

Natural History / Behaviour

- Echidnas are Monotremes – they lay an egg and carry the egg in a make-shift pouch on their belly until hatching
- Unable to sex without a general anaesthetic and even then, difficult unless experienced
- Nocturnal during warmer months, often seen out through the day during colder months
- Echidnas do not tolerate high temperatures – they prefer lower temperatures (less than 25°C) and can die from heat stress
- All echidnas hit by car (or suspected of being) **must** receive full assessment and radiographs by a wildlife veterinarian
- Echidnas are good escape artists – they can climb very well, are very strong and can break out of plastic tubs and bins easily: don't be fooled by thinking an echidna is too badly injured to try
- Echidnas have a very specialised diet
- Echidnas require a special Rehabilitation Permit to rehabilitate in Queensland
- Orphaned echidnas are high specialised – they must be referred to the Echidna Coordinator immediately

Common Species of South-east Queensland

Short-beaked Echidna

Tachyglossus aculeatus

Up to 7 kg (usually 2-4kg)

Basic Rescue Equipment and Emergency Housing

Adults / Sub-Adults

- Clean plastic rubbish bin with clip-on lid and holes drilled in lid for ventilation; or
- Large plastic smooth-sided tub with ventilated lid (at least 45cm in depth to help prevent escape) *Note: Plastic tub only suitable for very small individuals <1.5kg
- 2-3 towels to line bottom of bin and to cover echidna
- Leather gloves for handling
- Ice brick wrapped in a towel in bottom of enclosure (in hot weather if temperature needs to be brought down to below 25°C) – speak with Echidna Coordinator before offering.

Un-spined Young

- Small plastic smooth-sided tub with ventilated lid
- Small cotton baby blankets to line container
- Inner pouches (liners) x 2 (lined within themselves)
- Indoor/outdoor thermometer to monitor ambient pouch temperature



Photos: Karen Scott

OHS Considerations / Zoonoses

Beware of

- Spines – skin pricks to skin can lead to minor localised infection.
- Claws on both forearms and hind limbs – very strong and can scratch and grip hand tightly when handled.

Known Zoonotic Diseases

- Are natural hosts for ticks (e.g. *Aponomma/ Bothriocroton concolor*, *A. Tachyglossi* and *Ixodes holocyclus*) - need to consider domestic animals that may be at risk. No need to remove ticks upon rescue.
- No other known specific zoonoses

Handling

Adults

Wearing leather gloves, place hands on either side under the body between the forearms and hind legs. It will naturally curl into your grip, lift up and support against your body.

Alternatively, use a towel (folded-over) if gloves not available.

Photos: CWS



Orphans

Young echidnas (un-spined or just-spined) can be gently picked up with one hand by supporting the body and cupping in your hand.

Un-spined young should be kept in a cotton pouch.



