Tropical Topics

An interpretive newsletter for the tourism industry

Hazards in the wet tropics No. 31 November 1995

Notes from the Editor

This issue of *Tropical Topics* looks at a variety of the things which may bite, sting, kick, suck or poison visitors to the wet tropics. Many people believe that the rainforest is full of snakes and other animals just waiting for a chance to attack them. In fact, they are most unlikely to be harmed, especially if they keep to the tracks and do not try to sample 'bush tucker'.

Probably the greatest dangers for visitors to the wet tropics are not in the rainforest but in nearby water. Hot and tired from their walks they may put themselves at risk on slippery rocks and in fast-flowing or croc-inhabited rivers. Many will be only too ready to splash into the summer sea, unaware of the danger posed by box jellyfish. It is important that guides and others in the tourism industry warn visitors, particularly those from overseas, of these dangers.

Some terminology

A venomous animal uses a bite or sting to introduce a toxin into another animal. A poisonous animal, such as a pufferfish or toad, contains toxins which may be absorbed if the animal is eaten. The term toxic covers both.

Strictly speaking, anti-venom for snakes is termed antivenene and for spiders antivenin. For the sake of simplicity all are referred to as anti-venom in this newsletter.

Tour operators may wish to laminate page 7 and make it available in coaches, offices and so on to encourage environmentally-friendly behaviour.

Small is significant

One of the first questions commonly asked by visitors to the wet tropics is about dangerous snakes. However, one of the most dangerous animals in the wet tropics — the cause of at least 20 deaths in Australia in the first half of this century — is one of which few people are aware and which is so small its approach is almost never noticed. It is the Australian paralysis tick (*Ixodes holocyclus*) also known as the scrub tick.

Ticks are essentially large mites which need to feed on blood and are attracted to their hosts by movement and by the carbon dioxide exhaled by mammals. Dropping on to their victims from grass or leaves, they quickly find a dark moist spot such as the upper thighs, armpits, behind ears or on the scalp where they attach themselves and begin to feed. A female needs three feeds of blood during its life but it is usually the third feed of the large adult female which causes trouble. (The adult male feeds on female ticks.)

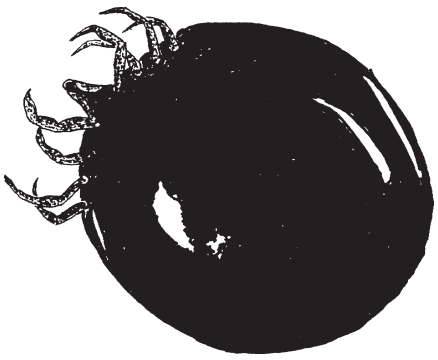
From time to time, as the tick feeds, it injects unwanted fluid from the blood back into the host's body, along with its own saliva. This saliva contains a powerful toxin and the output increases as the tick's body enlarges.

Small children begin to show the effects of the toxin after about three days when their walking tends to become unsteady. This muscle paralysis spreads to their arms and then, if no help is given, to their chest muscles, at which stage they may die from respiratory failure. The devastating effect of its saliva on some hosts is of no obvious use to the tick and seems to be purely a quirk of nature. Its normal native host, the bandicoot, is immune.

It is important to be aware of the potential impact of paralysis ticks, especially on children (and pets) and particularly during the peak season, from June to December. After bushwalking all members of the group should be checked for the following six days for signs of ticks — usually a minor irritation and lump.

If one is found a dab of petrol, lighter fluid, kerosene, turpentine or insecticide may cause the animal to drop off. Otherwise, grasp the tick as near to the person's skin as possible and pull it off, taking care not to squeeze the body which might then inject more saliva. If the mouthparts remain, they can be flicked out with a sharp blade, but there is no need to cut the skin.

Reaction to the toxin wears off slowly (even increasing for a while following removal). Happily, due to awareness of the problem and the availability of an antitoxin, deaths from ticks are now very rare.



An adult tick is at first oval, flat, yellowish and the size of a match head. As it feeds it darkens and swells to the size of a pea (above).

WET TROPICS MANAGEMENT AUTHORITY

Queensland Department of Environment and Heritage

Venomous snakes

The bad news and the good news

There are approximately 140 species of land snake in Australia. Some 70 percent of them are venomous, making Australia possibly the only country in the world where venomous snakes outnumber non-venomous species. However, of these only about 20 species (all in the elapid family) are considered dangerously venomous to humans. A further dozen or so may be dangerous to children.

