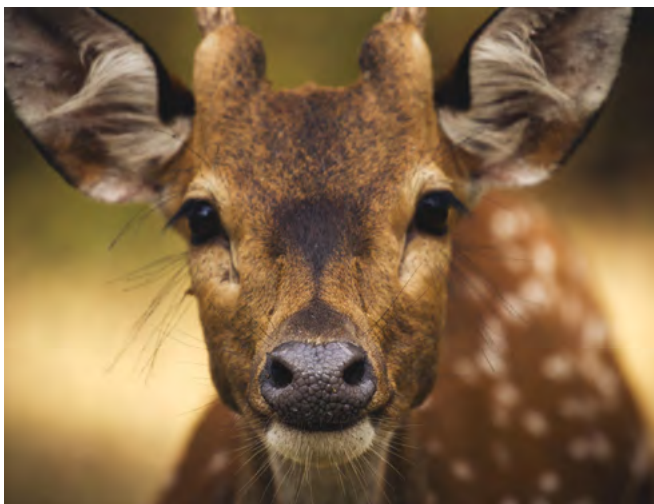


Distribution

Deer are found throughout Australia, except Western Australia and the Northern Territory. All six species occur in New South Wales and the ACT in patchy locations of mainly open forest and grassy woodland.

Fallow are the most common species of deer in the Molonglo catchment. A large population is known to exist in the Bungendore to Tarago area and has been known to disperse into the Tallaganda State Forest.

Occasional sightings of one to two deer have been recorded throughout the catchment, but identifying the density of deer is difficult because they are mobile and transitory. Within the catchment, sightings are most common on the western side, north of Williamsdale and in the Tallaganda State Forest/Molonglo River and most activity occurs in the very south-east corner at the head of the Queanbeyan River. A herd of approximately 300 head has been reported in the Burra area.



What can be done?

There are a number of options for deer control on your property. A good place to start is to contact the South East Local Land Services or NSW National Parks and Wildlife Service. These agencies can provide you with advice and assistance on control measures, including your legal obligations and any ethical issues. It is important to undertake pest animal control in a humane manner, minimising pain and suffering to the animals involved. Additionally, when planning a control strategy, engage your neighbours as their assistance will be essential to any program's success.

Control methods

- **SHOOTING.** This is target specific and effective in more open country for the removal of small numbers, however too much harassment may prompt deer to relocate. Deer are an attractive species to recreational hunters and have 'game status' in New South Wales. There are significant restrictions that apply to when, where and how deer can be hunted. For more information visit <http://www.dpi.nsw.gov.au/hunting>
- **TRAPPING.** This can be successful when the trap is set up in areas of limited water supply and can be used in conjunction with attractants. The long-term effectiveness is uncertain because deer can become wary of traps. It can also be expensive to establish due to the size and standard of the fence required. Traps also need to be checked and cleared regularly.
- **FENCING.** This is expensive and time consuming, requiring regular maintenance to ensure protection. It is usually used as protection against high-value crops or ecosystems.



Poisoning deer is not approved in New South Wales due to its low success rates and the high risk to non-target species.

Consider a control program that tackles all your pest animal issues as the reduction in one species may lead to an increase in another. Pest animal control is also a part of controlling your weeds as they often create opportunity for weed establishment or act as a vector for weeds. It may be useful to consult the Molonglo Catchment Group's weed information pack to identify the weeds that pest animals are bringing onto your land.

What YOU can do

The Molonglo Catchment Group is always interested to hear from you regarding any pest animal activity in your area. If possible, record the GPS coordinates of the location of a sighting. If this is not possible, a description of the location will suffice.

Other than direct sightings of goats some indications of their presence include:

- **Droppings.** These can be easily confused with those of sheep and goats. They are single or clumps of rounded, oval or cylindrical pellets and consist of fairly fine plant material and have a strong grassy odour when fresh. They are found where the deer have been moving and feeding.
- **Tracks.** Similar to sheep but are more elongated and parallel. If you are walking along a dirt road keep an eye out for these tracks, as dirt roads are a great place to spot animal tracks.
- **Foraging signs.** These include soil scuffing, bark rubbing and browsing damage to smaller plants.

Your help will enable us to build up a picture of the distribution of this pest species in our catchment.



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<http://www.dpi.nsw.gov.au/biosecurity/vertebrate-pests>



Description

Goats are most active during the day in herds of varying numbers and structure. They graze and browse on a wide range of plants and are able to forage on vegetation to a height of two metres. While they may be roughly the same size as sheep, a single goat can have an average daily intake equal to three sheep. The presence of goats can be difficult to determine because their tracks and droppings are very similar to sheep.

Goats prefer habitat that is hilly to rocky, or flatter country that has a dense shrub cover with shelter, surface water and an abundance of food. Home ranges for goats vary greatly and are dependent on the availability of food and water but are not rigidly defined or defended.

Females are fertile from six months old and gestate for 150 days with twins common. The mortality rate is high in juveniles to six months; however populations have potential to double every 1.6 years.

Impacts

Competition and habitat degradation by feral goats is listed as a key threatening process, which is defined as something that "threatens or may threaten the survival, abundance or evolutionary development of a native species or ecological community" (Department of the Environment and Energy).

