

TRIAGE OF THE WILDLIFE CASUALTY

Wildlife casualties are frequently presented to vets in general practice and should be triaged without delay. In the second article in our wildlife series, presented in association with Wildlife Rehabilitation Ireland (WRI), co-authors Eimear De Souza MVB, WRI volunteer, and Vicki Baldrey BVSc BSc(Hons) DZooMed(Avian) FHEA MRCVS, WRI course instructor and consultant, senior lecturer in exotic species and small mammal medicine and surgery, Beaumont Sainsbury Animal Hospital, Royal Veterinary College, London outline an evidence-based approach to the triage process for wildlife casualties

As referenced in the previous article in this series¹, under the Veterinary Practice Act 2005, veterinary practitioners have a duty of care to provide emergency care or euthanasia to any species of animal to relieve suffering, including out of hours. The law does not require the treatment to be free of charge, though many vets provide treatment either pro bono or on a cost basis. Further legislation and professional guidance relating to wildlife was also discussed²⁻³. Studies suggest a release rate of 35-43 per cent of wildlife cases presented to vets and wildlife hospitals in Ireland and the UK and initial triage should keep this in mind⁴⁻⁶.

Identification

Correct identification is vital to ensure appropriate husbandry, diet, and medications. This is sometimes challenging, e.g., in relation to some avian fledglings and juvenile mammals, e.g., the mustelids. Very young fox cubs are brown, not red! There are several useful websites to aid identification⁷⁻¹¹. Age estimation may be aided by feathering, gape, and dentition. Nestling birds are downy or partially-feathered and gape for food, while fledglings are fully-feathered, can walk/hop, and don't gape¹² (Figure 1).

Clinical examination

Before handling, prepare all potential equipment and medications to avoid repeated capture and restraint. Initial observation should be hands-off, noting any obvious injuries, haemorrhage, demeanour, dyspnoea, and postural deficits, e.g., head tilt, lameness, wing carriage. It is crucial to know what is normal for the species, in particular ecology^{4,13}, seasonality, behaviour, and breeding status. For more fractious species and, notably, to keep handling time and stress to a minimum, an assistant is helpful. Appropriate personal protective equipment should be used. Covering the eyes is useful in many species, to reduce handling stress. Table 1 lists common zoonotic diseases associated with the most commonly presented wildlife casualties. Consideration should be given to relevant staff keeping up to date with tetanus boosters. If handling bats, a current rabies

vaccination is recommended^{14,15}. Bacillus Calmette–Guérin (BCG) vaccination against tuberculosis may be appropriate¹⁵. Updates on the current avian influenza (AI) situation are regularly issued by the National Disease Control Centre and available on the Department of Agriculture, Food and the Marine (DAFM) webpage, www.gov.ie/birdflu. This includes biosecurity practice measures and advice for the public and wildlife centres regarding the risk of AI. Best biosecurity practice remains one of the best protections against AI. At time of writing, the Health Services Executive (HSE) recommends that people in regular contact with pigs, poultry, and waterfowl are vaccinated against seasonal human influenza.

At times of high AI risk, good practice includes:

- having a clear written practice AI protocol;
- arranging to triage wild birds outside the practice;
- knowing high risk species – euthanise, unless it's unlikely to be AI, i.e., has a good body condition score (BCS) and obvious injury:
 - » waterfowl, e.g., swans, ducks, and geese;
 - » birds of prey, particularly peregrines, buzzards, and sparrowhawks;
 - » scavenging birds, such as corvids;
 - » some seabirds, e.g., seagulls.
- during lockdown periods, having no wild birds in practice clinic/hospital – instead, use outbuilding or portacabin;
- careful disinfection with a DAFM approved disinfectant at correct dilution.

Note that AI has also been reported in some mammals, e.g., otters, with vague signs of illness, so this should be considered when dealing with these species.

Birds can be restrained using a towel to help control and/or cover the head. The feet/talons of birds of prey can be controlled as in Figure 2. Take care not to compress the sternum as this may restrict breathing. Goggles should be worn when dealing with seabirds, such as gannets or herons, that may peck with sharp beaks. Small hedgehogs may be examined wearing gardening gloves for protection from spines, but adults may require gaseous anaesthesia to allow full examination. For other mammals, e.g., foxes and badgers, a crush cage may be used to enable intramuscular sedation to facilitate full clinical examination.

Initial examination should assess vital signs, BCS, and any obvious injuries. BCS, in particular, can aid decision-making, as it may point to longer-term or underlying debility – emaciated animals are likely to carry a poor prognosis. Table 2 outlines some key features of initial avian and mammalian clinical examination.