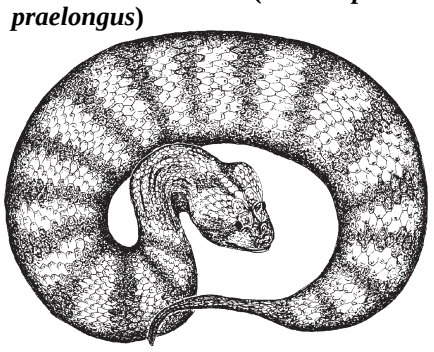
The good news is that Australian snakes are responsible for relatively few human deaths. In fact, statistically, you are as likely to die from a snake bite in France as you are in Australia! Most dangerous Australian snakes are shy and unaggressive. Also, the availability of anti-venom and the adoption of effective first-aid measures have undoubtedly saved many lives in recent decades.

Dangerous snakes in the wet tropics

Happily, most of the snakes which visitors to wet tropics rainforests are likely to see are non-venomous pythons and tree snakes. (Pythons are, however, capable of delivering nasty, if non-venomous, bites when antagonised.) Nevertheless, some dangerous snakes inhabit the wet tropics.

Taipan (*Oxyuranus scutellatus*)
The taipan is fast and agile, with very long fangs (up to 13mm). In the past a bite was invariably fatal. It is mainly an inhabitant of tropical woodlands and cane fields, its liking for rats and mice bringing it into contact with humans. It is not naturally aggressive and will always prefer to retreat from a human but will attack ferociously if cornered.

Northern death adder (*Acanthophis praelongus*)



Death adders prefer dry forest, grassland and sandy scrubland. Well-camouflaged, this snake lies in ambush in the leaf litter waggling the worm-like end of its tail to lure lizards, birds and rodents within striking distance of its head. Unlike most snakes, it does not move away when humans approach and strikes swiftly with a potent venom when trodden on.

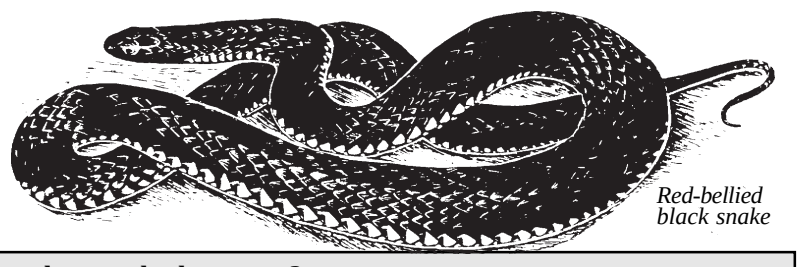
Red-bellied black snake (*Pseudechis porphyriacus*)
This snake is usually found around water and damp coastal forests where it feeds on aquatic animals and small reptiles. It is quick to retreat and if cornered tends to make bluff attacks, preferring not to waste its venom. This venom is not very toxic and fatalities are rare in adults, although it could be dangerous to children.

Eastern or common brown snake (*Pseudonaja textilis*)
This snake is found in a variety of habitats and is common in open forest and cultivated land of the Tablelands. When threatened it may rear up and bite aggressively, delivering one of the most potent snake venoms, albeit in small quantities. Its liking for rats and mice brings it into contact with humans and it is a leading cause of serious snake bite in Queensland.

Rough-scaled snake (*Tropidechis carinatus*)
Found close to water in moist forested country and often at high altitudes, this snake is nervous and easily provoked. Its venom is quite toxic and has caused human fatalities. Bush walkers should be aware that this snake often suns itself on rocks and knee-high bushes, especially after rain.

Small-eyed snake (*Cryptophis nigrescens*)
This nocturnal snake lives in wooded areas including rainforests, feeding mainly on small reptiles. Bites can be painful and cause headaches. At least one man has died as a result so it should be treated with caution.

Illustration courtesy Queensland Museum



Red-bellied black snake

What makes a snake dangerous?
The potential danger of snakes to humans does not just depend on the toxicity of their venom but is determined by five factors; venom toxicity, venom yield, fang length, temperament and how often the snake is encountered.

Avoiding trouble

Venom is a modified saliva used to incapacitate prey. It allows the snake to target a range of animals which would otherwise be too big to tackle. Venom also begins the process of digestion and speeds it up, important for cold-blooded animals whose stomach enzymes could stop working if external temperatures drop below critical levels. The third function of venom is to act as a deterrent.

