Bats (Mega Bats & Micro Bats)

Species Information Sheet

Natural History / Behaviour

- Mega bats – flying foxes (or fruit bats)
- Micro bats – insectivorous bats
- Only persons vaccinated against Australian Bat Lyssavirus should handle any bat species
- Must notify the Wildcare Bat Coordinator **immediately** if a person is bitten or scratched (or Queensland Health Department)

Common Species of South-east Queensland

Mega Bats (Fruit Bats)

Black Flying Fox	*Pteropus alecto*	500 g – 700 g
Grey-headed Flying Fox	*Pteropus poliocephalus*	600 g – 800 g
Little Red Flying Fox	*Pteropus scapulatus*	200 g – 500 g

Micro Bats (Insectivorous Bats)

Beccari's Free-tail Bat	*Ozimops lumsdenae*	13g – 19g
Gould's Wattled Bat	*Chalinolobus gouldii*	10g – 18g
Gould's Long-eared Bat	*Nyctophilus gouldii*	7g – 12g
Gould's Wattled Bat	*Chalinolobus gouldii*	10g – 18g
Little Broad-nosed Bat	*Scotorepens greyii*	4g – 8.5g
Eastern Broad-nosed Bat	*Scotorepens orion*	7g - 14g
Large Footed Myotis	*Myotis macropus*	5g - 12g
Eastern Freetail Bat	*Ozimops ridei*	6g – 11g

Note: For a more comprehensive list of Microbat species found in South-east Queensland refer to a mammal field guide such as 'Field Companion to The Mammals of Australia' by Van Dyck et al.

Basic Rescue Equipment and Emergency Housing

Adults / Sub-Adults

Mega Bats

- Plastic or wire carry cage (top or front opening) lined with soft towels or small blankets
- Sheet or towel to cover cage
- Leather gloves for handling
- Thick towel for handling
- Heat source if injured: Hot water bottle, instant heat packs, Snugglesafe, electric heat pad or ICU

Note: Transport mega bats wrapped in a towel in a well-supported transport carrier – do not allow them to hang in a cage during transportation (see photo below left). Transport microbats in tied off pouch.

Micro Bats

- Small cotton pouch with tie
- Polar-fleece wrap and thin leather gloves for handling/capture
- Heat source (as above)

Orphans

Mega Bats

- Face cloth (or similar) folded in half and then rolled up to provide the baby something to cling to
- Small cotton handkerchief–sized cloth to wrap baby in
- Plastic carry cage lined with towels or small blankets
- Heat source: Hot water bottle, instant heat packs, Snugglesafe, electric heat pad or ICU
- Probe thermometer to monitor ambient temperature

Micro Bats

- Small cotton pouch with tie
- Secure and ventilated mesh vivarium.
- Heat source (as above)

OHS Considerations / Zoonoses

Beware of

- Teeth
- Thumb claws
- Feet

Known Zoonotic Diseases

- Australian Bat Lyssavirus - **only vaccinated persons to handle any bat species.**
- Refer to Qld Health Information Sheet attached.

Handling

Adult Mega Bats (Flying Foxes)

Always wear PPE – good quality leather gloves and neoprene arm sleeves.

Use a thick towel to wrap around the bat so it is firmly secured and gently hold its head to prevent being bitten. Secure the head by holding the back of the head/jaw to prevent being bitten.

Photos: Trish Wimberley (left) and CWS (right)

Orphaned Mega Bats (Flying Foxes)

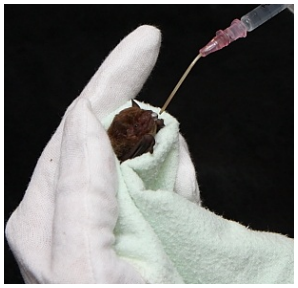
Provide the baby with a rolled-up face cloth to cling to and fold the wings around the wrapped cloth. Use a handkerchief-sized cloth to wrap the baby up (like a burrito!). Do not wrap tightly and be very wary of overheating.

Photo: Karen Scott

Microbats

Always wear PPE – leather rigger-style gloves
Gently restrain using a cloth (polar fleece ideally) with thumb placed along back and back of head or when inspecting the front of the bat, with thumb along front of torso up under chin of bat.