Photos: Australia Zoo Wildlife Hospital

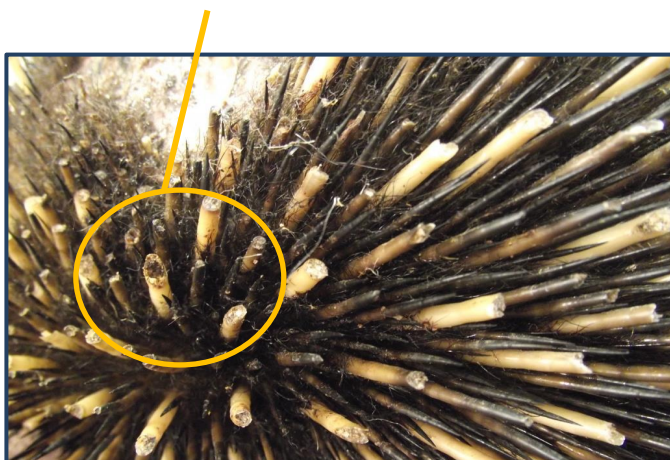
Assessment Checklist – Echidnas

Clinical Signs	Healthy / Normal	Sick / Injured
Demeanour	<ul style="list-style-type: none"> Bright and alert Conscious Responsive to stimuli (e.g. when touched they should 'flinch') Rolls into a tight ball when handled Walks around and investigates surroundings when left alone 	<ul style="list-style-type: none"> Quiet / depressed Distressed Non-responsive (or reduced response to stimuli) – barely flinches when touched Does not roll into a tight ball when handled Reduced mobility or lying flat on abdomen with/without legs splayed. <p><i>(Indicative of shock, dehydration, injury)</i></p>
Mobility / Limbs	<ul style="list-style-type: none"> Can walk well with rolling gait Hind limbs placed caudal to body (hind feet splay backwards and outwards) Forelimbs placed just in cranio-lateral to chest area Attempts to dig into substrate when approached/disturbed 	<ul style="list-style-type: none"> Abnormal movement (e.g. only using front legs, dragging a limb, falling over, swaying). Does not attempt to dig into substrate Reluctant to move (<i>pain</i>) Head tilted to one side (<i>trauma</i>) Paralysis Lying on its back <p><i>(Indicative of trauma)</i></p>
Body Condition and skin	<ul style="list-style-type: none"> Well-rounded body Good spine and fur coverage on back Even, light covering of fur on belly Low burden of ticks 	<ul style="list-style-type: none"> Sides of body concave (<i>underweight</i>) Thin, sparse fur between spines on back Alopecia Lesions on body or belly (<i>disease</i>) Masses present (<i>possible pox virus</i>) Puncture wounds (<i>dog attack</i>)
Spines (Quills)	<ul style="list-style-type: none"> Shiny Spines are intact and evenly distributed Small amount of randomly missing or old broken spines are normal 	<ul style="list-style-type: none"> Blood (<i>trauma</i>) Freshly broken or melted spines (<i>trauma</i>) Evidence of saliva (<i>dog attack</i>) Spines falling out (<i>skin condition</i>)
Breathing	<ul style="list-style-type: none"> Barely discernible (note that handling may result in increased respiration) Small volumes of clear bubbles from nose on expiration normal. 	<ul style="list-style-type: none"> Open-mouthed breathing Laboured (noticeable effort to breath) Audible breathing sounds (clicking, ticking, gurgling sounds) Sneezing or coughing <p><i>(Indicative of trauma related injury)</i></p> <p>Note – breathing difficulties are a sign of fractured beak – this is a veterinary emergency.</p>
Head	<ul style="list-style-type: none"> Symmetrical 	<ul style="list-style-type: none"> Abnormal symmetry Indentations Swelling Crepitation Lacerations/abrasions Blood <p><i>(Indicative of trauma)</i></p>
Snout / Beak	<ul style="list-style-type: none"> Straight No discharge or bleeding Small volumes of clear bubbles from nose on expiration normal 	<ul style="list-style-type: none"> Distorted (<i>trauma - fracture</i>) Blood or other discharge (purulent infection) from nostrils (<i>trauma</i>) Abrasions (<i>trauma</i>) Swelling (<i>trauma</i>)

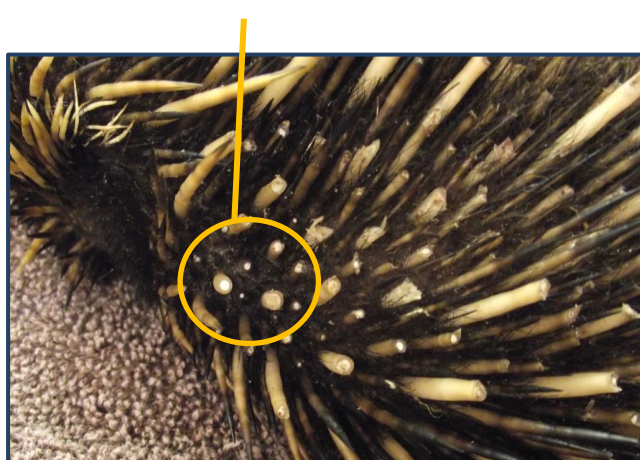
Assessment Checklist – Echidnas (continued)