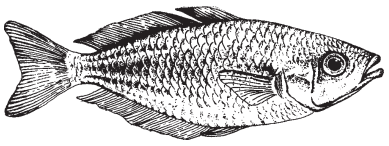
A snake does not wish to bite humans and waste venom on prey too large to consume. Most will remove themselves if at all possible and, even when cornered, will often withhold venom when biting. The golden rule is not to meddle with snakes and wear boots and jeans when in snake country.

First aid

The most important action to take following a snake bite is to prevent the poisons from moving into the general circulation. The venom initially spreads through tissues close to the bite and collects in lymphatic vessels from which it moves to the blood stream. The lymphatic vessels run very close to the skin so an elastic bandage, or clothing, wrapped firmly around the bitten limb can slow down the progress of the venom. Since the flow results from muscle movement a splint to immobilise the limb will help. The old-fashioned methods of cutting the wound and using tourniquets are OUT!

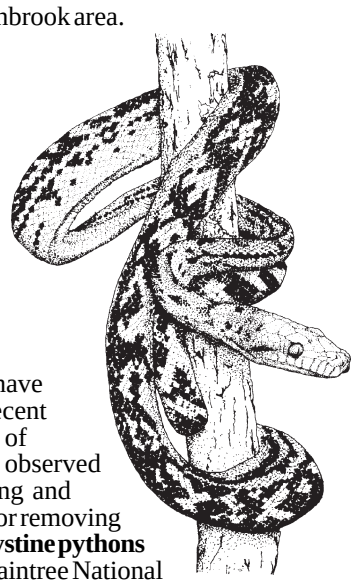
- Always carry an elastic bandage when in the bush.
- If bitten, do not panic or rush around. Move as little and as calmly as possible.
- Do not try to kill or capture the snake which is then likely to cause more damage.
- Do not wash the wound as traces of venom will help medical authorities to identify the snake.
- Wrap the wound firmly as if for a sprain. Keep it on — do not remove for a look. Make a splint if possible.
- Calmly, get to the nearest doctor or hospital, phoning ahead if possible.

Out and about



Appearances can be deceptive. The **Lake Eacham rainbow fish** was believed to have been made extinct in the wild by the introduction of other fish to its only known home (Lake Eacham). However, its seems that this wily character has been hiding out in disguise. Genetic studies by CRC rainforest researchers have shown that rainbowfish in other nearby lakes, although they look different, are actually of the same genetic type as the Lake Eacham ones.

A short video has been produced for people planning to walk the **Thorsborne Trail on Hinchinbrook Island**. Designed to help walkers to be properly prepared for their visit, the video offers advice aimed at protecting both the environment and the walker from potential risks. It can be viewed at a number of DEH information centres, the LIPS office in Port Douglas and tour outlets in the Hinchinbrook area.



There have been recent reports of people observed capturing and killing or removing **amethystine pythons** from Daintree National Park. The taking and killing of any native plants or animals in a national park is, of course, illegal. If you see this happening, please report it, along with details such as vehicle registration number, to the ranger on (070) 98 0052 or any DEH office.

Mike Ball Dive Expeditions have developed a new **dive signal** to convey the message 'Look, don't touch' for use underwater. Named 'Peace on the reef', the 'V' peace sign is explained in all their pre-dive briefings and used whenever anyone is seen touching the reef.

The company is keen for this signal to be adopted across the entire dive industry, thus helping to prevent damage to the delicate marine environment.

Coral spawning roulette is with us again! Predictably unpredictable, the expected dates this year are 11-13 November for fringing reefs close to the coast and 11-13 December for mid and offshore reefs. Spawning usually happens three full days after the full moon, continuing for about three nights — but it is notoriously difficult to catch the corals at it! Water temperature, tides and other local factors also affect the timing. Different species have their own schedules, but the bulk of the spawning usually takes place from 8pm to 10pm.

Weed and feral news

A recent blitz on **rubber vine** in Lakefield National Park, using a species of rust, has been a huge success. Large areas have been defoliated and seedlings killed.

There has also been a successful campaign against **lantana** on Russell Island, in the Franklands, and Stephens Island, in the South Barnards. Marine Parks rangers weeded the islands in March and a recent return trip showed very little regrowth.

Illustration courtesy Department of Lands

Thunbergia laurifolia as well as *Thunbergia grandiflora* (above) has been declared a category P2 weed. This means that both these destructive vines are to be completely destroyed throughout an area. Infestations should be reported to your local Department of Lands office.

New **cat legislation** in South Australia requires that all cats be identified if not confined to their own property. Unidentified cats and any cats found in a national park or more than 1km from the closest dwelling can be trapped and euthanased. Since it is estimated that domestic cats kill about 90 million vertebrates in Australia each year, this is an important step towards control.

