Introduction

Wildlife species are often presented to the private practitioner after being found by members of the general public. These animals may be orphaned, sick or injured. The extent of involvement of the veterinarian and staff depends on different factors such as the degree of expertise with the particular species, available resources, and whether or not a relationship exists with local wildlife rehabilitators. In general, veterinarians should be able to provide initial assessment and stabilization of the wild animal prior to transferring it into more experienced hands. The veterinarian may also choose to treat medical and surgical needs after initial stabilization, then transfer the animal for further care to a licensed wildlife rehabilitator. Lastly, interested veterinarians with proper permits, training and resources may elect to provide full rehabilitation for the animal up to release.

Legal Considerations

Any person working with wildlife, whether it be for emergency care or for longer term rehabilitation, should be aware of the state and Federal laws that govern this practice. All licensed veterinarians are allowed to provide stabilization on an emergency basis but will need permits for anything beyond this care. Federal permits are needed to rehabilitate all migratory birds in the United States, any threatened or endangered species, and any bald or golden eagles.

All Federal permits require the rehabilitator to be in compliance with state requirements. Permits to conduct wildlife rehabilitation vary by state so it is best to contact the appropriate state wildlife agency to determine the necessary specific requirements. For example, in Massachusetts, licensed veterinarians who rehabilitate animals on an emergency basis (six or fewer animals/calendar year) are exempt from rehabilitation permit requirements unless they intend to work with these animals on a more regular basis or advertise and promote their services working with wildlife. In this case, they are exempt from the fees and examination requirements but must still go through the rest of the permitting process, which includes a written application and facilities that meet the Minimum Standards for Wildlife Rehabilitation. These Minimum Standards are guidelines for housing and other rehabilitation practices that have been established by the National Wildlife Rehabilitators Association and the International Wildlife Council, which are professional groups representing wildlife rehabilitators.

Initial Steps

As with any patient, it is helpful to obtain as complete a history as possible from the finder of the wild animal. However, in many instances, the finder will only be able to say that the animal
appeared to be sick or injured and was unable to evade capture. Knowing where the animal was found can sometimes be helpful, e.g. if it was found near a road, this might indicate that any injuries could be related to being hit by a vehicle. Small birds or mammals found in backyards are often the victims of cat or dog attacks; those found near windows may have collided with the glass and sustained injury in this manner.

An initial examination should be completed as soon as possible after presentation. Make sure that all staff are familiar with proper handling and restraint of commonly encountered wildlife species and are using appropriate personal protective equipment during any procedures. If the animal is determined to be suffering from a non-survivable illness or injury, humane euthanasia is warranted. In many instances, it is less stressful for the wild animal and for veterinary staff to sedate and/or anesthetize the patient prior to any euthanasia procedure. If euthanasia is not warranted but the animal is a rabies vector species or there is a possibility of a zoonotic or notifiable disease, veterinarians must make the determination whether or not the case can be handled within the practice facility. If not, transfer the animal as quickly as possible to a permitted facility that has expertise working with these cases.

**Common Presentations**

**Orphans**
Many well-meaning members of the public find young mammals, birds and reptiles and assume that they are orphaned. Most of these young animals are not abandoned by their parents and should be left where they are found. Exceptions should be made if the parents are known to be dead, if the young animal is injured, or if it is an unsafe environment. If the baby has fallen out of the nest, but is otherwise healthy, an artificial nest can be made out of an appropriately sized container and wired up in a tree in the same area as the original nest. If it is necessary to transport the young animal to the rehabilitator or to the clinic, advise the finders to keep it in a warm, dry and quiet environment prior to transport and not to provide food or water. Typical mammal species that are orphaned include squirrels, cottontail rabbits and opossums. Most young animals that are brought into captivity are at least mildly to moderately dehydrated and hypothermic. Warmed Lactated Ringers Solution can be given subcutaneously at approximately 50 ml/kg body weight. Subcutaneous fluids are administered under the loose skin over the back in mammals and in the inguinal fold in birds. Avian skin is very thin and easily lacerated – care must be taken not to tear the skin or go into and out of the skin in very tiny nestling birds. In addition, be cautious so as not to penetrate the body wall in small baby birds when administering subcutaneous fluids. This can result in fluids accumulating in the air sacs, thus instantly drowning the nestling.