Clinical Signs	Healthy / Normal	Sick / Injured
Eyes	<ul style="list-style-type: none"> Bright and clear Shiny Hard to see eyes clearly in adult animals. Globes black/dark brown and appear unfocused and slightly cloudy. 	<ul style="list-style-type: none"> Dull (pain/dehydration) Sunken (<i>dehydrated</i>) Closed (<i>pain/dehydration</i>) Protrusion (<i>trauma</i>) Swelling (<i>trauma</i>) Inflamed or thickened eyelids, globes not visible (<i>conjunctivitis</i>) Opaque/grey/blue corneas Clear fluid (<i>trauma</i>) Nystagmus (<i>head trauma</i>) Unequal pupil(s) (<i>trauma</i>) Unreactive pupil(s) (<i>trauma</i>) Purulent discharge (<i>infection</i>)
Mouth	<ul style="list-style-type: none"> No discharge Symmetrical Able to extend tongue (Note they may not do this voluntarily during a clinical assessment) 	<ul style="list-style-type: none"> Mal-aligned jaw (<i>trauma</i>) Blood (<i>trauma</i>) Swelling (<i>trauma</i>) Crepitus (<i>trauma</i>) Bone protrusions (<i>compound fracture/trauma</i>)
Cloaca (vent)	<ul style="list-style-type: none"> Clean Free from discharge Pale pink in colour 	<ul style="list-style-type: none"> Pale (white) in colour (<i>dehydrated, shock, anaemia</i>) Diarrhoea Blood Lacerations Maggots Masses present (<i>possible pox virus</i>)
Parasites	<ul style="list-style-type: none"> Ticks are normal (echidnas are a natural host for certain ticks) 	<ul style="list-style-type: none"> Overabundance of ticks (<i>more than 20-30 engorged ticks</i>) Fly blown / maggots High burden of coccidiosis in faeces
Faeces	<ul style="list-style-type: none"> Dark, crumbly with tiny, shiny particles (insect remains) Normal faeces have a strong smell. 	<ul style="list-style-type: none"> Diarrhoea (<i>infection, parasites</i>) No faecal output (<i>constipation or malnutrition</i>) Very offensive smell (<i>coccidia/bacterial infection</i>)

Older broken quills.
Note the core is dirty.



Freshly broken quills.
Note the core is white and clean.



Assessment Parameters

Vital Signs

Heart Rate	96 (\pm 13) beats per minute
Respiration Rate	11 (\pm 3) breaths per minute
Core Body Temperature	23°C – 32°C

Preferred Ambient Temperature

Adults and Sub-Adults	18°C - 25°C
Orphaned – Un-spined and spined	20°C - 25°C

Note: When housing adults or sub-adults, ensure that temperature is kept between 18°C and 25°C – they can die from heat stress. Place an ice-brick wrapped in a towel at one end of their container.

Signs of Stress

- Increased respiration
- Excessive 'snuffling' and clear nasal discharge
- Constantly trying to escape
- Urination / defecation
- Overly responsive to stimuli

Signs of Pain

- Does not roll into a tight ball when handled
- Trembling
- Laying in lateral recumbency
- Heavy breathing

Signs of Dehydration

- Dull eyes
- Lethargy
- Sunken eyes
- History of incident

Assessment of Body Condition

Good coverage of muscle on forearms, hind limbs and stomach. Body should be nicely rounded.

Some odd broken spines are quite normal however areas where most spines are broken is often indicative of trauma (usually road trauma).

Fur loss and many broken spines can also be indications of disease/dermatitis.

