

## Wildlife Triage for the General Practitioner

### **Introduction**

Wildlife casualties are commonly presented to veterinary practices, and many general practitioners feel daunted by the huge diversity of species and conditions which they are expected to treat. This webinar aims to demonstrate how to apply basic principles and commonly used techniques to less familiar species, and some adaptations that may be required for the effective management of wildlife in practice.

A range of birds, mammals, reptiles and amphibians may be presented as injured, sick or orphaned patients. The most common wildlife admissions are birds, including passerines (small garden birds), corvids (members of the crow family), pigeons, waterfowl and birds of prey. The most common wild mammals that vets may be asked to see are hedgehogs and rabbits. Whilst most vets feel confident extrapolating much of their domestic mammal knowledge to treat mammals, bird may present more of a challenge. As such, the focus of this presentation will be on avian techniques, although many of the principles of wildlife medicine apply to all wild animal casualties.

### **Identification**

The veterinary surgeon needs first to identify the species that they have been presented with. This will help to guide husbandry, housing and diet and also direct the clinician towards any particular conditions, zoonoses, release requirements and legislation that may apply to certain species. This can be the first challenge, and having a good book to refer to can be invaluable – especially as even common species can look different at certain times of year. The importance of a good relationship with a local wildlife rehabilitator can not be overstated. They will likely have a wealth of knowledge on different species, and can assist in identification, husbandry, diet and recognising abnormal features in less familiar species, in addition to providing invaluable rehabilitation facilities which the majority of veterinary practices are unable to offer.

### **Husbandry**

It is important that wild animals are housed in secure, quiet and appropriate housing, away from predators and human traffic and with their specific needs met. All birds (except waterfowl) should have a perch to enable them to lift their tail feathers from the bottom of the box or cage. Wire cages should be avoided for birds at all times, as these can damaged their feathers – although metal bar fronted cages such as shoreline kennels or cat carriers are appropriate. Most wild animals require somewhere to hide and a small box can be useful for smaller patients, and a towel hung over the front of the cage for larger patients. Hedgehogs should have shredded paper or bedding to hide in during the day to stop them trying to burrow under the

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Dr. Bev Panto BVetMed BSc (Hons) CertAVP ZooMed MRCVS

substrate. Newspaper is an ideal substrate for most wildlife casualties – it is cheap, readily available and doesn't carry spores or produce dust.

Below are some suggestions for practical short term substitute diets for feeding commonly admitted wild mammals and birds.

## Nutrition in practice - Mammals

Species	Ideal Food	Appropriate short term substitute	Comments
Hedgehog	Mealworms, tinned dog food, commercial hedgehog food eg Spikes	Any dog or cat food (not fish flavoured)	Pancrex or similar pancreatic enzyme aids digestion in juveniles Mealworms good for enrichment if available Drinking water in shallow bowl Crepuscular so eat best in the evening NB Hogs WILL overeat in captivity
Fox	Tinned dog food, chicks, road kill	Any dog food	350-550g/day Juveniles can be reared with canine milk replacer and weaned at 4-6 weeks
Badger	Tinned dog food, chicks	Any dog food	Omnivorous and will take a variety of foods eg weetabix, cheese, cooked chicken, peanut butter
Rabbits	Hay, Grass, Green leafy Veg + small amount commercial rabbit food	Hay, Grass, Green leafy Veg + small amount commercial rabbit food	Juveniles very difficult to hand rear but can use Esbilac, Cimicat or similar, or goats milk + probiotics (or adult caecotrophs)
Small mustelids (Weasels, stoats)	Chicks, mice	Dog or cat food, liquid Hill's a/d for very sick individuals	Can use milk short term in dehydrated individuals,
Small rodents (Mice, Voles, Shrews)	Seeds, nuts, berries, vegetables, fungi (some insects)	Commercial rodent food Crushed dog biscuits	Water in shallow bowl or jam jar lid Don't assume can use a bottle drinker
Bats	Insects, mealworms	Tinned cat food, convalescent diet (eg Hill's a/d)	Offer on a toothpick

