



Chartered
Institute of
Environmental
Health



Urban foxes: Guidelines on their management

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Introduction

In the opinion of many, urban foxes have become a significant pest problem in cities and towns in the UK. There have been a number of stories in the media about attacks on children and pets and it is inevitable that because of this media interest, further stories will appear in the future.

The way we live nowadays provides the urban fox with a supply of food readily available in rubbish bins and other poorly managed disposal facilities. Their populations have recently increased in some urban areas.

Their control is a sensitive issue because many are fed by local residents and there are a number of organisations that see their presence in urban areas not as invasive but as a welcome addition to urban wildlife.

It has been decided to produce guidelines based on sound science and practical recommendations for acceptable methods of control. It is also necessary to inform residents of the consequences of encouraging commensal foxes; for the fox, themselves and other people.

These guidelines have been drawn up by wildlife experts from the Animal Health and Veterinary Laboratories Agency, the Public Health England, Public Health Wales, the National Pest Advisory Panel of the Chartered Institute of Environmental Health and Natural England.

The aim is to provide local authorities, pest control operators, the general public and the media with unbiased information. It is not anticipated that the guidelines will enter into the contentious debate as to whether urban foxes should be considered as invasive pests or welcome additions to urban wildlife.

Instead, the guidelines will provide science based information on which others may make that decision and, if it is decided that control is needed, provide recommendations on the most effective, humane and safe methods of control.

Background

The adaptable nature of the red fox *Vulpes vulpes* has made it a very successful resident of many British towns. Although many people enjoy seeing foxes around their homes or in parkland, foxes can be a nuisance and sometimes cause damage. Foxes are not a protected species as such but they are protected against abuse and ill-treatment.

Biology and behaviour

Foxes eat a wide range of foodstuffs. Their diet includes small mammals, birds (including eggs), reptiles, insects, earthworms, fruit, vegetables and carrion. In urban areas, about a third of their diet is scavenged waste or food deliberately provided by householders. Foxes readily store their food, usually by burying it in the ground. Foxes are predominantly nocturnal but in urban areas the sight of a fox active during the day is not unusual.

Urban fox

Foxes usually shelter and breed below ground in an 'earth' or 'den'. They prefer well-drained soil and sometimes use burrows made by rabbits or badgers. In urban areas, they also live underneath sheds and outbuildings, even under the floorboards of houses.

Urban foxes tend to live in family groups comprising one dog (male), a dominant vixen (female) and subordinate vixens which may be the young of the previous year. The group defends a territory located within a larger home range (foraging area) which may overlap with that of other groups. Territories in urban areas are typically much smaller than in the surrounding countryside.

Foxes breed once a year, with cubs being born during March and April. The average litter size is 4 or 5. The cubs start venturing in the open from late April onwards, and will normally stay with the vixen until the autumn, with some remaining until January. Urban fox cubs usually disperse between 3 and 8 km (2–5 miles) of their birthplace. Foxes born in towns rarely move into rural areas.

Foxes can live for over 8 years, but this is rare; the average life span of foxes in towns is only 18 months. Mortality most commonly results from traffic collisions.

Problems with urban foxes

Domestic animals

Given the opportunity, foxes will kill small domestic pets and livestock such as rabbits, guinea pigs, ducks and chickens. Unlike many predators, foxes have the habit of killing more than they need to eat immediately. They may subsequently return for any uneaten corpses.

Foxes are unlikely to be a danger to adult cats or dogs, although there are occasional reports of foxes fighting with a cat or small dog.

Nuisance

The digging, defaecating, and bin-raiding habits of foxes can cause considerable nuisance and disturbance in urban areas. Gardens can be spoilt as foxes establish an earth, dig for invertebrates, bury food, or help themselves to fruit and vegetables.

Complaints of 'unearthly screams' at night are also common during the mating season between December and February.



Foxes as sources of human disease

The public often express concerns regarding urban foxes as a source of human disease.

Like most mammals, foxes can carry a range of parasites and diseases which theoretically could affect humans. However, there is little published evidence to support the notion that foxes are actually a source of infection in the UK. For the majority of the listed diseases, pet dogs and cats represent a greater risk as potential sources of infection.

The two most important fox-borne zoonoses do not currently occur in the UK.

These are classical rabies (due to genotype 1 rabies virus) and alveolar echinococcosis (*Echinococcus multilocularis*). The significance of urban foxes for human disease would change substantially if either of these infections were introduced into the UK fox population.

Viruses

European Bat lyssavirus 2: EBLV2 is present in the UK bat population and could theoretically be transmitted to foxes. However, experimental evidence showed that foxes inoculated with EBLV-2 did not develop clinical disease. Foxes seem to be able to clear the virus before it reaches the brain and cause a lethal infection. This suggests that the chance of a EBLV2 spill-over from bat to fox is very low.

