

## Snake ecology and safety notes

**Snake and reptile workshop with Stu from Snakehandler Pty Ltd on 19 January 2019 at Muckleford**

*Notes recorded by Frances Howe*

It's estimated that in Australia we are always within 100 to 200 metres of a snake, we just don't see them. Snakes hide from humans if they can, so to see snakes, you need to know where to look.

In Australia, one to two people die from snakebite each year – a small fraction of the number of people killed by cattle or horses. Most people who die from snakebite are either in a remote area or don't know they've been bitten. With prompt medical treatment, chances of surviving snakebite are high.

### **Importance of snakes**

All snakes in Australia are protected and it's illegal to kill snakes. Snakes are an apex predator, like the grey wolf in Yellowstone National Park in the United States. Research shows apex predators are good for species diversity and ecosystem resilience. They keep predator and prey numbers in balance. Snakes are also useful in killing pest rodents.

Snakes have inhabited this area for possibly millions of years. They belong here in the landscape and humans have moved in relatively recently. We need to live with snakes and work with natural snake behaviour, not against it.

### **Snake safety**

People understandably want to keep snakes away from their houses, kids and pets. The best way is avoid providing snakes with the things they need, i.e., food, water and shelter. We can:

- Control rats and mice, and remove food that may attract rodents (e.g., spilled grain).
- Put weather seals under your doors, especially if you have a porch, to prevent snakes being attracted to cool drafts from your house during hot weather.
- Keep the area around your house tidy, removing rubbish and old building materials such as corrugated iron that provide shelter for snakes.
- Remove any items that could hide snakes from immediately around the house, to improve their visibility.
- Place animal watering troughs directly on the ground, without space underneath for snakes to hide. Curious horses are sometimes bitten when they meet a snake sheltering under their water trough.

Making a lot of noise does let snakes know that a big animal is coming, but this makes them hide rather than move away.

People are occasionally bitten without knowing it, for example they are pruning prickly plants and don't detect the bite. To avoid this, wear gloves when gardening.

If you see a snake, always back away slowly and allow it to move to shelter. Erratic movements may make the snake feel threatened. From a snake's perspective, a human is about 100 times taller than it, hence very scary. Snakes are vulnerable animals - their only defence is speed (moving away quickly) and striking.

Snakes don't want to bite you and will avoid it if possible. If threatened, they'll make a display to try to look big and intimidating. If this doesn't work and the threat remains, they may progress to striking with their mouth closed, then biting but not injecting venom, before then biting with venom. Snakes don't chase large animals like humans (we chase them!). Nobody has ever been chased by a snake in Victoria. If a snake moves towards a person, it's because they're seeking shelter located behind the person.

## **Understanding snakes**

Human fear of snakes may relate to our difficulty reading them. Snakes have no facial expressions and we can't relate to them like we do with many other animals. Understanding and predicting their behaviour requires a lot of snake handling experience.

Snakes need food, water and shelter to survive. They are ectothermic, meaning they rely on outside sources of heat to regulate their body temperature. Like us, they don't like being too cold or too hot.

Snakes have poor eyesight. Brown snakes can see about 10 m, red-bellied black snakes can see 2-3 m, and tiger snakes are almost blind. As with all snakes, tiger snakes want to avoid you, but often they are not aware of you until you're very close and they don't have time to move to shelter. Hence they are more likely to put on a defensive display than other snakes. It does not mean they're aggressive. Snake experts call this behaviour 'reactive' because the snakes are reacting to a perceived threat.

Snakes detect other animals by vibration and smell. They can hear, but only low frequencies. Hence they won't care if you scream! Snakes use their tongue to smell, allowing them to detect prey and predators. Their forked tongue is thought to give the snake directional perspective on smells in its environment, similar to the way we use two ears to detect sound.

Only trained snake handlers should handle wild snakes. Most snake handlers use a simple long-handled hook tool to pick up snakes. Experienced handlers can often pick up a snake with their hand because their experience allows them to understand their behaviour. Snakes should be picked up by the muscular part of their back half, never by their head or tail.