Because goats are such intensive grazers and damaging browsers they can slow or prevent natural and planned revegetation. Their behaviour can spoil crops and remove foraging habitat for native species (e.g. competition for resources by goats has been implicated as a threat to endangered species such as the Brush-tailed rock wallaby) and livestock. Goats also negatively impact groundcover, the presence of which is important to prevent erosion. Male goats paw at the ground which has the same effect on groundcover as excessive grazing. Another significant impact of such disturbance allows invasive weeds to become established.



Goats are also known carriers of parasites and diseases that affect domestic livestock. Examples include footrot and Q-fever, they are also a possible vector for new exotic disease outbreaks.

The negative impacts of goats come at a considerable cost to the environment and the Australian economy. The costs associated with goats include management and control programs, rehabilitation of degraded sites and increased costs to food production. The following table highlights the annual costs of managing goats in Australia.

COST OF GOATS (PEST ANIMAL CONTROL CRC, 2004)

Cost component	Control	Loss
Sheep production	–	\$1.85 million
Cattle production	–	\$2.39 million
Management	\$2.0 million	–
Research	\$3.5 million	\$4.23 million
Total	\$3.5 million	\$4.23 million

Distribution

Goats are present in all parts of Australia, except the northern tropics. They occur throughout most of New South Wales with the largest populations found in the western parts of the state. Sightings of herds of up to 30 goats are common in parts of the Molonglo catchment. These herds are often seen using properties next to national parks and nature reserves to gain access to open farm land and rural residential areas. Goats have been seen south of Googong Reservoir to within the Tinderry Nature Reserve.





Case study

Claudia is used to seeing pest animals on her property, Tinnenburra, which is surrounded by national park on three sides, and has 7 kilometres of Queanbeyan River frontage. Her property is a thoroughfare for the many pest animals that live in the national park, and then travel down to the more open farmland and peri-urban areas. One of the more problematic species she encounters is goats, seeing herds of up to 30 at a time. Claudia said "I've tried to keep the goats out, but despite fencing off the property boundary, they continue to find ways in. They damage fences and have hindered my attempts to establish new pastures on my land". This is just one example of a story that is becoming all too common in the Molonglo catchment.



What can be done?

There are a number of options for goat control on your property. A good place to start is to contact the South East Local Land Services or NSW National Parks and Wildlife Service. These agencies can provide you with advice and assistance on control measures, including your legal obligations and any ethical issues. It is important to undertake pest animal control in a humane manner, minimising pain and suffering to the animals involved. Additionally, when planning a control strategy, engage your neighbours as their assistance will be essential to any program's success.

Control methods

- **MUSTERING.** This coordinated activity for large populations can be very effective. In some cases the costs of coordinating the muster can be offset to some degree by the sale of the animals.
- **SHOOTING.** This is target specific and effective in more open country for the removal of a small number of goats, particularly when they are forced to visit water sources. However too much harassment will prompt goats to relocate. Under the *Game and Feral Animal Control Act 2002* a R-licence issued by the Game Council of NSW is required to hunt goats on public land in New South Wales.
- **TRAPPING.** This can be successful in areas of limited water supply where the trap is set up around the water source, but can be expensive to establish due to the high standard of fence required. Traps need to be checked and cleared regularly.
- **FENCING.** This tends to be expensive and time consuming, requiring regular maintenance to ensure protection. Goats are very inquisitive and will find weaknesses in fences and climb stays or adjacent timber to get over them. Usually used as protection against high-value crops or ecosystems.

What YOU can do

The Molonglo Catchment Group is always interested to hear from you regarding any pest animal activity in your area. If possible, record the GPS coordinates of the location of a sighting. If this is not possible, a description of the location will suffice.

Other than direct sightings of goats some indications of their presence include:

- **Droppings.** These can be easily confused with sheep and deer being single or clumps of rounded, oval or cylindrical pellets and consist of fairly fine plant material and have a strong grassy odour when fresh. They are found where the goats have been moving and feeding.
- **Tracks.** These are similar to sheep but tend to be more splayed at tips. Dirt roads are a great resource when looking for animal tracks, so keep your eyes peeled when walking along them.
- **Groundcover damage.** Evidence is shown by soil scuffing and browsing damage to smaller plants.

Your help will enable us to build up a picture of the distribution of this pest species in our catchment.



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More information

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Description

Pigs are opportunistic omnivores whose diet includes green vegetation, grains, fruit, roots, bulbs, fungi, insects, small mammals and carrion. They tend to be most active in cooler periods of the day and in hot weather they become mostly nocturnal. Damp areas are often favoured because they can provide adequate food, water and relief from extreme heat.

Pigs are able to breed all year, depending on food. Gestation lasts 112–114 days, with the average litter of five to six piglets weaned at two or three months. In favourable conditions two litters in a year are possible, however breeding is very susceptible to food supply. Mortality in the first year of life varies from 10–100 per cent and is caused by abortion, adverse weather, predation, starvation and accidental suffocation by sows.