Bacteria

- **Leptospirosis**: Foxes are susceptible to many serovars of *Leptospira* which may cause a range of signs, the most frequent being acute clinical disease, commonly referred to as Weil's disease in humans. There is a theoretical risk of transmission via fox urine to humans. However, rodents, domestic animals and livestock are more likely sources of human infection.
- ***Salmonella* /*Campylobacter* /*E. coli*** : There is a possible risk of human infection with these food-poisoning organisms via contact with fox faeces. Standard hygiene precautions should be followed.

- **Bovine tuberculosis (TB)**: There is a theoretical risk of foxes acquiring this if they move into recently vacated infected badger setts. Realistically, this is classified as a rural/peri-urban risk, rather than an urban risk.
- Other micro-organisms carried by foxes are probably the same species as otherwise infect humans and may be acquired via direct contact with fox lesions or bites.
- Mouth flora of foxes, such as *Pasteurella* species is presumed to be similar to cats and dogs and may result in bite infections.
- *Rickettsia* spp such as *R. felis* and *R. massiliae* have been reported in fleas and ticks from foxes elsewhere in Europe and therefore may also be associated with UK foxes. These organisms appear to be uncommon causes of disease in humans.
- *Bartonella henselae*: There is a theoretical risk of acquiring cat-scratch disease (of which *Bartonella henselae* is the causative agent) from a fox scratch, however infection is much more likely to be acquired from kittens and cats.

Parasites

- ***Angiostrongylus***: Foxes and other canines are susceptible to *Angiostrongylus vasorum*, known as lungworm. This species is not known to be zoonotic.
- **Cryptosporidiosis**: *Cryptosporidium parvum* has a very broad host range. Human infection causes gastroenteritis. Species-adapted strains appear not to be zoonotic but there is a possible risk of human infection via exposure to fox faeces.
- ***Echinococcus granulosus***: The only areas in the UK where hydatid disease (dog tapeworm) is known to be present are South Powys, Gwent, Western Herefordshire or the Western Isles of Scotland. Foxes could be involved in human disease in these areas if foxes scavenged sheep carcasses, and humans then ingest eggs derived from fox faeces. However, this is unlikely to occur in urban settings.

The risk of catching an infection from a fox in the UK is very low. There may be a health risk if a person comes into direct contact with fox faeces, however this can be reduced with appropriate hygiene

- *Toxocara canis/cati*: Cats and dogs are most important in roundworm epidemiology, and the risk from them is likely to be far more important than that from foxes. Gardens and public areas contaminated by feline and canine (including fox) faeces are the most likely source. Eggs develop to the infective stage in 2-7 weeks and remain viable for up to a year depending on environmental conditions. Toxocara infection in humans can result in blindness.
- *Taenia serialis*: Only dogs and foxes can serve as hosts for *T. serialis*, the canid tapeworm. Humans can become infected after the accidental ingestion of eggs on fomites (any inanimate object capable of transmitting infectious organisms) or in food and water contaminated with dog/fox faeces. However, this parasite has very rarely been found in the UK.
- *Toxoplasma gondii*: Many animals can act as intermediate hosts of the protozoan parasite *T. gondii*, but the life cycle is only completed in cats, which are the definitive host. Human disease is usually acquired via contact with cat faeces and/or ingestion of meat from infected food animals. It is unlikely therefore that foxes will be important in human disease.
- Trichinellosis: The UK is *Trichinella* (a roundworm) free. Disease in humans is acquired by ingestion of meat containing viable larvae, so humans would not acquire infection from infected foxes even if they were present. Infected foxes could however infect scavenging animals.

Ticks

- *Ixodes canisuga*: This tick is associated with foxes and badgers. *I. canisuga* can infest dogs, but there is little evidence that it bites humans.

Sarcoptic mange

- The most commonly observed infection of foxes is sarcoptic mange, which is transmissible to dogs and humans. It is a skin condition caused by a mite, resulting in extensive hair loss and can be fatal for foxes if not treated. Although highly contagious among foxes, there are few confirmed reports of mange being passed to dogs and little evidence to suggest outbreaks amongst domestic pets. Specific types or variants of *Sarcoptes scabiei* exist for humans and animals. The animal variant *Sarcoptes* mites found on foxes may cause a self-limited infestation in humans with temporary itching due to dermatitis, but they do not multiply on the human host.

Fungi

- Dermatophytes (Ringworm): Foxes are as likely as other canines and felines to be affected and so there is a theoretical risk to humans who have direct contact with their skin/fur.

The risk of catching an infection from a fox in the UK is very low. There may be a health risk if a person comes into direct contact with fox faeces, however this can be reduced with appropriate hygiene. Washing hands thoroughly with soap and water is effective in reducing the spread of infections.