## Nutrition in practice - Birds

Species	Ideal Food	Appropriate short term substitute
Small passerines – Seed eaters (Finches, Sparrows)	Bird seed	Bird Seed
Small passerines – Insectivores (Thrushes, Blackbirds, Robins, Starling, Tits)	Bird seed and mealworms	Bird Seed, small amount dog food
Corvids (Crow, Magpie, Jackdaw, Raven, Jay, Rook)	Insectivore mix, chopped chick, puppy food, meal worms	Dog or cat food plus bird seed
Pigeons & Doves	Mixed grain ration + grit	Poultry pellets/mash
Gamebirds eg Partridge, Pheasant)	Berries, shoots, insectivore mix, seeds	Poultry mash or pellets, chick crumb
Birds of Prey – Buzzard, Kestrel, Owls,	Mice, small mammals, rabbits (Buzzards )	Hills a/d or Emerald Carnivore by gavage Little Owl 2ml q 6h, Kestrel, Tawny Owl, Barn Owl 5ml q 6h, Buzzard 15ml q 8h
Birds of Prey – Sparrowhawk, Hobby, Peregrine Falcon	Chicks, pigeons, small birds	Hills a/d by gavage 5-10 ml q 6h
Seabird (Gulls, Gannets, Guillemot)	Mackerel, Herring, Sprats NB Thiamine + Vit. E supplementation	White fish, fishy cat food
Grebes, Divers	Small white fish eg minnows, insectivore mix	White fish
Waders & Herons (Variable diet)	Invertebrates & small fish	White fish, dog food, mealworms, hard boiled egg
Crakes/Rails (Coots, Moorhens)	Mealworms, aquatic vegetation Esp. coots), finely chopped/ minced fish	Mashed dog food, small seeds, greens
Waterfowl (Swans, Ducks)	Corn, Grass, Swan/duck pellets	Brown bread, grass, sweetcorn – in water

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## Legislation

Another reason for promptly identifying wildlife species is to ensure that there is no particular legislation that applies to them with regards to their captivity or release. The Wildlife and Countryside Act 1981 is the primary piece of legislation that protects wildlife in the wild, and there are sections which may apply to the veterinary practitioner. Section 14 of the act prohibits the introduction into the wild of any animal of a kind which is not ordinarily resident in, and is not a regular visitor to, Great Britain in a wild state, or any species of animal listed in Schedule 9. Schedule 9 is a long list of species which mainly includes non native species, such as the Grey squirrel (*Sciurus carolinensis*), Canada Goose (*Branta canadensis*), Ring necked parakeet (*Psittacula krameri*) and Muntjac Deer (*Muntiacus reevesi*), but also includes natives species such as the Barn Owl (*Tyto alba*) and Red Kite (*Milvus milvus*) to ensure that releases (eg from captive breeding programmes) are carried out appropriately. Species on Schedule 9 **may not be released, or allowed to escape without a license**. General licenses exist for the release of **wild** native species such as these, so they can be released without application for a license. There are heavy penalties for offences under the Act.

Section 7 of the Act restricts the possession of several wild birds of prey, listed on Schedule 4, unless they are registered with natural England and ringed. This includes Peregrine falcons (*Falco peregrinus*), Merlins (*Falco columbarius*) and Honey Buzzards (*Pernis apivorus*), but correct identification of birds of prey is essential, and reference the the Act to ensure that captivity is legal. General licenses exist to permit a wildlife rehabilitator to keep a bird on Schedule 4 for up to 15 days for the purposes of rehabilitation and return to the wild, or for a veterinary surgeon to keep a bird for up to 6 weeks under veterinary care, with the intention to ultimately return it to the wild.

There are a number of other acts that are relevant to wildlife care in practice, in particular the Animal Welfare Act 2006, which, whilst it does not apply to wild animals in the wild, as soon as they are in captivity and are 'under the temporary or permanent control of man' need to have their 5 needs addressed. Species specific legislation such as the Protection of Badgers Act 1992, Deer Act 1991, Conservation of Seals Act 1970 and the Wild Mammals (Protection) Act 1996 also exist to protect native wildlife.

## The Practice Team

The involvement of the whole practice team is essential in order to achieve efficient and effective management of wildlife casualties. The reception team should be instructed in what information is important to obtain from the finder – including species, date, name and contact details of finder, location (exact) where found, any history, date found (NB this is not always the same as date of admission), any

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feed/treatment given and whether the finder would like to be updated as to the outcome of treatment. This is a good PR opportunity for practices to demonstrate their compassion and care for animals which are not owned, and do not generate an income for the practice.

The veterinary nursing team are often instrumental, and in many cases take the clinical lead on wildlife casualties – and whilst nursing input is indispensable, the veterinary surgeon must be fully aware and involved with wildlife cases, as with any other species, and ensure that the team is practising within the law – particularly with regards to prescribing of drugs. The nursing team can often provide initial triage, and assist the veterinary team in prioritising their caseload; wildlife and domestic, based on the presenting problems.