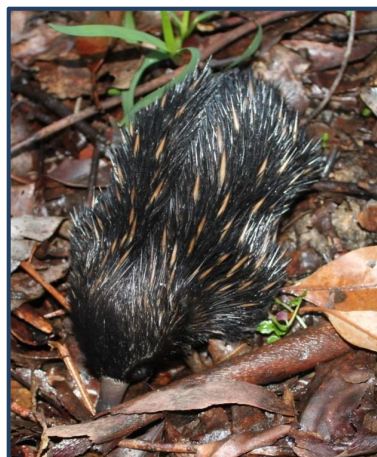
Clear bubbles from nose/beak are normal – blood or blood-tinged bubbles are indicative of trauma. Visual asymmetry and/or swelling of beak can also indicate beak fracture but requires radiographs by veterinarian to properly assess.

Examples of body condition:

Below left: Rounded bodied, good body condition.

Below middle: Juvenile, very emaciated – note the concave sides.

Below right: Adult, very emaciated – note the hollowed appearance.



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

- Fresh Water

Note: Do not feed adult echidnas until they have received a full veterinarian assessment (including radiographs).

Orphans

- Nil

Note: Do not attempt to feed an orphaned echidna. They have very specialised feeding requirements. They must be transferred to an Echidna Coordinator immediately.

Common Injuries, Diseases and Conditions

Adults

- **Road trauma injuries** (fractured nose/beak, fractured limbs, lacerated tongue, internal injuries)
- **Dog attack** (puncture wounds, evisceration, internal injuries)
- **Other Disease** (weak, poor body condition – often indicative of disease such as coccidiosis)
- **Skin Conditions** – dermatitis/fungal conditions (extensive broken spines, dry flaky skin), burns (melted spines and burnt feet)

Orphans

- **Dehydration** – (level dependent upon length of time without maternal nutrition)
- **Wounds** – from road trauma (abrasions/lacerations)
- **Anaemia**



Fractured beaks are the most common injury in echidnas. The radiograph left shows the bilateral and rostral fractures.

Radiographs must be performed on all echidnas that have been the subject of trauma.

Bilateral beak fractures have a poor prognosis and most warrant euthanasia.

Photos: Karen Scott

Drug Administration (preferred routes)

Oral	Adults:	Not suitable
	Orphans:	Feeding orphaned echidnas is a specialised technique – refer to an Echidna Coordinator immediately.
Intramuscular	Forearm muscle, hind limb muscle and parallel to spine.	
Subcutaneous	Loose skin on underbelly.	
Intravenous	Beak sinus, cephalic or femoral vein.	

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 (Lethobarb) after induction with Isoflurane (strongly preferred):
 - Intravenous
 - Intracardiac (must be anaesthetised first)
 - Intraperitoneal (dilute with water 50:50)

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).