Hypothermia can be addressed by warming the infant in an incubator, utilizing a warm water heating pad, or even with hot water bottles. Maintaining an ambient temperature of approximately 80-85°F is generally recommended for most young wildlife. When the babies are properly warmed, they will usually become more active and feel warm to the touch. Only when these individuals are rehydrated and normothermic should any type of feeding be attempted. Because the diet in rehabilitation will differ somewhat from their mother’s milk, baby mammals are gradually weaned onto the full strength formula over a 24-48 hour period, depending on their
hydration status. There are many different formulations for feeding orphaned mammals and the veterinarian should work with local wildlife rehabilitators to transfer these young animals as quickly as possible into their care.

Baby birds usually fall into three major categories: raptors, waterfowl and passerine birds. Raptorial and passerine species produce altricial offspring while waterfowl young are precocial. Again, there are widely different husbandry needs and rehabilitation techniques for these different groups. Working with wildlife rehabilitators familiar with the species in question is oftentimes the best course of action.

Trauma
Many of the wildlife patients brought into clinics or rehabilitation centers suffer from some sort of traumatic injury. The potential for eventual release must always be carefully considered prior to undertaking medical care and rehabilitation. The following are some common traumatic presentations:

- **Head and ocular trauma in birds**
  - Always examine the eyes in birds with head trauma. Because birds rely heavily on their sense of vision, most birds with visual impairment are not releasable.
  - Give 50 ml/kg LRS or 0.9% saline IV, IO or SC.
  - Pain medication
    - 0.5–2 mg/kg IM butorphanol q 4-6 hours
    - 0.3–0.5 mg/kg buprenorphine SC q 8-12 hours
  - Oxygen via facemask or caging.
  - Monitor for progression of neurological signs.

- **Avian fracture repair**
  - Requires knowledge of avian skeletal anatomy/function.
  - Can sometimes heal with external coaptation though joint ankylosis is much more common than in mammals with prolonged bandaging.
  - Lightweight repair using an IM pin tie in to an ESF is commonly used with extremity repair.

- **Turtle shell fractures**
  - Prognosis poorer if open into coelom.
  - Turtles with carapacial fractures that cross midline may sustain spinal trauma – this is sometimes not clinically apparent until several days to a week from presentation
  - Clean fracture site, place temporary bandage.
  - Stabilize turtle with SC fluids, e.g. Plasmalyte®.
  - Pain medication
    - 0.1 mg/kg buprenorphine SC SID
  - Antibiotics
    - Ceftazidime 20 mg/kg SC q 3 days
    - Enrofloxacin 5-10 mg/kg SC SID
  - Many techniques for shell repair
    - Cerclage wire
    - Hook and wire across fracture lines
- Avoid use of fiberglass/epoxy that will interfere with normal scute shedding and healing across fracture lines.

- Fishing line/hook entanglement
  - Fishing line entanglement can lead to soft tissue injuries.
  - Constriction injuries can result in loss of extremity distal to site of entanglement.
  - Lines and hook can be swallowed and require surgical removal.

- Predator attack
  - Puncture wounds, lacerations, abscess formation, air sac rupture in birds
  - Treatment
    - Appropriate wound care
    - Take care in flushing penetrating wounds in birds as these may open into an air sac
    - Amoxicillin/clavulinic acid in birds 125-150 mg/kg PO BID x 5-10 days
    - Trimethoprim– sulfa 30 mg/kg PO BID in small mammals x 7-10 days
    - Meloxicam
      - 1-2 mg/kg PO BID in birds
      - 0.1 – 0.2 mg/kg PO SID in mammals.