Foxes as a source of infectious risks to pets and other animals

Canine distemper virus, canine parvovirus and canine adenoviruses: these viruses pose no threat to human health or, apart from the domestic dog, to livestock.

There is very little concrete evidence to suggest that canine distemper has occurred in UK foxes in recent years. However, with the remaining two viruses there is the possibility that they may, in theory, circulate between foxes and pet dogs.

These diseases are mentioned here because some of the clinical signs exhibited by foxes with these viruses are similar to those seen in foxes with rabies.

Other bacteria carried by foxes are probably similar to those otherwise infecting a wide range of animals, but these may be acquired via direct contact with lesions or bites. Mouth flora, such as *Streptococcus* species and *Pasteurella* species, can cause serious infections in animals following fox bites. These include acute disease with septicaemia, sudden death and jaundice.

Coccidiosis: Parasites of the genus *Isospora* may be a cause of intestinal coccidiosis in foxes. Species of *Isospora* are generally species-specific.

Urban fox management



Dealing with foxes is the non-statutory responsibility of the owner, occupier or manager of the property where the problem occurs. Local Authorities do not have a statutory responsibility to control foxes as they do under the Prevention of Damage by Pests Act 1949 to keep their districts as far as practicable free from rats and mice.

Foxes are now established residents of many urban areas and are likely to remain so. Therefore a realistic expectation of what can be achieved is essential when considering options to deal with a fox problem.

Practicalities of preventing & reducing attraction of sites

The urban environment comprises a diverse range of habitats which provide foxes with the necessary shelter and food to thrive.

Poor food waste management at fast food outlets and restaurants, overgrown back gardens, gaps under sheds and house foundations and broken air vents are all contributory factors to the successful colonisation of urban areas by foxes.

Some people enjoy seeing foxes in their gardens and actively encourage them by providing food and harborages.

By addressing these two core areas, it is possible to lessen the risk of foxes becoming a problem in the first instance.

The following are practical measures which residents can take to address the problem.

- Store rubbish, especially food waste (including composted waste), in fox-proof containers made of materials such as metal

- Ensure that dustbin lids are secure, eg by having a clip-on lid or expanding 'bungie' straps which secure the lid; and avoid leaving rubbish sacks unprotected
- Clear away wind-fallen fruit
- Do not feed foxes, either intentionally or unintentionally, as this can artificially sustain populations
- Always clear away spilt food from under any bird feeder
- Ensure that foxes cannot access food put out for other wildlife or pets
- Clear overgrown areas of the garden, especially where there are brambles
- Ensure that gaps under sheds and house foundations are suitably proofed to prevent ingress.

Human interference will often encourage foxes to leave a site.

- Filling in excavations as soon as they appear can prevent foxes from moving in where they are not wanted. This can be done by light blocking with loose soil. This will help to ensure that no animals become trapped below ground
- Care must be taken to check that the hole is not part of an active badger sett; blocking or interfering with a badger sett without a licence is illegal. Advice on distinguishing badger setts is available from Natural England (see 'Further information')

It should be borne in mind that there is no single solution to managing fox problems. Individual site assessments are essential to ascertain the most appropriate course of action.



Pesticide products

Repellents

These compounds have an unpleasant odour or taste, which makes an area or particular substrate unattractive to foxes. Only compounds that are approved as animal repellents under the Control of Pesticides Regulations 1986 or the Biocidal Product Regulations 2001 may be applied and they must be used in accordance with the instructions on the product label.

Repellents should not be placed down a fox hole, and the use of anything other than an approved product as a repellent e.g. disinfectants, fuels and wood preservatives may be illegal.

Care should be taken to avoid getting repellents on the skin or clothing.

The efficacy of a repellent depends on the determination of a fox to enter the area to be protected, and this will be affected by the availability of alternative food and shelter.

Insecticides

Damage to lawns is sometimes caused by foxes attracted by the presence of invertebrate turf pests such as leatherjackets and chafers.

Removal of these pests using a pesticide approved for the purpose or a biological control product (eg nematode worms) may alleviate the problem; however, the effects on other invertebrates (and those species which feed on them) should be fully considered before doing so.

The costs of preventing this type of damage can sometimes outweigh the benefits; in fact, some gardeners tolerate it as damage is often seasonal, occurring for limited periods of the year.

Reducing Disease Risk from Fouling

It is essential to undertake regular site inspections to remove and dispose of all fox, as well as dog and cat, droppings.

Fox droppings are distinguishable from those of a cat or dog by their musty odour and often twisted shape.

Do not handle droppings with bare hands and ensure that children and adults always wash their hands after spending time in the garden.

Once the droppings have been removed, the area should be decontaminated with an approved disinfectant.

Proofing & Exclusion

Despite the possible long-term benefits that proofing measures can provide, they are generally expensive, require continual maintenance and are often aesthetically unattractive.