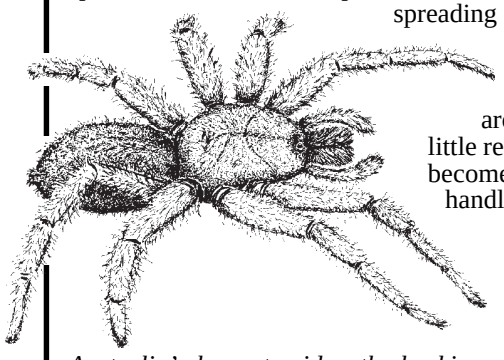
Troubles in the tropics

Spiders belong to the Arachnid group which also includes scorpions, mites and ticks. There are over 2000 spider species in Australia and, since they are carnivores, most possess a venom strong enough to subdue their prey.

Two are known to have caused human fatalities, the Sydney funnel-web and the redback. Neither of these is naturally found in the wet tropics but redbacks have been turning up here in increasing numbers, presumably having hitched a ride on trailers, furniture, and so on. It is only the females, the ones marked with the warning red spot, which can cause us problems but they are responsible for more cases of serious envenomation in Australia than all snakes and marine stingers put together.

The good news is that redbacks are not aggressive, their venom is slow-acting and an anti-venom is available. They like undisturbed spots such as outbuildings and can be found underneath logs and rafters so it is always wise to be careful where you put your hands. Some people in redback prone areas have their houses sprayed with insecticides but this is not necessarily a smart move because redback predators may also be killed; black house spiders kill redbacks.

Much remains to be discovered about the effects of various spider bites on humans. Many, including the common black house spider, can cause severe illness. Wolf spiders and white-tailed spiders have both been blamed for causing ulcers and spreading tissue death leading occasionally to amputation. The latter spider is a small long-bodied black spider with a white tip to its tail, sometimes found wandering around homes at night. Some people suffer little reaction to the bites while for others they become an ordeal. The simple message is, don't handle spiders.

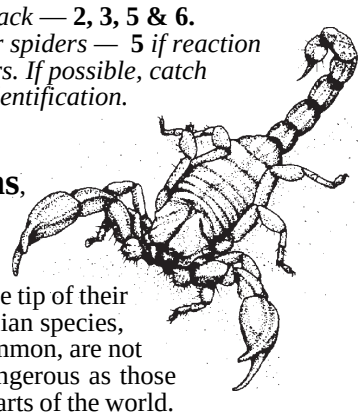


Australia's largest spider, the barking or whistling spider (above), lives in the wet tropics. Growing up to 6cm in body length with a leg span of 16cm, it eats frogs and lizards. One of the trap-door spider group, it lives in web-lined burrows in the ground or under logs and rocks. With fangs as big as a taipan's, its bite is painful, leading to nausea, vomiting and headache, but despite its appearance it is not aggressive and bites are rare.

Redback — **2, 3, 5 & 6.**
Other spiders — **5** *if reaction occurs. If possible, catch spider for identification.*

Scorpions,

when provoked, deliver a sting from the tip of their tails. Australian species, although common, are not nearly as dangerous as those from other parts of the world.



3 Stings are rare and pain usually wears off after a few hours.

Mites

are tiny relatives of spiders. One species occurring in north Queensland is known as the scrub itch mite. Juveniles picked up by people from logs or vegetation become lodged in skin folds and under tight clothing causing an itchy rash. Rarely, these mites (and ticks) also transmit scrub typhus, a serious illness typified by headaches and fever which needs antibiotic treatment.

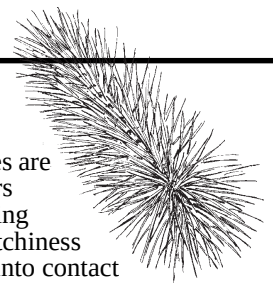
Remove mites with insect repellent and wash clothes.

Centipedes

up to 15cm long are found in the wet tropics. The two powerful jaws can deliver a painful bite which may cause nausea. Centipedes are fast-moving creatures and shouldn't be handled.

Use painkillers
5 *if complications arise.*

Caterpillars



of a number of moth species are covered with spines or hairs containing venom or irritating substances, which cause itchiness and pain when they come into contact with human skin or eyes.

