# EMERGENCY CARE OF INJURED WILD DEER

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## Background

Tens of thousands of deer are hit by cars (RTAs) in the UK each year. Many die, many immediately run away despite injury, but some are incapacitated and often a vet is called to the animal either by the driver, a passer-by or the police. Less often a deer is bought to a veterinary practice. Occasionally, vets may be asked to attend deer trapped in fencing or incapacitated in other ways.

As more rural practices have become companion-animal only, and more wild deer have been moving into suburban and even urban environments, companion-animal vets unfamiliar with deer have occasionally found themselves having to deal with these species. This document provides relevant information for that situation, including legal and practical issues. The final page is a flowchart for quick reference, indicating the factors to consider.

## Species of deer

There are six species of deer in Britain. The RSPCA estimates that the most common species involved in RTAs are fallow (40%), roe (32%) and muntjac (25%). The remaining 3% of RTAs will be red, sika or Chinese water deer – these species are less common, and their preferred habitats and behaviour make them less likely to meet traffic.

Fallow, roe and red deer are widely distributed throughout the UK, although roe deer are absent from Northern Ireland. Muntjac are common in most of England and Wales, but uncommon in Scotland and Northern Ireland. Sika are most common in Northwest Scotland, and there are scattered populations in England, South Wales and Northern Ireland. Chinese water deer are restricted to South-eastern and South-central England and the southern Midlands, especially Bedfordshire, Cambridgeshire and Norfolk.

The UK populations and distribution of all six species of deer have increased over the last few decades. Fallow, roe, red, muntjac and sika deer are each classified as 'least concern' in conservation status. Chinese water deer are protected in China and classed as 'vulnerable' worldwide but are not under threat in the UK (the UK population is about 10% of the worldwide population). All six species are culled in the UK to control their populations and protect the environment, each with open seasons for hunting.

## Approximate adult body weights (kg)

| | Stags/bucks | Hinds/does |
|---|---|---|
| **Red** | Up to 190 kg | 63-120 kgs |
| **Fallow** | 46-93 kgs | 35-56 kgs |
| **Sika** | 40-70 kgs | 30-45 kgs |
| **Roe** | Up to 25-30 kgs | Up to 25-30 kgs |
| **Chinese water deer** | 11-18 kgs | Up to 11 kgs |
| **Muntjac** | 10-18 kgs | 9-16 kgs |

## The law

All wild deer are protected by various UK Acts (in particular the Deer Act 1991) which, among other things, make it illegal to take them from the wild, or to kill them in the closed season. However, euthanasia to relieve suffering is allowed under the relevant Acts, as is removal from the wild for veterinary and/or rehabilitation care.

Muntjac deer are, in law, an 'invasive alien species' and, if taken into captivity – even to a veterinary surgery for short-term treatment – should not then be released back into the wild. Sika and Chinese water deer are not, in law, 'invasive alien species', but (like muntjac) they are not indigenous, and it is also an offence – under Section 14 of the Wildlife and Countryside Act 1981 – to release them into the wild (they are listed in Section 9 of this Act). As it is not in the interests of a wild deer to be kept in a 'rescue' environment, any wild muntjac, sika or Chinese water deer admitted to practice should be euthanised, even if they appear fit to release.

## General practical, ethical and welfare considerations

Although different vets will have different 'thresholds', the decision of how to manage injured deer tends to gravitate towards euthanasia, because most cases will be RTAs, and the large majority of injured deer that are not trapped, yet are recumbent and/or allow a human to approach and handle them, will be seriously injured, and:

- It is not in the interests of wild deer to be kept in a 'rescue' environment for any length of time, e.g., while being rehabilitated.
- Deer will be highly stressed in a veterinary environment.
- Even for the smaller deer species a typical companion-animal practice is unlikely to have appropriate accommodation.

Rarely, a deer's injuries may be judged as relatively minor, needing either no treatment or just some basic first aid, perhaps in the form of non-steroidal analgesia, and then leaving the deer to go about its life. These cases are typically either deer trapped in some way, usually in fencing, or deer initially concussed after an RTA but obviously improving.

Any deer that allows a human to approach and handle it should not be left where it was found, or released from a practice. They should either be euthanised or bought into a veterinary practice or rehabilitation centre. In practice, most will require euthanasia. However, a minority of injured deer, particularly very juvenile animals, may be deemed suitable for treatment at a practice. Ideally, practices will have already considered whether they have suitable facilities to treat an injured wild deer, and whether they would consider treating any type of injury, and if so what types of injury they would consider treating, before any vets are confronted with a deer. Our opinion is that any deer that requires more than 'first aid' and/or investigation (usually analgesia, IV fluids and general anaesthesia to clean wounds, and radiography or ultrasound to identify and assess injuries) should be euthanised. For instance, a 'simple' long-bone fracture that could be easily repaired in a similar-sized dog could also be surgically repaired in a deer, but the aftercare – 'rest', analgesic drug administration, etc., is often impractical and would certainly be highly stressful for the deer.