A suitable mesh fence needs to be at least 2 m (6 ft 6 in) high, buried to a depth of at least 45 cm (1 ft 6 in) and with a sheet of smooth material at the top of at least 30 cm (1 ft) depth.

The addition of an electric wire will improve the security of this fence. Electric fences can be relatively inexpensive and are operated by a car battery or 12v mains transformer through a fence energiser. Where pets and children are present, the fence can be linked to a timer.



For guidance on the use of electric fences contact Natural England's Wildlife Licensing Unit (see 'Further information').

Provide secure, fox-proof accommodation for vulnerable pets and livestock, especially at night.

Foxes can bite through ordinary chicken wire; welded mesh provides a much stronger alternative.

Foxes climb well, have strong jaws and are powerful diggers. They can be very tenacious, especially when they have had a 'taste' of what is available. Do not underestimate the determination and intelligence of a fox.

Legal Control Measures

Cage trapping

It is legal to place and set a suitably baited cage trap for the purpose of catching foxes. However, section 11 of the Wildlife & Countryside Act 1981 (as amended) prohibits the use of live decoys for the taking or killing of any wild animal.

As there are no restrictions on the design or manufacture of these traps, there are many types available.

One of the major advantages of live capture trapping is that it enables the release of any protected wild animals or domestic pets.

Once captured, the fox becomes a protected animal under the Animal Welfare Act 2006 as it is 'under the control of man'; albeit temporarily.

A decision on how to deal with the fox should have been made prior to setting the trap.

After the fox is trapped

The options available are relocate & release or dispatch.

Relocate and release is not recommended due to the stress imposed on the animal through transportation and relocation into an unfamiliar environment.

Dispatch must be conducted humanely and is best dealt with at the site of capture.

However, there may be situations where this is not possible (e.g. where the site is in full view of the public or others) and movement to an alternative site for dispatch may be necessary.

Dispatch will either be by lethal injection (via a veterinary surgeon) where humaneness considerations and the stress factors that may be involved with the transporting and handling of trapped animals should be taken into account or, use of an appropriate firearm.

Although there is no legal requirement for firearms to be of a minimum specification when it comes to fox control, the correct firearm/ammunition combination should be chosen to ensure that humane dispatch of the fox is achieved.

As such, these operations should be carried out by trained/professional individuals, who are experienced and skilled with using firearms in urban environments.

Dispatching a cage-trapped fox with a head-shot is the normal technique adopted.

Because of the need to place the firearm through the mesh of the cage-trap to achieve accurate shot placement, pistols are usually the firearm of choice.

Ricochet and splash back need to be considered and as such, suitable ammunition needs to be used. The use of non-FAC (firearm certificate) rated air rifles are not suitable due to their low muzzle energy.

Controlled Shooting

The urban environment contains a diverse range of habitats that foxes may utilise; from small back gardens in housing estates to large parks.

The suitability of a particular type of firearm for fox control needs to be assessed on a case-by-case basis.

Shooting will usually be conducted from a vantage point to obtain a suitable backstop (the urban environment being relatively flat), with the fox being shot at a pre-established bait station.

Extreme caution should be exercised when using FAC-rated rifles within urban environments due to the range and risk of ricochet.

It is important that any persons taking part in shooting activities within an urban environment, obtain appropriate training in the use of firearms.

Snaring

This is a legal technique that if deployed correctly, can be undertaken humanely. However, this method should only be used by persons who are trained and skilled in this method of capture.

Section 11 of the Wildlife and Countryside Act 1981 (as amended) makes it an offence to use a self-locking snare and to fail to inspect a set snare at least once every day (without reasonable excuse).

Owing to the risk of catching non-target animals e.g. domestic pets and protected wildlife including badgers, snaring is generally regarded as unsuitable for use in urban environments.



Prohibited Control Measures

Section 11 of WCA 1981 makes it an offence to use any bow or cross-bow to kill or take a fox

The Protection of Animals Act 1911 and the Control of Pesticides Regulations 1986 make it an offence to lay poisonous substances for foxes.

Although the Agriculture Act 1947 permits the gassing of foxes, there is no approved fumigant for this purpose. It is illegal to use gassing compounds against foxes that are approved for use against rabbits, rats and moles.

The Hunting Act 2004 makes it illegal to hunt wild animals with dogs unless the hunting is exempt.

Animal Welfare Act 2006

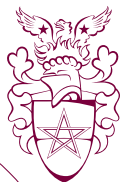
The Act applies to wild animals being held captive or restrained and to certain animals when they are living free in the wild. 'Protected animals' as defined under the Act, include those that are 'under the control of man' and this can apply to foxes caught in live capture cage traps. The person who has undertaken the trapping becomes 'responsible' for that animal.

To cause a protected animal to suffer unnecessarily could result in an offence being committed.

Further information

Further advice and information is available in Technical Information Note TIN072 available from Natural England.





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