Caterpillars of the bag moth (boree moth) are usually associated with acacia trees where they feed and shelter communally, building a tent-like bag of silk. They can also be seen travelling head-to-tail in long processionary trails. Contact with the caterpillars, the hairs which they leave on tree barks, cast-off skins or bags can lead to numerous hairs penetrating the skin. It is unwise to sit or camp under trees where they are present.

Hairs can be removed from skin with tweezers or adhesive tape and eyes bathed. **5** *if pain continues in eyes.*

Green tree ants

are the animals most likely to trouble visitors and residents in the coastal wet tropics. They are everywhere where there is vegetation and bite with a nasty nip. Knocking into a nest is a particularly unpleasant experience but the effects are not serious or long-lasting.

Bees and wasps

Usually stings result in local pain and swelling but some people are allergic to the venom, their reaction becoming more severe each time until a sting may be life-threatening. Wasps, defending a nest, can attack viciously, each delivering multiple stings. Wasps remove their stings but when a bee departs it leaves behind the sting and attached venom sac which continues to pump toxins into the victim.

Remove a bee sting quickly by scraping it out. Take care not to squeeze more venom out of the sac.
3
1 & 5 *in case of allergic reactions.*

Leeches

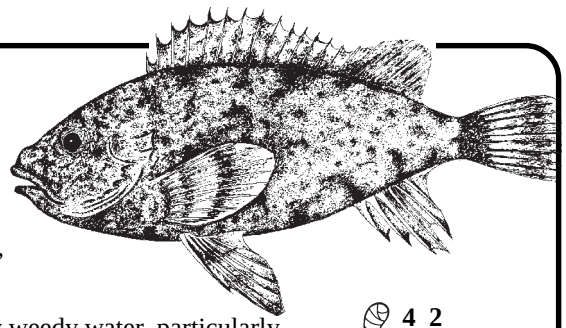
are among the most loathed but least harmful of the animals which might take more than a passing interest in humans in the rainforest. Related to earthworms, they feed on blood. A leech's body is covered with receptors attuned to heat, cold, light, odour and vibration so it is very quick to detect a potential meal. Using suckers on each end of its body, the leech loops swiftly in pursuit. Once on the host it seeks out a dark spot and digs in its teeth, releasing an anaesthetic which keeps its presence undetected and an anti-coagulant which stops the blood from clotting. It falls off when it is full — and up to five times heavier than it was at the beginning of its meal. It can last for a further year without eating.

It is difficult to outwit leeches when they are around in large numbers in wet rainforests. Covering the socks and shoes with insect repellent, eucalyptus oil or soap lather is said to repel them and some people wear pantyhose on the outside of socks and long pants. Others simply ignore them and just wash off the blood at the end of the day. Leeches can be encouraged to drop off when heat, such as a lighted cigarette, or salt are applied. Pulling them off can tear the skin which may then become infected.

One potentially dangerous situation is where a leech is not noticed crossing a face in wet and cold conditions and fastens itself to an eyeball. It does happen! The only safe thing to do is wait for 15-40 minutes until the leech voluntarily detaches itself and drops off. Pulling it or applying salt may damage the eye.

Gympie stinging tree
(Dendrocnide moroides)

Bullrouts

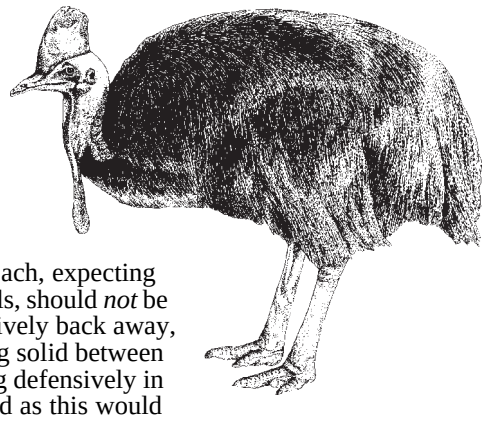


Even if you avoid the stingers in the sea and the crocs in the creeks you are not entirely safe in fresh water. In coastal rivers, near rocks and in weedbeds, the bullrout lurks, lying in wait for small fish and crustaceans. A relative of the marine stonefish, it sports very similar venomous spines on its fins. Human victims usually accidentally stand on or brush the fish, the spines even penetrating light footwear and delivering venom deep below the skin. The pain is excruciating but the venom is, happily, quickly destroyed by heat.

Avoid bullrout stings by wearing substantial footwear when wading through shallow weedy water, particularly below dams and weirs where bullrouts accumulate. Shuffling may encourage the fish to move away.