## **Snake venom**

Most Australian snakes are venomous to some extent. Most human deaths from snakebite are from brown snakes, not because they are aggressive but because their habitat overlaps with where people like to live. By some measures, brown snakes are the second most venomous snake species in the world. They are also relatively reactive, hence more likely than other snakes to bite in defence when threatened.

Venom is very metabolically expensive for the snake to produce. It wants to save venom for catching food, not to waste it on biting a non-prey animal like a human. Striking is also risky for the snake. Many snakes are injured while striking, even with small prey such as mice.

Australian snakes have incredibly short fangs. Brown snake fangs are approximately 3 mm long and can only inject into skin, not muscle (unlike African snakes that can be up to 50 mm long). Wearing long pants with boots and long sleeves means the bite may not even penetrate your skin. Our snakes have grooved fangs (not hollow) so the venom flows down the fangs by capillary action. This means a lot of venom is lost during the biting process, rather than injected.

Even if you are bitten by a snake, it may not have injected any venom, or much of the venom may have been lost, not injected. However, there is no way of knowing so always seek urgent medical care.

Once injected, venom moves in the victim's lymphatic system, not the blood system. Lymphatic fluid moves around the body when we move our muscles.

Snake venom has evolved to be most effective on the snake's preferred prey. In our local area brown snakes often prey on small mammals, and red-bellied black, tiger and copperhead snakes often eat frogs. Birds are not immune to snake venom, but are generally less susceptible.

## Snakebite first aid

First aid actions are immobilise and apply pressure. Do not allow the patient to move, unless absolutely necessary, as moving helps venom to spread. Apply a pressure immobilisation bandage to the limb and call an ambulance. Smart bandages and specialised snakebite kits can be purchased from pharmacists. Smart bandages have markings to ensure you stretch the bandage enough to provide the correct pressure. A standard crepe bandage is ok and usually slows spread of the venom for about 20 minutes, which is long enough if you're near a hospital. Do not wash the bite.

At the hospital, staff will seek a venom sample from the bite to identify the required antivenom. They will assess and monitor the patient for signs and symptoms of snakebite before progressing. If necessary they will administer antivenom. There are six kinds of antivenom: brown snake, black snake, tiger snake, taipan, death adder and polyvalent (for multiple snake types). Antivenom soaks up and neutralises remaining venom toxins in the body. It does not reverse the effects of the venom. If the venom has already caused damage, there could be lasting injury. People can have an adverse reaction to antivenom, so it is only administered when necessary.

## Myth busting

The following myths are **not true**:

- *Red-bellied black snakes, tiger snakes and brown snakes never occur together.* Although this isn't true, these snakes have different habitat preferences. Brown snakes prefer dry grassy areas whereas tiger snakes and red bellies prefer wetlands.
- *If you see one snake there are more snakes nearby.* Snakes are solitary animals and only come together occasionally to mate or fight. Snakes do not take care of their babies, hence a large snake does not indicate young snakes nearby or vice versa.
- *When mating, snakes intertwine their bodies as though they are in combat.* During the mating season male snakes fight by intertwining their bodies. In contrast, snake mating behaviour is gentle.
- *Juvenile snakes are more/less venomous.* Young snakes have the same type of venom as adult snakes, although smaller snakes have less venom.
- *Snakes are born with a set amount of venom.* Although not true, it does take a snake several days to restock their venom after an injection bite.
- *Lizards mean no snakes are present.* Lizards such as blue-tongues and snakes live in the same areas and often prey on each other.

## Meeting live snakes and other reptiles

Stu brought us four live snakes representing local venomous species for us to view: brown snake, tiger snake, red-bellied black snake and copperhead. To handle, he brought a Murray-Darling carpet python (from northern Victoria), a blue-tongue lizard and an eastern bearded dragon.