Photos: Rachel Lyons



Assessment Checklist – Bats

Clinical Signs	Healthy / Normal	Sick / Injured
Demeanour	• Bright, alert and looking around • Ears moving to follow sound • Responsive (struggles when handling) • Responsive to stimuli (e.g. noises) • Conscious • Vocalising • Tries to bite and scratch	• Quiet / depressed • Distressed • Reduced response when handled • Not responding to stimuli • Unconscious • Teeth grinding • Screeching • Crying (orphans) *(Indicative of shock, dehydration, injury)*
Mobility / Limbs	• Able to move all limbs and wings • No bruising or swelling • No obvious abnormalities or lack of symmetry	• Abnormalities in movement (e.g. only using one wing, unable to grip with feet) • Head tilted to one side • Paralysis *(trauma)* *(Indicative of trauma related injury)*
Body Condition	• Good body condition • Good muscle tone over chest • Fur in good condition • Non-odorous smell •	• Open wounds • Puncture wounds • Poor body condition *(malnourished)* • Lack of muscle tone • Offensive odour (chronic disease or old wounds) • Missing fur *(trauma)* • Bruising *(trauma)* *(Indicative of trauma, old age or chronic illness/disease)*
Breathing	• Normal (handling may result in increased respiration rate)	• Open-mouthed breathing • Laboured (noticeable effort to breath) • Audible breathing sounds (clicking, ticking, gurgling sounds) • Sneezing or coughing • Shaking head *(possible obstruction or head injury)* *(Indicative of trauma related injury, poisoning)*
Head	• Symmetrical	• Abnormal symmetry • Indentations • Swelling • Crepitation • Lacerations/abrasions *(Indicative of trauma related injury)*
Eyes	• Bright and clear • Shiny • Pupils constricted	• Dull *(pain/dehydration)* • Sunken (*dehydrated*) • Closed (pain/dehydration) • Protrusion *(trauma)* • Swelling *(trauma)* • Clear fluid *(trauma)* • Nystagmus *(head trauma)* • Unequal pupil(s) *(trauma)* • Unreactive pupil(s) *(trauma)* • Purulent discharge *(infection)*
Nose	• Straight • Symmetrical • No discharge or bleeding	• Distorted (*trauma - fracture*) • Blood or other discharge (purulent infection) from nostrils (*trauma*) • Abrasions (*trauma*) • Swelling (*trauma*)

Assessment Checklist – Bats (continued)

Clinical Signs	Healthy / Normal	Sick / Injured
Mouth	• No discharge • Symmetrical • Teeth and tongue undamaged	• Misaligned jaw (*trauma*) • Broken or missing teeth *(trauma)* • Worn teeth *(old age)* • Blood (*trauma*) • Swelling (*trauma*) • Crepitation (*trauma*) • Pale mucous membrane *(shock/dehydration)* • Slow capillary refill time *(shock/dehydration)*
Ears	• No discharge	• Blood • Clear fluid *(Indicative of trauma related injury)*
Fur	• Shiny and in good condition	• Patchy or missing fur *(dog/cat attack)* • Wet patches of fur *(dog/cat attack)* • Fungal infections *(chronic illness)*
Cloaca (vent)	• Clean • Free from discharge	• Blood *(trauma)* • Lacerations *(trauma)* • Swelling *(trauma)* • Pouch – check for joeys *(Indicative of trauma related injury)*
Wings	• Smooth membrane • No holes or tears	• Blood • Swelling • Lack of movement in joints • Holes/tears in membrane • Very wrinkled appearance *(dehydration)* *(Indicative of trauma related injury)*
Parasites	• Flat flies and bat flies are normal	• Overabundance of bat flies *(chronic illness)* • Fly blown/Maggots *(trauma)*

Assessment Parameters

Vital Signs

Heart Rate	100-400 beats per minute (Mega bats) 250-450 beats per minute (Micro bats)
Respiration Rate	Variable
Core Body Temperature	37°C - 39°C (Mega bats) Variable (Micro bats)

Note: Micro Bats can go into torpor (feel cold to touch with limited or slow movement, cannot fly and will typically not eat or drink).