A robust evidence-based triage process minimises possible



Figure 1: Nestlings (left) versus fledgling (right).



Figure 2: Buzzard talon restraint and tailguard.

welfare harms through inappropriate selection of candidates for treatment¹. The outcome of initial triage and clinical examination may be:

- Immediate release –this is rarely appropriate. Most cases benefit from a minimum 24-hour period of observation. Exceptions include uninjured entanglement and misguided 'rescues', e.g., fledglings, fawns, or leverets. In many species, fledglings are fed on the ground prior to flight feathers becoming fully grown and these should be returned to the site where found without delay (preferably not removed at all).
- Short-term veterinary treatment and release.
- Treatment, rehabilitation, and release.
- Immediate euthanasia - an early decision being vital to welfare. If in doubt, reassess frequently and discuss with colleague or licensed rehabilitator. Common indications for immediate euthanasia were discussed in the previous article in this series¹.

Disease	Species Commonly Affected	Common Routes of Zoonotic Infection
Dermatophytosis	Hedgehogs, foxes	Skin contact (especially via hedgehog spines)
Sarcoptic mange	Foxes	Skin contact
Leptospirosis	Rodents, foxes	Urine contamination
Lyme disease	Deer, foxes	Tick bites
Tuberculosis	Badgers, deer	Aerosol, post-mortem examination
European bat lyssavirus	Bats, foxes	Bites, saliva, wound contamination
Avian influenza	Birds	Aerosol
Chlamydiosis (psittacosis)	Pigeons and other birds	Aerosol
Enteric bacteria, e.g., <i>Salmonella</i> , <i>E. coli</i>	Most species	Faecal-oral
Cryptosporidiosis, giardiasis	Most species	Faecal-oral

Table 1: Common zoonoses carried by wildlife.



Figure 3: Assessing dentition of (left to right): Pine Marten, Badger, and Red Squirrel.

Euthanasia techniques for birds include intravenous pentobarbitone into the right jugular (garden birds), medial tarsal (waterfowl, raptors, pigeons), or cutaneous ulna vein. Euthanasia techniques for mammals include intravenous pentobarbitone via the jugular, cephalic or marginal ear vein (rabbits). Under anaesthesia, the cranial vena cava may be accessed or, alternatively, the intracardiac route may be used.

Hospitalisation

A team approach is vital and veterinary nurses play a key role. Accommodation should be:

- dark, quiet, warm, secure (foxes chew, foxes and badgers dig, and hedgehogs climb);
- away from sight, scent, and noise of predators;
- possible to observe and change food/water without undue disturbance;
- easy and quick to clean;
- appropriate perching for avians.

A rolled-up towel in a 'doughnut' shape will support and protect the keel of a recumbent bird and a tail guard should be applied to all raptors to prevent feather damage (Figure 5).

Stabilisation

More species-specific information on common conditions, treatment, drugs, dosages, fluid therapy etc is available free on irishwildlifematters.ie.

- **Oxygen** - if required, via oxygen cage/homemade alternative or mask if reduced mentation¹⁶.
- **Warmth** - should not be underestimated in wildlife, often hypothermic on presentation. Most have higher metabolic rates than domesticated species, with significant calories needed to keep warm, yet they may be in calorie deficit for days, due to their presenting complaint. Warmth is also essential for juveniles. Heat sources include microwave heat pads, hot water bottles, heat pads, and overhead radiant heat bulbs. The patient must be able to move away from direct contact and extra caution is needed regarding chewing risk. If the practice sees a lot of wildlife, an incubator can be invaluable, though caution is urged to avoid excessive temperatures, as the patient cannot move away.
- **Analgesia** - few wildlife cases do not warrant analgesia, with the exception of non-injuries, e.g., orphans. Opioids are used for moderate to severe pain. Buprenorphine or



Figure 4: Bat wing examination.

methadone are suitable for mammalian species; however, most avian species possess mainly kappa receptors⁹ so butorphanol is more suitable for these species. The exception is some raptor species where buprenorphine has been shown to be effective. Non-steroidal anti-inflammatory drugs are also suitable for most species once hydration is corrected. An up-to-date formulary should be consulted for doses.