Anaesthetic

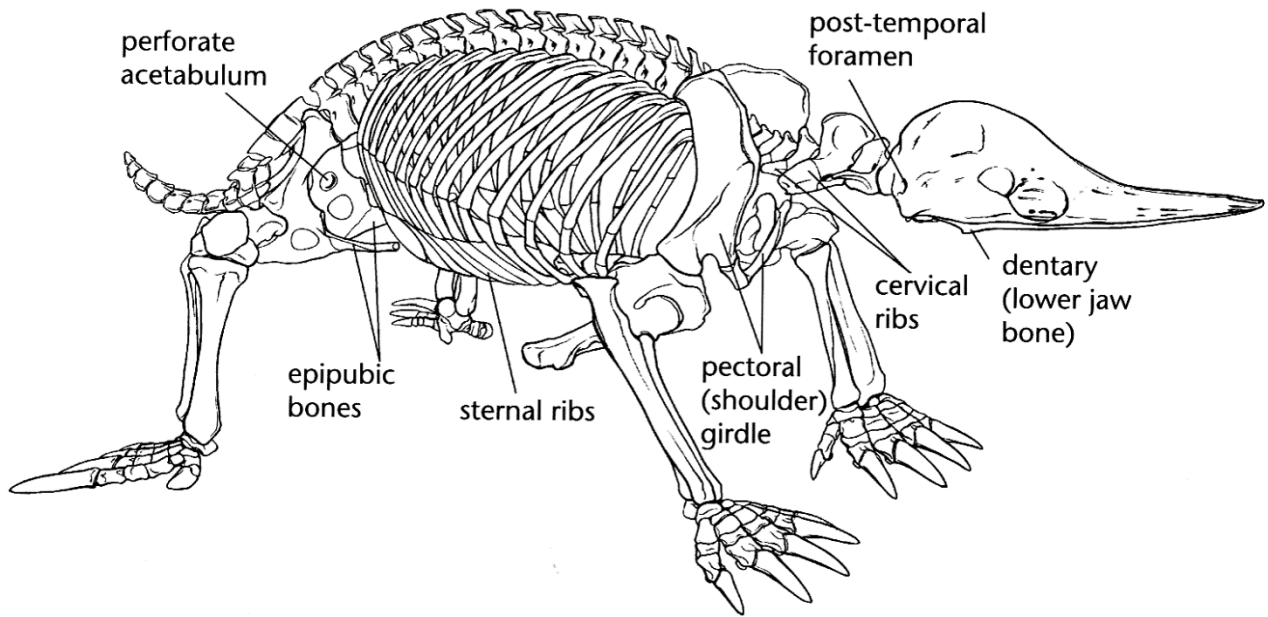
Drug	Composition	Dose Rates
Isoflurane ®	Isoflurane 100%	5% for induction and 2-3% for maintenance with oxygen flow rate of 1-2 litres per minute Mask can be made from a 60mL catheter syringe case.
Alfaxan CD RTU ®	Alphaxalone	3 to 5mg/kg – (IM)
Zoletil	Tiletamine and Zolazepam	5mg/kg (IM)

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)
Rimadyl ®	Carprofen	<u>Day 1</u> - 4mg/kg SID (SC) <u>Days 2 – 5</u> - 2mg/kg SID (SC)
Metacam ®	Meloxicam 5mg/mL	<u>Day 1</u> - 0.2mg/kg SID (SC) <u>Days 2 – 5</u> - 0.1mg/kg SID (SC)

