



Short-beaked Echidnas

The Short-beaked Echidna (*Tachyglossus aculeatus*) is one of only two monotremes (egg-laying mammals) in Australia, the other being the Platypus. This Note discusses the ecology of the echidna, and provides some information on how landholders can encourage and protect them on their property.

Short-beaked Echidnas have a unique appearance, with their backs and sides covered in stout, sharp spines amongst a fur coat of light brown to black. Echidnas have a long snout, which they use to search for food, smell for predators and to find other echidnas. The Latin, *Tachyglossus*, means 'quick tongue', referring to the speed with which the echidna uses its tongue to

catch ants and termites, and *aculeatus* means 'spiny'.

Where are echidnas found?

Apart from humans and the house mouse, no other mammal occupies so many different habitats in Australia. Short-beaked Echidnas are found in the arid zone, tropics, coastal margins, snowy regions (where they hibernate during winter), Tasmania and other offshore islands.

Two sub-species of Short-beaked Echidna are reasonably common in Queensland:

- *Tachyglossus aculeatus acanthion* is spread across northern Queensland, into the Northern Territory and inland to Western Australia.
- *Tachyglossus aculeatus aculeatus* is found in southern Queensland, eastern New South Wales and south to Victoria.

Echidnas seek shelter under thick bushes, in hollow logs or amongst rocks. For most of the year echidnas are solitary animals. Whilst each animal's

territory is large (about 50 hectares in southern Queensland), territories often overlap. During the breeding season they use their good sense of smell to find one another. The presence of an echidna can be indicated by three main ways: ant nests and termite mounds broken apart; half-moon-shaped hollows at the base of plants where echidnas have been searching for grubs; and partially broken, smooth, cylindrical droppings containing insect cases mixed with soil or sand which have a strong odour due to their high protein content.

Echidnas are most active when the temperature is 16-20°C. This means during the heat of summer they will operate mainly at night, but other times of the year they may be active during the day. Heat is much more dangerous to echidnas than cold, and body temperatures above 34°C are probably fatal. Echidnas avoid high temperatures in burrows, hollow logs, and rock crevices, and may also go for a swim to cool themselves down as they have no sweat glands.



Echidnas can sometimes be seen in relatively open areas.

EchidnaWatch

EchidnaWatch is a program of the Wildlife Preservation Society of Queensland (WPSQ) that aims to collate information on the distribution of echidnas in Queensland. EchidnaWatch data also helps inform how echidnas are coping with modern hazards and introduced pests.

Wherever you live in Queensland, you can watch out for echidnas and tell EchidnaWatch what you have observed. Together we can help build up an accurate up-to-date picture of echidnas in Queensland. For more information on EchidnaWatch, or to complete an online survey form, visit www.wildlife.org.au/projects/echidna) or call WPSQ on 3221 0194.

Echidna ecology

Monotremes are classified as the most ancient group of mammals with echidnas showing up in fossil records about 15 million years ago. Some ecological features of echidnas may help us understand why monotremes have been so successful in surviving for such a long period of time:

- By burrowing, echidnas can avoid most predators and survive extreme hot and cold temperatures and bushfires.
- Body temperatures can be lowered and controlled in extreme cold (hibernation) or if food is scarce.
- Food is found underground, so echidnas can forage in the dark using electro-receptors (described below).
- Echidnas are long-lived mammals, with individuals recorded as living for 50 years in captivity and 45 years in the wild.
- Echidnas are highly tolerant (when compared to other mammals) to low levels of oxygen and high levels of carbon dioxide in the air.

Adult echidnas vary in size and weight but are usually between 30-45 cm in length with the males weighing about 6 kg and females about 4.5 kg.



*Echidnas will seek out water during hot weather.
Photo by Brian Douglas.*

Foraging and diet

Echidnas (like Platypus) have electro-receptors located in their snouts. Studies done on echidnas show that almost half of the sensory receptors in their brain are allocated to the snout, tongue and sense of smell. These electro-receptors (together with their sense of smell) help them detect small prey as they forage in the undergrowth and soil. An amazing fact is that about half of an echidna's brain is taken up with the prefrontal cortex - a larger proportion than any other animal. In humans, this part of the brain is thought to be responsible for future planning, interpretation and monitoring behaviour. Some studies on the feeding patterns of echidnas indicate that they may be able to assess, plan and conserve their food supplies.