Impacts

Predation, habitat degradation, competition and disease transmission by wild pigs has been listed as a key threatening process which is defined as something that “threatens or may threaten the survival, abundance, or evolutionary development of a native species or ecological community” (Department of the Environment and Energy).

Pigs can cause very significant soil disturbance as they root around for food or wallow in wet areas, both of which contribute to soil erosion and reduced water quality. They compete with native animals for plants, insects, reptiles and ground-nesting birds. Pigs will also eat and damage commercial crops damaging fences in the process and have been known to attack newborn lambs. They are also predators of native birds, reptile eggs, frogs and soil invertebrates.



The damage caused to native habitats by pigs can also provide an opportunity for weeds to become established, which can then alter the composition of native vegetation communities. Pigs are also a vector for disease dispersal (leptospirosis, porcine brucellosis and tuberculosis) and possibly root rot fungus causing vegetation dieback. Pig activity can have a significant impact on biodiversity and ecosystem resilience as they foul and damage waterholes.

The negative impact of pigs comes at a considerable cost to the environment and the Australian economy. This includes management and control programs, rehabilitation of degraded sites and increased costs to food production. The following table shows the annual costs of managing pigs in Australia.

COST OF PIGS (PEST ANIMAL CONTROL CRC, 2004)

Cost component	Control	Loss
Agricultural production	–	\$100 million
Management	\$5.0 million	–
Research	\$1.5 million	–
Total	\$6.5 million	\$100 million

Distribution

Pigs occur throughout Australia with estimates on populations varying from 3.5 to 23.5 million. Pigs are common throughout New South Wales especially in the west. Although they are mobile their distribution in the Molonglo catchment is considered patchy and seasonal. They favour timbered areas with access to water, with fewer numbers reported in cleared country. Sightings of pigs occur most often in the south-eastern side of the catchment, however, they have been reported in other areas.

Case study

A long-time local from Burra Creek area has been struggling with wild pigs on his property for some years now. In their search for food, the pigs will often root around in the soil, "sometimes it's so bad it looks like a rotary hoe has been through the place, they create the perfect conditions for weeds to invade". He believes most of the pigs are coming down through the Tinderrys: "They tend to stay up in higher country during the day and hang about water, but during the night they make their way to the lower areas and cause unbelievable damage". In a concerted effort to control pig numbers on his property, he has set up a number of large cage traps, luring the pigs with wheat. He said "most people aren't aware of their presence because they are active at night which means they don't directly see them, but I can assure you they are there. I have caught as many as 13 pigs in a single trap on occasions ranging from young ones through to a 140 kilogram boar".



What can be done?

There are a number of options for pig control on your property. A good place to start is to contact the South East Local Land Services or NSW National Parks and Wildlife Service. These agencies can provide you with advice and assistance on control measures, including your legal obligations and any ethical issues. It is important to undertake pest animal control in a humane manner, minimising pain and suffering to the animals involved. Additionally, when planning a control strategy, engage your neighbours as their assistance will be essential to any program's success.

Control methods

- **POISONING.** This is effective when other food sources are limited. There are significant legal restrictions that apply to signage while baiting, number of baits supplied, clearance distances between baits, use in small properties and in urban or closely-settled areas. For use and information on controlled pesticides you must contact your local governing authority.
- **TRAPPING.** This can be effective in follow-up work or maintenance programs to prevent population build up. Traps require free feeding, regular checking and should be easily relocated. There seems to be little effect on native animals.
- **SHOOTING.** This is target specific, opportunistic and can be done with dogs, however humane treatment of both dog and pig is essential. This should not be conducted during any other control program as it may cause population disturbance and dispersal. Under the *Game and Feral Animal Control Act 2002*, a R-licence issued by the Game Council of NSW is required to hunt pigs on public lands in New South Wales.
- **FENCING.** This is expensive and time consuming, requiring regular maintenance to ensure protection. It is usually used as protection against high-value crops or ecosystems. Electric fencing if constructed and maintained can be very effective.

Consider a control program that tackles all your pest animal issues as the reduction in one species may lead to an increase in another. Pest animal control is also a part of controlling your weeds as they often create opportunity for weed establishment or act as a vector for weeds. It may be useful to consult the Molonglo Catchment Group's weed information pack to identify the weeds that pest animals are bringing onto your land.

What YOU can do

The Molonglo Catchment Group is always interested to hear from you regarding any pest animal activity in your area. If possible, record the GPS coordinates of the location of a sighting. If this is not possible, a description of the location will suffice.

Raise awareness by identifying pigs in your area from sightings, spotlight counts, calls, tracks (picture) and faeces. Some of the signs to look out for include:

- **Foraging.** These are areas of disturbed ground where pigs have been rooting for larvae, insects and roots. Dust or mud wallows may also be formed.
- **Droppings.** These dung sites are typically found where the pigs have been eating. Dung is typically cylindrical, brown and made up of individual round cakes when the diet is solely plant material. The smell can range from peaty to a strong acrid odour.
- **Tracks.** These are similar to deer, sheep and goat.
- **Trails.** Rubbing or tusking of trees and logs on trails is common.

Your help will enable us to build up a picture of the distribution of this pest species in our catchment.



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