4 2
5 *if necessary*

Cassowaries and pigs



are the only potentially dangerous large animals to be encountered in wet tropic forests. Although cassowaries will usually move away they are unpredictable and it is not unknown for them to attack people, kicking forward with strong feet and dagger-like middle toes. Sometimes birds which are accustomed to being fed by people appear aggressive when they approach, expecting handouts. Cassowaries, like all wild animals, should *not* be fed. If a cassowary does approach aggressively back away, keeping it in sight, and try to get something solid between you and the bird. Be prepared to hold a bag defensively in front of your body but not above your head as this would leave your torso vulnerable.

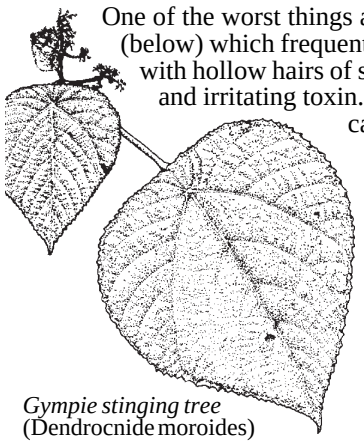
Most pigs will run away from you but if one approaches just step aside, behind a tree, and it will probably keep going.

Monitor lizards

have strong claws and jaws and, if accustomed to being fed, boldly approach camp and picnic areas. When scared they climb trees (do not get in their way) and may bite if provoked. Since they feed on carrion, bacteria in their mouths may cause infection.

5 *if necessary*

Plants



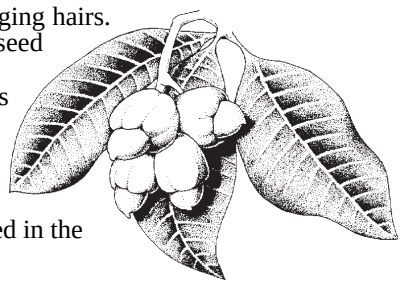
Gympie stinging tree
(Dendrocnide moroides)

One of the worst things a visitor to the rainforest can encounter is the **stinging tree** (below) which frequently grows in clearings and along tracks. The leaves bristle with hollow hairs of silica which, when brushed, snap off and inject a powerful and irritating toxin. The composition of this is not fully understood but it causes intense pain which can last for months, recurring whenever the area becomes wet or cold.

Dead stinging trees are also hazardous — when disturbed they release a cloud of stinging hairs which can cause severe problems if inhaled. It is a good idea to learn to recognise and avoid stinging trees.

*Stingose, if applied **immediately** is said to relieve the pain. Try to remove the hairs with depilatory wax, adhesive tape or by shaving.*
5 *for severe cases and if inhaled.*

Many other plants also protect themselves with stinging hairs. The **burny bean** vine (*Mucuna gigantea*) produces seed pods up to 14cm long covered with golden hairs which cause a burning sensation in enquiring fingers for about half an hour.



The **tar tree** (*Semecarpus australiensis*) (right) gets its name from the black resin which drips from it and which can cause permanent blindness if rubbed in the eyes.

The cashew-like fruit of the tar tree causes painful ulcers of the mouth if eaten but is only one of many toxic rainforest fruits. Don't sample, unless very sure of what you are putting in your mouth.

First aid

Please note that different people have different reactions to venoms. Urgent medical attention may be needed for unusually severe reactions.

1 Apply pressure bandage (firm, not tight, as for a sprain). Immobilise affected part using splints for limbs. This prevents venom from moving around the body. NEVER use a tourniquet.
Snakes and, in case of allergic reaction, bees, wasps and ants.

2 Do NOT apply pressure bandage and immobilisation techniques. Restriction of movement of some venoms will cause tissue damage and increase pain. It may be more quickly destroyed if it moves around the body.
Redback spider, bullrout and ticks.

3 Application of cold pack — cold water, with ice if possible, in a bag.
Redback spider, scorpions, centipedes, bees, wasps and ants.

4 Application of hot water. This should be about 50deg. and kept at that temperature. Test the temperature with unaffected limb or unaffected person — do NOT scald the area. Hot water can relieve pain and can destroy some venoms.
Bullrout

5 Seek medical assistance. Be prepared to use artificial respiration. Do not leave the victim alone.
Snakes, redback spider — and strong reactions to many of the animals and plants featured on this page.

6 Anti-venom available
Snakes, funnel-web spider, redback spider, ticks.

First aid tips in accordance with St John Ambulance Australia advice.

Questions & Answers

Q When traditional fish-poisons are put into water how are the fish killed?