Central blindness: Deer that are standing, appear uninjured yet allow a human to approach and handle them may have an acute central blindness that is common in these species post trauma. The full aetiology of this is unknown but appears to be related to shock/trauma, with the eyes themselves unaffected (eyes should be checked for injury), and usually resolves within a few days. This blindness makes injured deer easier to examine and treat initially, but requires appropriate hospital/rehabilitation facilities before release – veterinary practice premises are generally not appropriate for this care (see below).

Accommodation: Deer are stressed by the proximity of people and dogs, and by the usual noises within a veterinary practice. Typical dog kennels, hard, smooth floors, and the proximity of dogs are not suitable even for short-term hospitalisation, and may well lead to any deer that is able to move around, injuring itself further. If a deer is admitted to a practice, arrangements should be in place for it to be moved to more suitable accommodation, e.g., a wildlife rescue centre with suitable facilities, as soon as possible. If no suitable facilities are available either in the practice, or for rehabilitation after treatment, the deer should be euthanised.

Transport: Before considering transportation of any injured deer, careful consideration must be given to what will happen to the deer after transport. In general, we strongly recommend against vets advising members of the public to transport deer in their car – and against vets transporting deer in their car. If deer are to be transported, juveniles and small adults can be wrapped in a blanket and held. If put in a dog crate, they need a deep soft substrate and either hobbling (tying all four legs together at the metacarpus/metatarsus) or sedation. Wildlife rehabilitation centres may have a larger size wire cage ('badger cage') in which juveniles and deer up to the size of small roe can be placed and restrained (with the lid open). Adults, even of smaller species, which may initially be 'stunned' and so appear safely transportable, might recover during a journey, panic, and constitute a danger while driving. Larger deer require a trailer or horsebox for transport.

As most veterinary surgeries do not have appropriate accommodation for deer, unless absolutely necessary, they should be transported to more suitable locations, such as some wildlife rescue centres.

## If an injured wild deer is bought to a practice

Members of the public may turn-up at the practice with an injured deer, but we strongly recommend against advising members of the public to handle and transport deer, unless they are very small.

If members of the public do bring a deer to the practice, as with other found wildlife, we advise that the finder should sign a document clarifying that the practice will be responsible for all decisions regarding how the animal will be treated, whether it will be euthanased, or what will happen to it when it leaves the practice.

## If a practice is called about an injured deer

Take a good history from the caller, including exactly where the deer is (what3words), what it is doing, and any obvious injuries. If the deer is on a road, or the roadside, and could potentially constitute a hazard to traffic, advise the finder to call the police – they can call 101 for that. Members of the public should be advised to watch the animal from a distance (ideally from where the animal cannot see them), but not approach it or try to assist it as that is likely to just distress the animal more

– and with larger deer there is the risk of the animal suddenly jumping up and potentially injuring the person.

If the police are involved, get an 'incident number' – this will usually ensure some payment.

If going out to attend to an injured deer, get good details of the deer's location – what3words is very useful, as injured deer are often not near any obvious landmark. It is common for injured deer to have disappeared off well before the vet arrives, so it is useful if the person calling stays near the deer because they can inform the vet if it has run off before the vet arrives, or be visible to the vet on arrival.

Although vets are required to address animals that are suffering, it does not have to be a vet that initially attends an injured deer. Other organisations, including the RSPCA and other wildlife or welfare organisations, may be able to attend. Some rural practices have informal arrangements with local farmers or gamekeepers they can call to shoot deer that have been injured in their locality, and some wildlife centres have staff trained to use a captive-bolt gun. It is helpful for practices to have a list of contacts, including people who are able to 'dispatch' an injured deer.

In some practices, veterinary nurses may be willing go to injured deer to triage, and transport them to the practice (if they have appropriate transport), although veterinary nurses are not permitted to take controlled drugs out of the practice, so they will be unable to euthanase suffering deer with pentobarbital or Somulose. If sedation or anaesthesia is needed for transport and/or to prevent suffering, that can be administered by an RVN under the direction of a vet, perhaps on the basis of a 'phone video, but without the use of controlled drugs, and a specific dose advised by a vet must be administered (these drugs must not be given 'to effect' by a nurse). Suitable intramuscular sedatives and doses are given below.