Preferred Ambient Temperature

Mega Bats	
Adults and Sub-Adults	28°C
Orphans – Full Term	28-32°C
Orphans – Premature	32°C
Microbats	
Adults & Fully Furred Juveniles	30-35 °C
Pups	35-39°C (humid heat)

Signs of Stress

- Vocalisation
- Biting
- Aggressive behaviour

Signs of Pain

- Aggressive or excessively introverted behaviour
- Self-mutilation
- Dull/unfocused eyes
- Not able or unwilling to hang
- Reduced level of alertness
- Heavy breathing – particularly chest area breathing (not abdominal)

Signs of Dehydration

- Dry tacky mucous membranes
- Dry papery/flaky wing membranes
- Sunken eyes
- Lack of skin elasticity/ skin tenting
- Lethargy
- Dull eyes

Note: All microbats should be rehydrated subcutaneously as a matter of course upon entry to address potential dehydration, reduce effects on the kidneys associated with dehydration and potential high blood urea levels, and reduce the effects of myopathy. A glucose component is recommended due to the high metabolic rates and stress levels of microbats.

Assessment of Body Condition

Chest (pectoral) – feel for good muscle coverage.
Temporal region (skull) – feel for good coverage – depression could indicate poor body condition.
Fur – uniform thick fur, no missing fur
Abdomen – recessed, concave indicates shorter term malnourishment

Emergency Diet

Do not offer any food or water to an animal suffering from injury (e.g. vehicle hit, dog/cat encounter etc). Injured wildlife must be presented to a veterinarian for treatment before offering food or water. Alternatively, please consult with your relevant Species Coordinator.

Adults

Mega Bats (Flying Foxes)

- **Good quality fruit** (e.g. apple, banana, grapes, rockmelon)
- **Fruit Juice** (diluted) – mango or apricot
- **Fresh water**

Microbats

- Mealworms – whole or viscera (must be hand fed).
- Blended food diet (Refer to Bat Coordinator)
- Water

Note – Microbats enter a state of torpor very regularly and must be fed when they are warm.

Orphans

Mega Bats and Micro Bats

- **Water and Glucodin** (initially for first 2 feeds); then
- **Suitable milk replacer** – Refer to Bat Coordinator
- **Fruit Juice** (Mega Bats only)

Common Injuries, Diseases and Conditions

Adults

- **Road trauma injuries** (head injury, fractured limbs, internal injuries)
- **Dog or cat attack** (puncture wounds, open wounds, evisceration, internal injuries) ***Note***: cat attack injuries often difficult to visualise
- **Entanglement** - caused by barb wire, fruit netting (torn/damaged membrane, mouth damage, fractured limbs)
- **Electrocution** (burnt membranes)

Orphans

- **Dehydration** – (level dependent upon length of time without maternal nutrition)
- **Hypothermia** (particularly premature or very young babies)
- **Hypoglycaemia**
- **Cat attack** (puncture wounds, internal bleeding)
- **Wounds** (from being entangled on barb wire or fruit netting, dog/cat attacks)
- **Fractures** (from dog/cat attacks and road trauma)

Photos above: (1) Wounds caused from electrocution
(2) Entanglement injuries from fruit netting
(3) Injuries caused by barb wire entanglement.

Photos: Australia Zoo Wildlife Hospital

Drug Administration (preferred routes)

Oral	Adults:	Mega Bats: Place fluid in bowl within easy reach (if hanging) or use a 2.5mL syringe Micro Bats: 1mL syringe with 22g cannula attached
	Sub-Adults:	As above
	Orphans:	Mega Bats: Flying fox teat (with a bottle or 10mL syringe) Micro Bats: 1mL syringe with a 24g or 22g cannula attached
Intramuscular	Pectoral muscle over breastbone, dorsal neck or scapula	
Subcutaneous	Loose skin over the back of the neck/shoulders	
Intravenous	Cranial edge of wing membrane (Patagium/Propatagium - the membrane that spans from the shoulder to the wrist).	

Note – Microbats torpor and must only be provided medications via any route when warm. They must be kept in warm confines (preferably humidicrib setups) for the duration of their medication course and for a couple of days after.