Infectious Disease
Wild animals may sometimes be presented for signs associated with various infectious diseases. Veterinary staff should always be aware of the potential for zoonotic disease transmission from wild animals. Important zoonoses include rabies, hantavirus, leptospirosis, tularemia, salmonellosis, Baylisascaris larval migrans, and many others. An awareness of which infectious diseases are present in local wildlife populations is important. Additionally, all personnel should be well acquainted with safe handling and restraint procedures, proper use of personal protective equipment and appropriate disinfection protocols. Some of the more commonly presented infectious diseases in wildlife are:

- Sarcoptic mange in wild mammals
  - Patients can present in varying stages of malnutrition, dehydration, and skin abnormalities
  - Secondary bacterial skin infections are common and should be treated with appropriate antibiotics
  - Selamectin 6 mg/kg topically q 1-2 weeks till resolved
  - Meloxicam 0.1 – 0.2 mg/kg PO SID until inflammation is resolved.

- Mycoplasma conjunctivitis in finches
  - Birds present with swollen, crusty eyes
  - Are often malnourished and/or have been attacked by predators due to visual impairment
  - Tetracycline ophthalmic ointments applied BID x 5 days
  - Tylosin in drinking water x 21 days
  - Birds can still be carriers of this organism after treatment. Release potential is controversial.

- Trichomonas in pigeons, doves and raptors that eat these birds, e.g. accipiters
  - Granulomatous oropharyngeal lesions can impair ability of bird to eat.
  - Can invade into bony structures of the head
Carnidazole 1 tablet (10 mg) PO given once in mild cases or metronidazole given at 25-50 mg/kg PO q12-24 hours x 5-10 days

**Toxicities**
Unfortunately, some wildlife may be admitted with toxicities associated with environmental exposure to agents such as heavy metals, pesticides, and pharmaceuticals. Examples of toxicities seen in wildlife include:

- **Lead toxicity**
  - Found in birds that ingest lead fishing gear or in those that feed on carcasses of animals that have been shot with lead ammunition
  - Clinical signs usually seen with lead levels > 20 mg/dl. Signs include weakness, ataxia, emaciation
  - Treatment with CaEDTA 20-40 mg/kg IM or SC BID x 5 days on, 5 days off then retest to determine if another round is needed. Can also supplement with DMSA 30 mg/kg PO BID x 7 day minimum.

- **Rodenticide toxicity**
  - Usually seen in raptors from secondary ingestion of brodifacoum or other rodenticides in prey species
  - Weakness, pallor, subcutaneous bleeding, anemia
  - Vitamin K1 at 0.2 – 2.2 mg/kg IM, SC q 4-8 hours till stable then SID PO for 4-6 weeks.

**Rehabilitation and Release Considerations**

Once an animal has resolved any medical or surgical issues, the process of rehabilitation continues with the goal of eventual release back to the wild. Veterinarians are strongly advised to work closely with local wildlife rehabilitators with expertise in working with the species in question. There are many available resources with detailed information about wildlife rehabilitation across a wide range of species. The decision to release an animal must be made based on whether or not the animal will survive back in the wild. Factors to consider include recovery from any illness or injury, physical fitness, whether or not the animal is behaviorally appropriate, finding suitable habitat for release, releasing at an appropriate time of the year and into appropriate weather conditions. Careful evaluation of all of these factors will help to optimize the animal’s chances of survival after the release.

**Conclusions**
Veterinarians who are interested in working with wildlife not only provide an invaluable service for the individual animal but also help respond to a demand for care from the general public. Optimal care for orphaned, sick or injured wildlife can be given when veterinarians and wildlife rehabilitators work together. The opportunity to give wildlife another chance at life back in their natural habitat is what makes these efforts extremely rewarding.

**Suggested Reading and Resources**

1. AVMA Wildlife Decision Tree [https://www.avma.org/wildlife](https://www.avma.org/wildlife)