A Over 30 plant species are recorded as having been used for poisoning fish in Australia. Usually the appropriate part of the plant, such as leaves or bark, is pounded and put into a pool or dammed-off part of a river or in a sea lagoon at low tide. The active constituents of the plants appear to be alkaloids, saponins or, less effective, tannins. Some plants act faster than others; the vines of *Derris* species, which contain saponins, are so effective they are known as 'wild dynamite'.

Fish are stupefied and rise to the surface where they are easily caught or speared. It is sometimes said that the chemicals remove oxygen from the water, thus causing the fish to simply suffocate. However, the saponins may actually act on the blood corpuscles, affecting the ability of the blood within the fish to carry oxygen, while tannins may interfere with the function of the gills. Since the dead fish must be edible the poisons used presumably have no ill-effects on humans, although there are sometimes prohibitions on drinking the water from the pond afterwards. It is difficult to find information on this subject so contributions from readers would be welcome.

Fish-poisoning is common throughout the world and has been recorded from Malaysia, India, South Africa and North and South America.

Q Are rainforest trees basically hardwoods or softwoods?

A This terminology is based on the classification of the trees rather than the strength of the timber. Gymnosperms, such as the pine group of trees are classed as softwoods. This includes native pines such as the hoop, bunya and brown pines in rainforest and the cyprus pines of the drier country. Eucalypts and most rainforest trees are classed as hardwoods, though this is no guarantee that the timber will be hard.

Q How long do bats live?

A If they survive the first few years most species, both megabats (flying foxes and other fruit and nectar eaters) and microbats (insectivores and carnivores), seem to live for about 20-25 years.

Reduce, Reuse, Recycle is a kit for schools. There are two versions, the Preschool to Year 3 source book and the Years 4 to 7 one. Each has a Background Notes booklet, an Activities Booklet, a poster and evaluation sheet. Schools have received these kits but other interested people can purchase them from Department of Environment and Heritage outlets for $10 each.

Tourist talk

ENGLISH	GERMAN	JAPANESE	
bite	Biß	kami kizu	かみ傷
sting	Stich	toge	棘
toxic	giftig	doku no	毒の
irritating	schmerzhaft juckend	shigeki suru koto	刺激する事
harmless	harmlos	mugai na	無害な
snake	Schlange	he bi	蛇
tick	Zecke	da ni	ダニ
spider	Spinne	ku mo	クモ
leech	Blutegel	hi ru	ヒル
caterpillar	Raupe	imo mushi	いも虫

Facts and Stats

Australia has only about six percent of the world's species of terrestrial and marine snakes but these include nearly 25 percent of all venomous snakes and about 40 percent of dangerous front-fanged snakes.

The small-scaled snake (also known as the inland taipan and fierce snake) has the most toxic venom of all Australian snakes — but it delivers it in small quantities, it has small fangs, is reluctant to bite and lives in very sparsely populated parts of Australia.

The average amount of venom produced by a taipan in one bite is enough to kill 12 000 guinea pigs.

A species of funnel-web spider has recently been discovered in the Daintree area. It is certainly not abundant and is rarely encountered; it has taken scientists 40 or 50 years to find it!

The venom (atraxotoxin) found in male Sydney funnel-web spiders and in both sexes of other funnel-web spiders can kill humans, monkeys and mice but has no effect on other animals — probably a fluke of nature.

Spider silk is stronger than steel of the same thickness, but very light. A strand 0.005mm in diameter, long enough to encircle the world, would weigh less than 170 grams.

Male platypuses have a venomous spur on the inside of each rear leg which can cause painful wounds.

If eaten, toxins in finger cherries (*Rhodomyrtus macrocarpa*) cause permanent blindness.

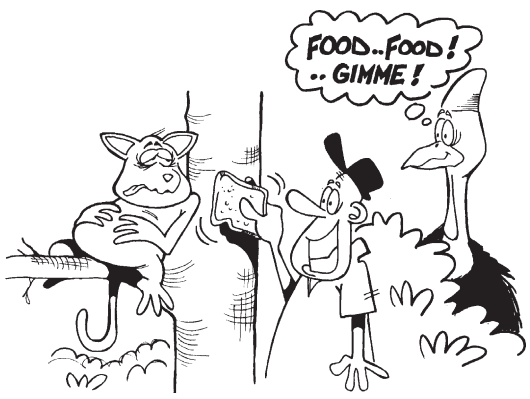
Many ornamental plants are dangerous. Oleander (both the pink, white or red flowering species and the yellow flowering type) is commonly grown, yet the consumption of just a few flowers, leaves or seeds can cause death from heart failure. Every part of these plants is poisonous and people have become very ill simply from inhaling the smoke of burning branches or simply stirring their tea with a twig. Allamanda and pink periwinkle are also toxic.