Euthanasia (preferred methods)

Euthanasia methods stated to assist veterinary staff.
Wildlife volunteers must not euthanise unless trained to do so or they hold appropriate approvals.

- Injection of sodium pentobarbitone (Lethabarb) after induction with Isoflurane (strongly preferred):
  - Intravenous
  - Intracardiac (must be anaesthetised first)
  - Intraperitoneal (dilute with water 50:50)

- Blunt force trauma to the head (Micro bats only) **– only if trained to do so**

Microbats – Additional information

Additional information on microbats can be obtained by contacting the Australian Microbat Rehabilitation Forum through Facebook. https://www.facebook.com/groups/507677942577505

A comprehensive manual on the rescue and rehabilitation of Australian microbats can be requested via a PDF download.

Suggested Drugs and Dose Rates

This information is provided for **VETERINARY USE ONLY** to assist veterinary staff with the **initial assessment** and **emergency treatment** of sick, injured and orphaned wildlife. Suggested drugs and doses are those commonly used by the wildlife hospitals in South-east Queensland and are for routine treatment only. Recommendations may vary between individual veterinarians. Culture and sensitivity results would indicate the most appropriate antibiotic regime. Most drugs are used off-label.

For more information see 'Current Therapy in Medicine of Australian Mammals' by Vogelnest and Portas (2019).

Note: Microbats, due to their ability to torpor, must be kept at 30-35°C for the duration of their medication or until medication is entirely metabolised.

Anaesthetic

Drug	Composition	Dose Rates
Isoflurane ®	Isoflurane 100%	5% for induction and 2-3% for maintenance with oxygen flow rate of 1-2 litres per minute
Alfaxan CD RTU ®	Alphaxalone	3 – 5 mg/kg (IM)
Pamlin ®	Diazepam	1mg/kg (IM)

Analgesic

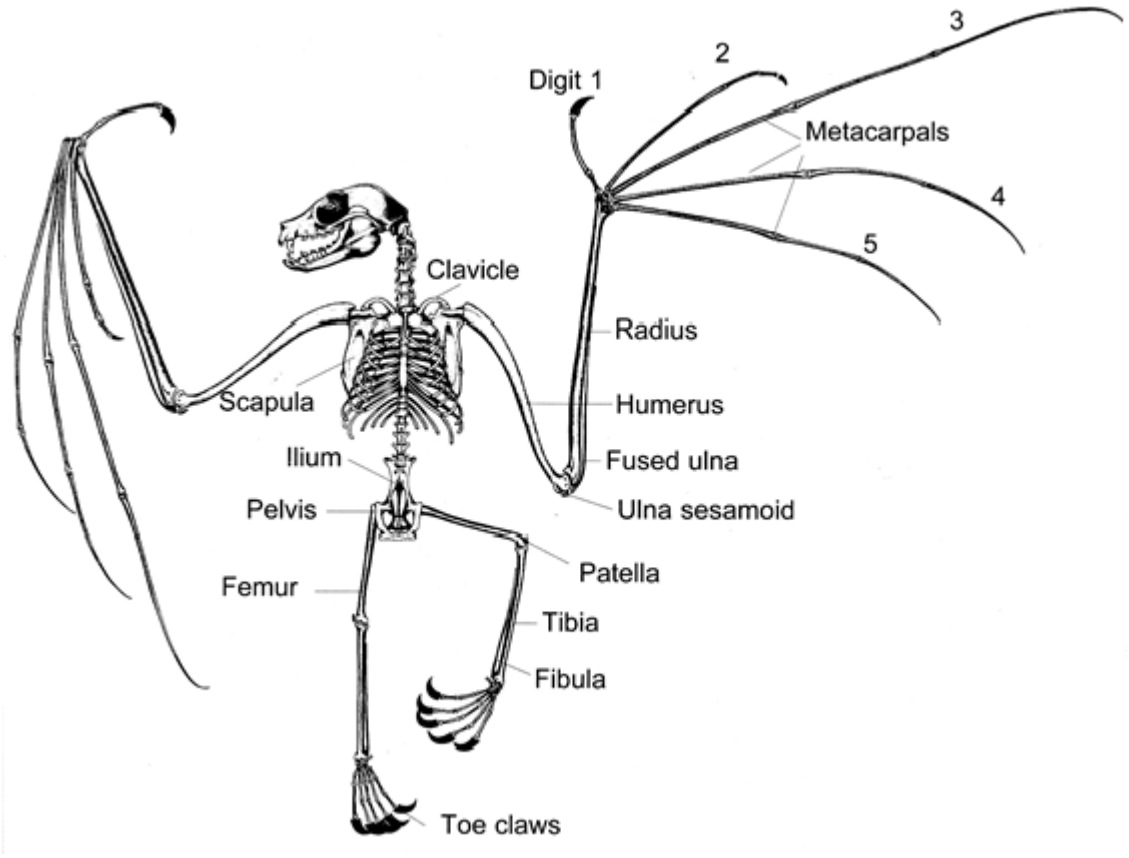
Drug	Composition	Dose Rates
Methone ®	Methadone hydrochloride	0.3 to 0.5 mg/kg - 4 to 6 hourly (SC)
Temgesic ®	Buprenorphine hydrochloride	0.01mg/kg - 8 to 12 hourly (SC)
Metacam ®	Meloxicam	**Day 1** - 0.2mg/kg SID (SC) **Days 2 – 5** - 0.1mg/kg SID (SC)
Painstop ®	Paracetamol 24mg/mL Codeine 1mg/mL	15mg/kg of Paracetamol component 8 hourly (PO)
Infant Panadol Drops ® (1 month – 2 years)	Paracetamol 100mg/mL	15mg/kg - 4-6 hourly (PO)