### Useful equipment:

- A firearm or humane killer, if available.
- A blanket, towel or pillowcase to cover the head and act as a blindfold.
- Pentobarbital or Somulose (Dechra) for euthanasia.
- Scissors or (quiet) clippers to aid in locating a vein.
- Intramuscular sedative or anaesthetic, e.g., xylazine (Rompun injection, Elanco) or (dex)medetomidine with ketamine or butorphanol or alfaxalone (doses given below).
- Injectable non-steroidal anti-inflammatory (doses given below).
- Intravenous fluids – 1 litre bags of Hartmann's solution and a selection of appropriate catheters, T-connectors and giving sets (spiral is useful).
- A dog crate for small deer / juveniles.
- Cord or rope as a hobble.
- Ophthalmoscope to check the eyes if deer appear otherwise uninjured.

### Health and safety

If attending to injured deer on or by a road, ensure that yourself and others are safe from traffic.

Wild deer have an overwhelming drive to escape from humans, which can lead to unpredictable behaviour if they are partially trapped. Adults of all deer species, even the smaller species, can injure

humans. Larger deer can kick, otherwise the main risk of human injury from deer is from antlers, which are present only on males at certain times of year. However, male muntjac, and both male and female Chinese water deer, have maxillary tusks which can cause nasty injuries, and are much less obvious than antlers.

If a deer is to be admitted to a practice or wildlife centre for treatment, be aware than in areas of the country in which TB is endemic in cattle, wild deer may potentially be infected.

### Initial assessment

If called out to a deer, initially, observe briefly from a distance. As any severely injured deer should be euthanised, in most cases the decision whether to euthanise or treat will be made at this time. This decision determines what equipment you will need when you approach the deer.

### Handling

It is not uncommon for even an obviously severely injured, recumbent deer to run away when a vet attempts to approach it – and usually there is little that can be done in that circumstance. If a deer that is not trapped allows a human to approach and handle it, it is either concussed, blind, and/or severely injured or ill.

For most deer, the best way to handle them, if possible, is to throw a pillowcase, towel or blanket over their head – best done from behind – to blindfold them. Juveniles, and some adults, will become malleable once blindfolded. But, be warned, others may panic!

### Examination

As far as possible, a full systematic examination should be carried out; this may be difficult with large deer. Head examination, including vision assessment and ocular examination, is essential (see 'central blindness' above). Limbs should be examined for soft tissue trauma and evidence of fractures or dislocations. Orthopaedic examination can be difficult and a deer that cannot stand and run away should be considered to be extremely likely to have significant damage somewhere and should be euthanised *in situ* rather than transported for what is likely to be unnecessary diagnostic work up.

### Euthanasia

Deer can be shot in the head with a free bullet in such a way as to destroy the brainstem, if the location and circumstances are safe for that to be done, shot with a captive-bolt gun, or euthanised with pentobarbital solution or Somulose via the jugular, cephalic or saphenous vein, using the same doses as for a similar-weight dog. Because deer have long metacarpal and metatarsal bones, the carpus and tarsus, and cephalic and saphenous veins, are much further up the leg than in dogs and cats. Cephalic and saphenous veins are usually easy to see, and jugular veins are typically visible on 'raising' by pressing on the ventral neck either side of midline. It is sometimes useful to sedate with an intramuscular sedative before euthanasia.

### Disposal of carcases

Deer euthanised using drugs must be cremated – a carcass containing pentobarbital or Somulose must not be left where it could be eaten by animals or by someone mistaking it for 'roadkill'. These carcasses will, therefore, need to be transported, which may be awkward if they are large individuals.

If a deer dies before being treated, or is shot, it can be left where it is for wildlife to utilise, providing it does not constitute any sort of hazard (under the Deer Act 1991 it could be argued that it is illegal to remove it!). However, if it is where people will walk by or near houses, it would be better to move it out of view (not in someone's garden).

### Sedation – i.m. doses (drugs can be mixed in one syringe)

- Xylazine 1-2 mg/kg + ketamine 3-15 mg/kg
- Medetomidine 0.05-0.1 mg/kg + ketamine 1-3 mg/kg.
  In the absence of ketamine (a controlled drug):
- Medetomidine 0.15-0.25 mg/kg + butorphanol 0.5 mg/kg + alphaxalone 0.5 mg/kg.

Dexmedetomidine can be used instead of medetomidine, at half the dose.

Reverse medetomidine with atipamezole at 5x the medetomidine mg/kg dose (i.v. or i.m.), as for dogs.
Reverse xylazine with atipamezole at 0.25-0.5x the xylazine dose (i.v. or i.m.).

If a deer is to be sedated 'in the field', it must be securely restrained before administration, otherwise, there is a risk of the animal running off before the sedative takes effect.

### Analgesia for first aid

- Carprofen 1mg/kg s.c.
- Flunixin 2 mg/kg s.c.
- Ketoprofen 3 mg/kg s.c.
- Meloxicam 0.5 mg/kg s.c.
- Buprenorphine 10-20 ug/kg i.m.
- Methadone 0.5 mg/kg i.m.
- As opioids may cause some sedation, they should not be given within a few hours before release.