Aborigines are said to have used stinging tree leaves as a cure for rheumatism, just as European rheumatism suffers used the related stinging nettle.

At the immature stage a tick is no larger than a pin head but increases in size by up to 400 times while feeding on its host.

Hazards in the forest - *Homo sapiens*

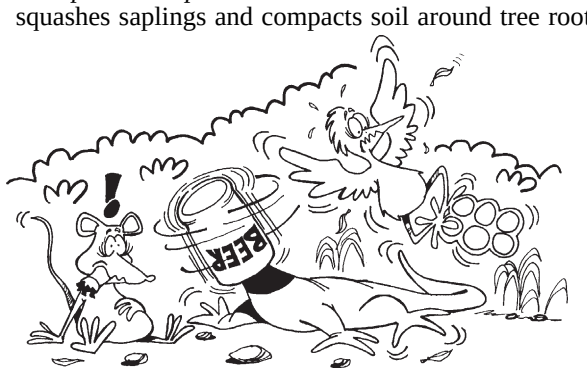
There are various terrestrial sub-species.



H. sapiens junkfoodius
feeds wild animals, making them sick and/or demanding

H. sapiens tramplicus
squashes saplings and compacts soil around tree roots

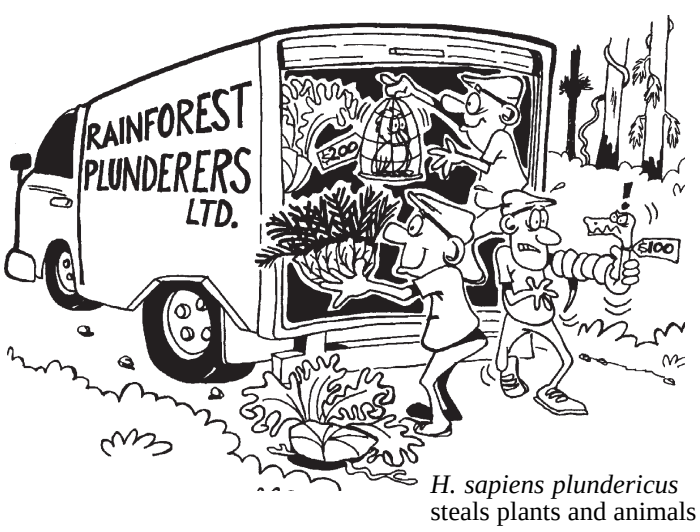
H. sapiens petus
brings uninvited guests



H. sapiens litterus
destroys the environment with litter

H. sapiens tarzanicus
breaks vines

H. sapiens campus insensitivus
destroys vegetation and puts soap in waterways



H. sapiens plundericus
steals plants and animals

H. sapiens blindus
uses too bright lights when spotlighting

Cartoons by Donnelly

Bookshelf

Australia's Dangerous Creatures
Reader's Digest Services Pty Ltd
Sydney (1987)

There is a wealth of information on Australians (animals and plants, from land and sea) to be avoided.

Toxic Plants and Animals
A Guide for Australia
Jeanette Covacevich, Peter Davie, John Pearn (eds)
Queensland Museum (1987)

While covering the same ground, this book has more scientific detail. There is a large section on venomous land snakes and a useful key for identifying spiders.

Venomous Creatures of Australia
A Field Guide with Notes on First Aid
Dr Struan K. Sutherland
Melbourne University Press (1982)

An excellent field guide.

The Puffin Book of Australian Spiders
Helen Hunt
Puffin Books (1989)

A kids' book with useful information and illustrations.

Australian Snakes
Richard Shine
Reed Books (1994)

Ample information on snake biology.

Graeme Gow's Complete Guide to Australian Snakes
Angus and Robertson (1989)

A comprehensive identification guide.

The Queensland Museum has an excellent series of one-page leaflets on a vast range of subjects. No.2 deals with dangerous snakes in Queensland, no.33 with Townsville snakes, nos.35-46 with spiders, no.47 with scorpions, centipedes and millipedes, and nos.70, 71, 78, 80, 83 with snakes.

This newsletter was produced by the Queensland Department of Environment and Heritage (now The Environmental Protection Agency) with funding from the Wet Tropics Management Authority.

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WET TROPICS MANAGEMENT AUTHORITY

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service