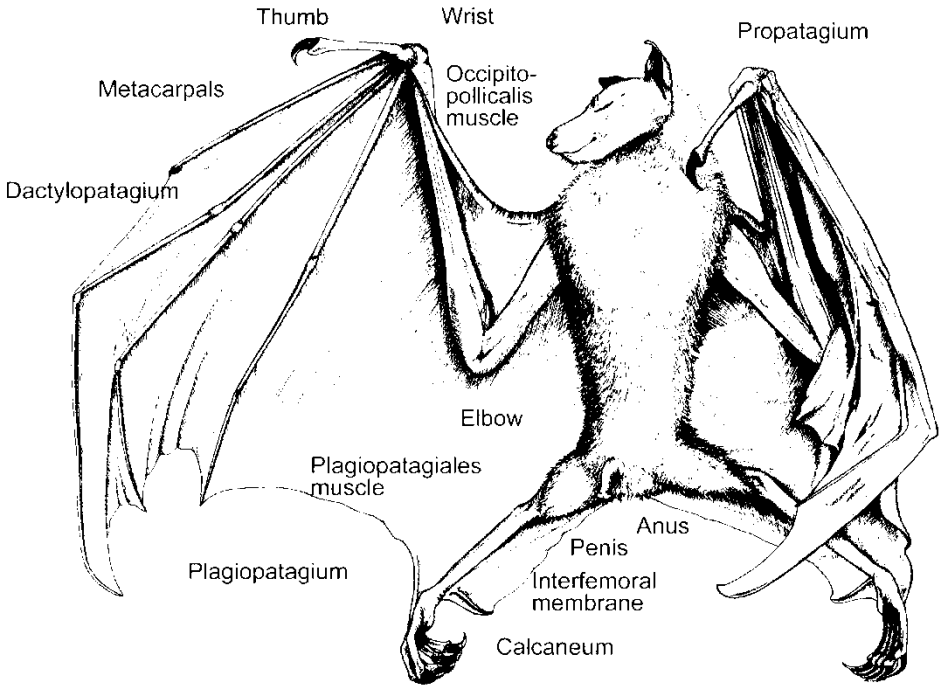
Antibiotics

Drug	Composition	Dose Rates
Clavulox ®	Clavulanic acid 35mg/mL Amoxycillin 140mg/mL	15-20mg/kg combined drugs SID (SC or IM) or BID (PO)
Clindamycin (Antirobe)	Clindamycin	11mg/kg PO BID (bone and anaerobic infection)
Baytril ®	Enrofloxacin	5-10mg/kg SID (PO) or (SC or IM) - must be diluted at least 50:50 with sterile water) For any wound penetrating peritoneal cavity.