### **Triage**

The first priority is to establish a problem list, which requires some knowledge of normal behaviour, ecology, seasonality, anatomy and physiology of the species. This may include assessing whether an animal is in need of veterinary attention at all, or whether it could be suitable for quick release – such as juvenile animals that are perceived to be abandoned or orphaned, but whose parents may actually be off foraging for food. The species that are most commonly unnecessarily picked up as orphans, because of their normal parenting behaviour, are deer fawns, Tawny owl chicks, leverets (young hares) and some garden birds. The public should be encouraged to seek advice from a wildlife rehabilitator or vets if they find animals that they presume to be orphaned, before disturbing them. Some patients may also only need very transient intervention before release eg. those trapped down drains or in buildings, or birds that have stunned themselves by flying into windows. Animals caught in netting should be assessed very carefully before release, and in most cases admitted for observation for a minimum of 5 days as ischaemic injury can result from ligature wounds, which may not initially be apparent.

There are four possible outcomes of the initial decision making process: immediate euthanasia; immediate release; admission for first aid, treatment and further rehabilitation as necessary; and, sadly in some cases, the patients die before any decisions can be made. In order to help decision-making in wild animal patients, it is useful to think about how an animal behaves and survives in the wild, and to consider whether any likely permanent disability or deficit will compromise them in the wild. If an animal is likely to be compromised when compared to its healthy wild counterparts, it is likely to suffer unnecessarily and should be euthanased as early as possible. This can be a difficult decision to make, as it often requires an in depth knowledge of the species, as well as some confidence in determining the level of 'disability' likely to persist. It is useful to consult both wildlife and veterinary colleagues in some of the less clear-cut cases.

### **First Aid**

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Once it is established that a wild animal does require veterinary intervention, then first aid measures must be taken. The three main aspects of first aid to be addressed are the need for fluid therapy, supplemental heat and analgesia. In some cases, nutritional support will be required, but this should not be provided until after initial rehydration. Particularly in birds, feeding whilst dehydrated can cause crop stasis and rapid putrefaction of crop contents as a result of reduced crop motility.

### **Fluid Therapy**

It is assumed that all wild animal casualties are a minimum of 5-10% dehydrated by the time they present for care. The basic principles of fluid therapy can be applied to wildlife casualties.

Oral fluid therapy is the primary route used, especially in birds which can easily be tubed into their crop (for birds that have them including most passerines, pigeons and diurnal raptors), the distal oesophagus for birds without crops (such as owls, waterfowl and gulls), or directly into the proventriculus, the bird's glandular stomach (with a true sphincter and therefore reduced risk of regurgitation) if it is desirable to bypass the crop. The crop can hold up to 50ml/kg bodyweight although usually a maximum of 50% of the full crop capacity is tubed initially, until normal function and gastrointestinal motility has been established. A maximum of 20ml/kg bodyweight is recommended for birds which don't have a crop.

Fluids may also be administered subcutaneously –a safe and easy route to use, but one which should only be used to correct mild or anticipated fluid deficits. This is often used in dyspnoeic birds, or those with crop or gastrointestinal motility problems, where the risk of regurgitation and aspiration is high. In birds, the precrucial fold (a skin fold in the inguinal region) is the administration site of choice, but fluids can also be administered into the interscapular region. In hedgehogs, particularly curled up individuals, subcutaneous fluid administration is the route of choice (and indeed often the only option without resorting to anaesthesia). Isotonic fluids (with or without glucose) may be injected into the large dorsal subcutaneous space. If more rapid circulatory volume expansion is required, intravenous and intraosseous fluids may be administered. Intravenous catheters can be placed in many of the larger mammals and birds. For birds with an easily accessible medial metatarsal vein (i.e. in non feathered/scaled legs), this is a useful venous access point. Alternatives are the basilic (wing) vein, at the ventral aspect of the elbow, or the right jugular. In mammals, cephalic, lateral saphenous, femoral, cranial vena cava and marginal ear veins are all used, depending on species. In smaller mammals, or collapsed patients, where venous access is difficult, intraperitoneal fluid therapy is a simple and useful technique. This is **NOT** appropriate in birds, as they have air sacs and any attempted 'intraperitoneal' injection is likely to enter the air sac system. Intraosseous catheter placement is another technique for administering fluids (and drugs) to collapse or small patients where venous access is difficult. In birds, the pneumatized bones (particularly humerus and femur) should be avoided, and the insertion sites most commonly used are the distal ulna and proximal tibiotarsus. In

mammals, the proximal tibia and proximal femur are the most commonly utilised insertion sites. Many wild animals won't tolerate a drip line, and it is often wise to attach an injection port, and manually bolus fluid, or give drugs as necessary.