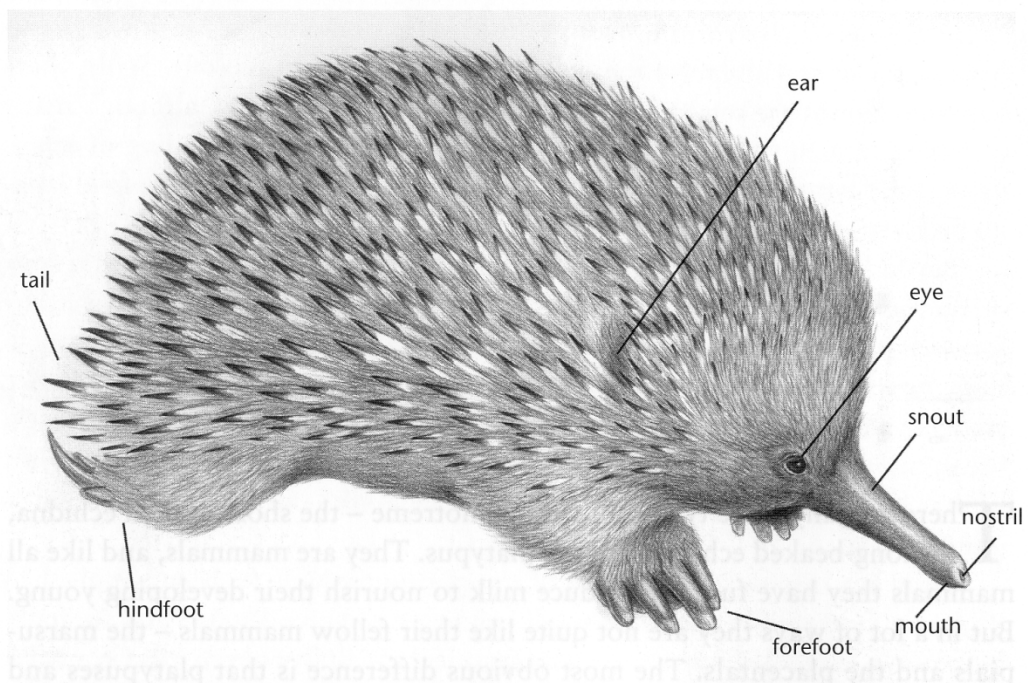
Antibiotics – Wounds

Drug	Composition	Dose Rates
Clavulox® Injectable	Clavulanic acid 35mg/mL Amoxycillin 140mg/mL	12.5 – 15 mg/kg combined drugs SID (SC) or (IM)
Baytril ®	Enrofloxacin 50mg/mL	5 to 10mg/kg SID (IM) or (SC) – diluted with sterile water
Fortum ®	Ceftazidime pentahydrate	20 mg/kg q72hrs (IM) or (SC)



Above - Skeleton of the Echidna

Source – *Echidna: Extraordinary egg-laying mammal* (Augee et al, 2006)



Above – Body structure of the Echidna

Source – *Echidna: Extraordinary egg-laying mammal* (Augee et al, 2006)

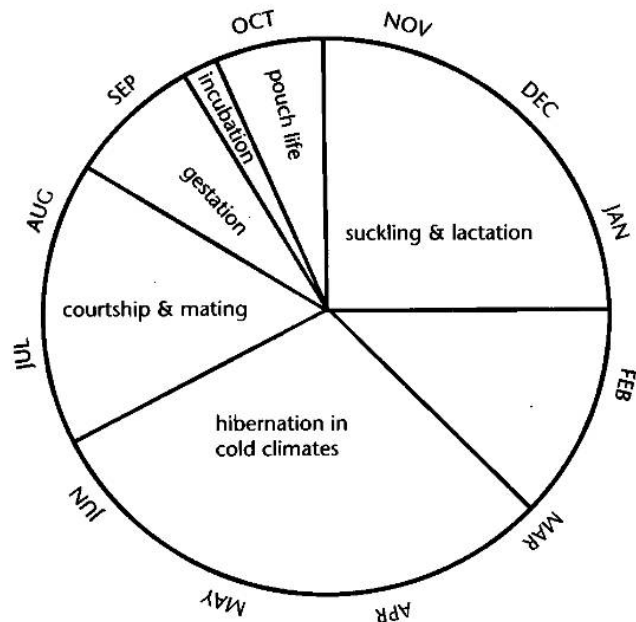
Reproduction

Because the sex of an adult echidna is not easily achieved by inexperienced persons, it is important to understand the reproductive life cycle of the female echidna. During certain times of the year, the female will leave her young in a 'burrow' and only return periodically (every 3 to 10 days) to feed the young. **It is imperative that echidnas are returned as soon as possible to their exact rescue location if they are not injured.** Echidnas should not be relocated without consulting an Echidna Coordinator.

Experienced wildlife veterinarians may use ultrasonography to sex echidnas or may be able to palpate the penis in males once the echidna is anaesthetised.

Diagram Right: Shows the annual cycle of the female echidna with her young.

Source: *Echidna: Extraordinary egg-laying mammal* (Augee et al, 2006)



Age Determination

It is not possible to accurately determine the age of an echidna by its size. This photo shows two orphaned echidnas (both would be in a burrow) that are the same age/stage of development. One weighed 330grams and the other 1050 grams.

The same applies to adult echidnas. Smaller echidnas are not necessarily young echidnas.

Photo: Karen Scott