Note: Drugs often need to be diluted 10% to be able to be administered to microbats.

Anatomy – Mega bats (Flying Foxes)



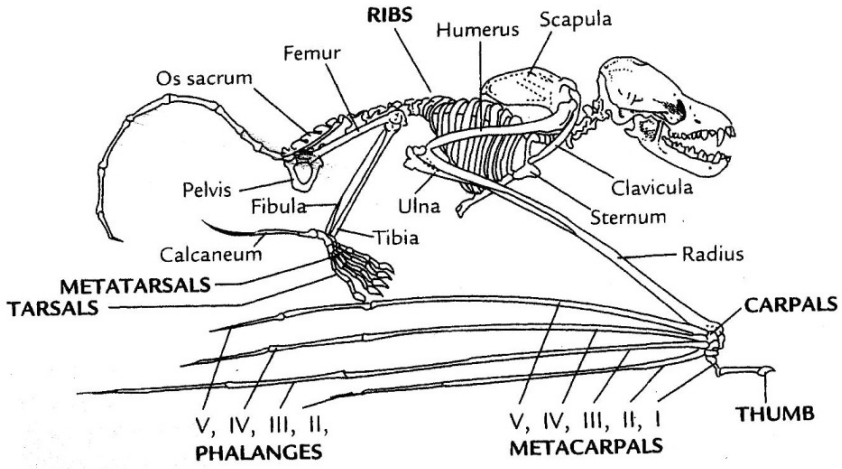


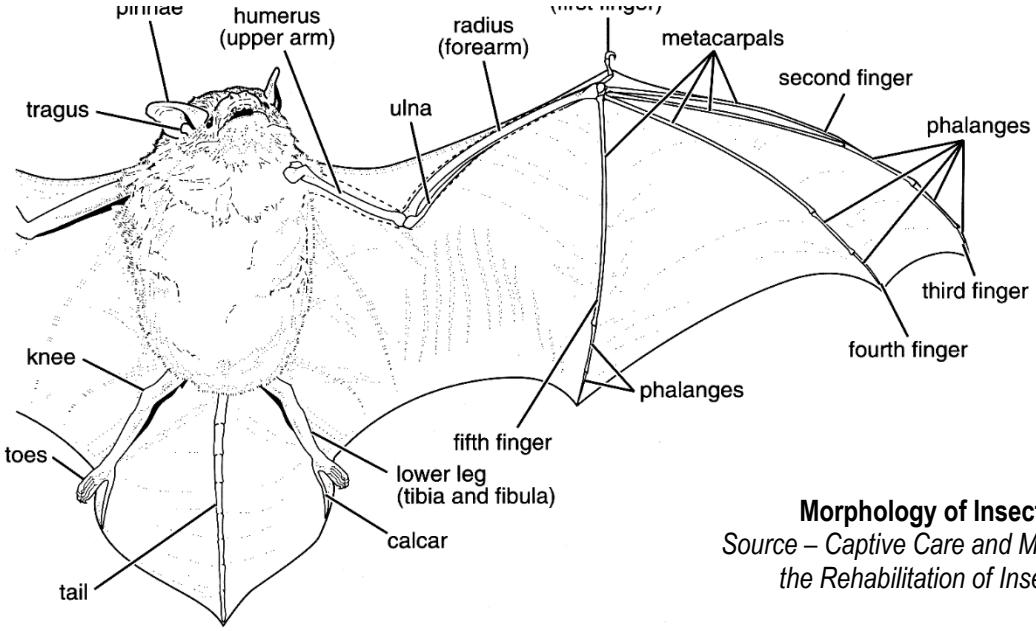
Skeleton and morphology of a flying fox.
Source – Flying Foxes: Fruit and Blossom Bats of Australia

Anatomy – Microbats

Left: Skeleton of a microbat

Source: *The Biology of Bats* (Neuweiler, G)





Morphology of Insectivorous Bat
Source – Captive Care and Medical Reference for the Rehabilitation of Insectivorous Bats