## **Analgesia**

Whilst many wild animal casualties are prey species, and therefore very effective at masking pain, it is imperative to assess a patient's requirement for analgesia. Mammalian analgesia can be extrapolated from familiar mammals, with larger wild mammals such as foxes and badgers often having comparable dosing regimes to dogs and cats. Smaller mammals such as hedgehogs and rodents often require increased dose rates and frequencies compared to common domestic pets, and an exotic or wildlife drug formulary should be consulted to ensure safe and effective doses. Non-steroidal anti-inflammatory drugs (NSAIDs) such as meloxicam and carprofen are very useful in wild animal patients. Small birds can usually easily be dosed orally, with larger birds and mammals tolerating injectables well. If multimodal or opioid analgesia is deemed necessary, pure and partial mu agonists such as buprenorphine, morphine and methadone are useful in mammals. Birds, which have a higher number of kappa opioid receptors, are thought to receive greater analgesia from butorphanol. Local anaesthetic blocks can also be utilised, as with other veterinary patients, and the immobilisation of fractures and dressing of wounds are all adjunctive to analgesia to help make the patient more comfortable.

## **Euthanasia**

The reality of wildlife medicine is that many of the patients presented to veterinary practice will be permanently compromised in comparison to their healthy conspecifics and prompt euthanasia is an important aspect of good wildlife management. The method of choice is usually barbiturate euthanasia, but in smaller birds and mammals, physical euthanasia methods such as cervical dislocation are humane, quick and effective.

Pentobarbitone is the most commonly used barbiturate, and can be administered via a number of routes. Administration directly into the circulation is the ideal – via either intravenous injection, or into a venous sinus such as the occipital venous sinus in birds. In a conscious bird, intravenous injection, into the right jugular, medial metatarsal or basilica vein are the most useful techniques, but in smaller birds, intrahepatic injection is also fast and appropriate. Vets commonly inject 'intra-bird' – aiming for an intraperitoneal injection. As stated above, this is most likely to enter the air sacs and drown the bird. This is distressing, painful and prolonged, and as such is **not** an appropriate method of avian euthanasia. If vascular or hepatic access is not possible, or the clinician is not confident in avian anaesthesia, the bird should be anaesthetised (with 5% isoflurane in oxygen) to aid vascular access or the administration via the occipital venous sinus, or cardiac injection (neither of which

should be carried out in the conscious bird). In mammals, venous access sites vary between species, but intravenous euthanasia is the most appropriate method.

Death should always be verified by rigor mortis as some species may enter hibernation states, or torpor and may stop breathing and have very low (almost undetectable) heart rates which can confuse even the most experienced clinician. Post mortem examination can be a very useful tool to not only make a diagnosis, but also to learn for future cases, and if time allows should always be performed in wild animal casualties where the cause of morbidity or mortality is not clear. It is also useful to build a better understanding of normal anatomy of less familiar species.

### **Diagnostic techniques**

Further diagnostics, treatment and surgery are often necessary in wild animal patients. Radiography is a useful technique, particularly for the not flying bird, or for suspected fractures or shot animals. Air sac endoscopy with rigid endoscopes can be an invaluable diagnostic tool in avian patients, particularly to assess any abnormalities identified radiographically, or further investigate a bird which is not progressing as hoped. Other imaging modalities such as ultrasonography, contrast radiography and advanced imaging also have their place in wildlife patients if available. Whilst diagnostic imaging is outwith the scope of this webinar, it is important to recognise the importance of excellent positioning and orthogonal view with all avian radiography, particularly as fractures or displacement of the pectoral girdle (clavicle, coracoid, scapula and head of the humerus) are easily missed on palpation, and can be easily missed or misdiagnosed on rotated or single view radiographs.

### **Summary**

Whilst many of the wildlife species that are presented to practice are less familiar to you than the usual day-to-day domestic patients, the basic principles that are applied to all veterinary patients are wholly applicable. Effective and good wildlife medicine is underpinned by the understanding that a wild animal must be able to thrive in the wild, and that veterinary intervention must be only with the intention of returning an animal to full function. It is important to remember that captivity represents inherently poor welfare for a wild animal – as a result of stress, imperfect diets, proximity to other animals and people, pain and discomfort – and whilst this should be minimised where possible, it is an inevitable consequence of captivity. As such, it is only acceptable if the likelihood of ultimate and timely re-release is high. It is essential to consider the bigger picture – not only whether an animal can be treated, but also the likelihood of release back into the wild, and the welfare implications throughout treatment.