- **Fluid therapy** - in the absence of other information, an assumption of five to 10 per cent dehydration is reasonable in most cases. Intravenous (IV) fluid administration may not be well-tolerated by larger mammals; however, it can be very useful for larger birds, e.g., waterfowl. If IV access is unsuitable, then subcutaneous (SC) fluids may be used alongside oral fluids. Hyaluronidase can be added to SC fluids at a dose of 1,500IU per litre to increase speed of absorption. Fluids should be warmed to body temperature. The intraosseous route can be an alternative to IV. Compound Sodium Lactate (Hartmann's solution) is generally suitable as injectable fluids for avian and mammalian species (amphibians are more complex). Assuming 10 per cent dehydration, a reasonable approach is to give one to two per cent of body weight in fluids by injectable route initially, then continue with SC or oral fluids to correct ongoing deficits.
- **Nutrition** - Fluids and nutrition can overlap somewhat in wildlife care. Canine/feline convalescent products, e.g., Hill's A/D if diluted with water, can be given to seagulls, birds of prey, insectivores, and carnivorous mammals. Human convalescent products are suitable for fruit or



Figure 5: 'Doughnut' support (left) and tail guard (right).

grain eaters. Lafeber's EmerAid Carnivore/Herbivore/Omnivore products are useful to aid weight gain, before transitioning to a more natural diet. Crop tubing or syringe feeding is required if not self-feeding. Birds should not be crop tubed if they are unable to hold their head up, due to the risk of regurgitation and aspiration.

Beware of ad lib feeding in the initial period, as this can lead to refeeding syndrome in a patient that has not eaten in some time. Hydration should be corrected first, then nutrition provided gradually, aiming to provide 50-80 per cent of normal energy requirement in the first few days. Supplementation of vitamins and minerals in the first 10 days is useful also. Following on, a variety of food choices should be offered and should mimic the natural diet as closely as possible. Consider the time of day, e.g., nocturnal species such as hedgehogs should be fed in early evening. Various online references are available to guide choice of nutrition provided⁷¹⁷.

Further first aid

- Antibiotic choice should be determined by what bacteria is likely in that species, whether dysbiosis is a risk (e.g., lagomorphs must not be given penicillins, cephalosporins, lincosamides, or aminoglycosides), and whether a bacterial infection is likely. Ideally, use broad spectrum antibiotics only when indicated, to minimise antibiotic resistance and promote responsible antibiotic usage.
- Wound management depends on the type and species. For example, bites from conspecifics are common in badgers, particularly in the autumn. These tend to heal well without dressing, while other wounds may need wet-to-dry dressing to encourage granulation. General wound management principles apply, e.g., bite wounds should not be sutured closed, on the assumption of contamination. Degloving injuries, e.g., on the head of pigeons may benefit from surgical advancement flaps to accelerate healing and time in captivity.

Avian Clinical Examination	Mammalian Clinical Examination
▪ Weigh & BCS ▪ Assess keel prominence and pectoral muscle mass ▪ Lameness score & flight test if relevant ▪ Palpate thoracic girdle (clavicles, coracoids, scapulae) & wings/limbs for fractures ▪ Check for wounds (gently blow to part feathers) ▪ Bumblefoot (raptors, waterfowl) ▪ Oral exam (capillaria, trichomonas) ▪ Palpate neck for oesophageal swelling (balls of grass, fishing hooks in swans) ▪ Ocular exam, including pecten oculi (especially raptors)	▪ Weigh & BCS ▪ Mentation, ambulation (considering stress effect) ▪ Assess dentition (Figure 3) - fractured teeth or excessive wear can compromise food acquisition ▪ Skin and coat condition, ectoparasites, wounds ▪ Palpate limbs and pelvis for fractures ▪ Check nails for wear or overgrowth ▪ Hedgehogs - always uncurl to check for missing limbs or myiasis (may require anaesthesia) ▪ Bat wings - assess for tears / fractures, transillumination can aid (Figure 4)

Table 2: Key features of initial avian and mammalian clinical examination.

Summary

Wildlife casualties are commonly presented to vets in general practice and should be triaged without delay. An understanding of basic biology and ecology of the commonly-presented species is necessary for the vet team to provide appropriate emergency care and make welfare-positive triage decisions based on the chances of successful rehabilitation and release. If release is unlikely or the period in captivity will be prolonged, consideration must be given to euthanasia on welfare grounds.

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Wildlife Rehabilitation Ireland holds regular educational webinars on wildlife topics. Free to attend, but booking is required. For more information contact enquiries@wri.ie and to book a place, visit <https://wri.ie/webinar>

Further resources

- WRI - irishwildlifematters.ie provides species specific information on common conditions, treatment, drugs, dosages, fluid therapy etc.
- BSAVA Manual of Wildlife Casualties
- Species specific euthanasia techniques -
- www.avma.org/KB/Policies/Documents/euthanasia.pdf
- Wildpro – <http://www.wildlifeinformation.org>

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