### Treatment of hospitalised deer

It is not the purpose of this document to cover the management of hospitalised deer, and such information is available elsewhere, e.g., Varga (2016). However, here are a few important points:

- Any deer injured enough that it is possible to place a catheter should be assumed to be in need of IV fluids – fluids are a necessary part of 'first aid' for almost every injured deer admitted to a practice.
- Ruminants can regurgitate and aspirate ruminal contents when heavily sedated or anaesthetised.
- Any deer that is sedated or anaesthetised should have a thorough investigation, including radiography, because some serious injuries may not be obvious.
- Before releasing any deer into the wild or transferring it to a wildlife rehabilitation centre, ensure the animal can see and that there is no injury to its teeth.

### Deer fawns/kids/calves

Juvenile deer found in the wild, like juvenile wild birds, are generally best left alone. Mothers leave their young often for hours at a time, and will not return while people are close by. A juvenile that appears in distress, on or close to a road, or that is out in the open, especially if wet and cold, may

require intervention. If not obviously injured, it is best taken to a rescue centre that has the facilities to rear fawns – rearing fawns is an intensive task, and many wildlife rescue and rehabilitation centres are not in a position to do so. If obviously injured, it should be taken to a veterinary practice.

Muntjac fawns, sika calves or Chinese water deer fawns taken to a veterinary practice or rescue centre will need to be euthanised, as it is illegal to release them.

Generally, fawns are fed every 4-6 hours. Goats milk (available in most supermarkets) is suitable.

### Release

If an adult deer is to be released from a veterinary practice, rather than transferred to a wildlife rescue centre for rehabilitation, that should ideally be done at dawn or dusk, as close as possible to where it was found, but away from members of the public, traffic and any other hazards, and near suitable 'cover'. Juvenile deer require a carefully monitored return to where they were found within several hours, or 'soft release' at a new site following rearing – in both cases the expertise of a wildlife rehabilitation centre should be used.

As already mentioned, it is illegal to release muntjac, sika or Chinese water deer (or their hybrids), even after a short period in a veterinary practice.

### Record keeping

As for any other animal, notes should be recorded for any wildlife treated, including drug use. Many practices have a 'wildlife' account on their practice management system which can be used for this purpose.

### Useful contacts for advice within IVC

These UK IVC practices or individuals are familiar with treating wild deer, and are happy to be contacted for advice:

- Chipping Norton Veterinary Hospital (NW Oxfordshire) 01608 642547
  Ask for Martin Whitehead, Peter Kettlewell or Nat Wissink Argilaga.
- Great Western Exotics (Swindon) 01793 603800
- Holly House Vets, Exotic Service (Leeds) 0113 3224341
- Manor Vets (Birmingham) 0121 4292829
- David Martin MRCVS, IVC's Group Welfare Advisor david.martin@ivcevidensia.com
- Tess Merry RVN. Hawthorne Lodge Veterinary Practice (Banbury) 01295 259466
  & The Nutkin Ward 07733 220266

### Other useful contacts for advice

Local wildlife rescues – A list of members of the British Wildlife Rehabilitation Council (BWRC) can be found here: www.bwrc.org.uk/rehabilitators/

Large rescues include:

- Before Harper Asprey Wildlife Rescue: https://hawr.co.uk/
- RSPCA East Winch: www.rspca.org.uk/local/east-winch-wildlife-centre
- RSPCA Mallydams Wood: www.rspca.org.uk/local/mallydams-wood
- RSPCA Oak & Furrows Wildlife Rescue Centre: www.rspcaoandf.org.uk/

- RSPCA Stapeley Grange Wildlife Centre: www.rspca.org.uk/local/stapeley-grange-wildlife-centre
- RSPCA West Hatch Wildlife Centre: www.rspca.org.uk/local/west-hatch-wildlife-centre
- Secret World Wildlife Rescue: https://www.secretworld.org 01278 783250
- Tiggywinkles: https://www.sttiggywinkles.org.uk/
- Vale Wildlife Hospital & Rehabilitation Centre: www.valewildlife.org.uk/

## Other useful resources


- The British Deer Society. Injured deer. What to do https://bds.org.uk/information-advice/issues-with-deer/injured-deer/
- RSPCA (2013) Wildlife Rehabilitation protocol: Deer. http://rspca-brighton.org.uk/wp-content/uploads/2022/05/Deer.pdf
- Varga, M. (2016). Deer (chap. 22). In: BSAVA Manual of Wildlife Casualties, 2nd ed. Eds: E. Mullineaux & E. Keeble.
- Wildlife Aid Foundation: https://www.wildlifeaid.org.uk/helping-deer

## Considerations when dealing with injured wild deer