Echidnas are opportunistic feeders and will become active depending on food sources and temperatures. Echidnas take advantage of concentrated food sources such as ant nests and termite mounds, but will also eat beetles, moth larvae and earthworms. The echidna's 18 cm long tongue is sticky and collects many termites or ants at once. The tongue can be shot out of the echidna's mouth about 100 times per minute, enabling it to consume large quantities of termites in one meal. Echidnas, like the Platypus, do not have teeth. Instead they mash their food between plates on their tongue and the top of their mouth. They occasionally drink from open water or may even lick dew from leaves.

Termites (shown below) and ants are the main components in an echidna's diet.



Echidna defences

Male echidnas have a small spur (0.5-1 cm long) near the hindfoot ankle, known as the 'crural' spur. However, the spur is not connected to a venom gland, unlike male Platypus' venomous spurs. Young female echidnas also have this spur, but it reduces in size with age. In males, the spur is covered by a sheath that is lost by four years of age and is considered an indication of sexual maturity. The spines that cover the back of echidnas can be used to anchor an individual in a hollow if under threat, or can help an echidna flip upright if it falls onto its back. There are muscles at the base of each spine which gives the echidna control over the movement and direction of all spines.



*A male echidna follows a female during mating season.
Photo by Gordon Grigg.*

Echidna mating

Unless you pick up an echidna, it is generally impossible to distinguish male from female. In general, males are about 25% larger than females. They live solitary lives coming together only to mate between June and early September. It seems that they find each other by following odour tracks and scent marks.

Echidnas generally produce one young every two years. Young are reported to remain in the pouch for between 45 and 55 days, at which time the young start to develop spines. The females do not have teats or nipples, so the baby sucks directly from the milk patch (hairs over openings of milk glands) in the pouch until weaning at approximately seven months of age. Mothers leave the young (or puggle) in a nursery burrow, which may be within mulch or wood piles, and return every 5-10 days to feed it.

Echidna nursery burrows can be up to 1.5 metres long with multiple chambers and a single opening of less than half a metre in diameter. The entrance is often closed off or plugged for safety by the female echidna, when she leaves her young and goes foraging for food.



Echidnas take advantage of concentrated food sources such as ant nests and termite mounds.

Threats to echidnas

The main predators of the echidna are dingoes, eagles and dogs. When threatened, the echidna will curl into a ball with its snout and legs tucked in beneath it and its sharp spines (which provide protection) sticking out. If the ground is soft, the echidna will dig and burrow itself in the ground or wedge itself under a rock.

Land clearing is a significant threat as loss of suitable habitat limits echidnas' ability to forage, breed and thermo-regulate. Echidnas can also be killed by cars as they wander along roadsides foraging for their favourite food, the termite.

What you can do

- ✓ Retain potential food sources such as ant nests and termite mounds.
- ✓ Retain potential nest burrow sites such as piles of mulch, leaf litter or wood piles.
- ✓ Do not 'tidy-up' bushland areas, instead retain fallen branches, logs, undergrowth, leaf litter, dead trees, rocks and rocky outcrops.
- ✓ Control domestic pets and feral animals.

References and further reading

Augee M, Gooden B & Musser A (2006) *Echidna: Extraordinary Egg-Laying Mammal*. CSIRO Publishing.

Land for Wildlife Note G5 - Responsible Pet Ownership.

Land for Wildlife Note V6 - The Value of Understorey Vegetation.

Land for Wildlife Note V7 - The Value of Habitat Trees.

Wildlife Preservation Society of Queensland

www.wildlife.org.au/wildlife/speciesprofile/mammals



Keep an eye open for distinctive echidna tracks in sandy areas.



Finding scats can give clues that echidnas are on your property. Image reproduced with permission from Tracks, Scats and Other Traces (2004) by Barbara Triggs.

Land for Wildlife is a voluntary program that encourages and assists landholders to provide habitat for wildlife on their properties. For more information about Land for Wildlife South East Queensland, or to download *Land for Wildlife Notes* free of charge, visit www.lfwseq.com.au

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