

The Australian Paralysis Tick

Fact Sheet



The barbs on its hypostome will embed a Paralysis Ticky firmly into its host. Image: QM, Geoff Thompson.

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There are at least 74 species of ticks in Australia but only a handful of these are known to bite people. In the humid coastal region of eastern Australia almost all tick bites on people are from the Australian Paralysis Tick, *Ixodes holocyclus*. This tick also feeds on many other mammals and birds. Australian Paralysis Ticks occur in areas of high humidity, especially in gullies, wet sclerophyll forests, rainforest edges and regrowth, lantana thickets and grassy areas near these. All sizes and life stages of Paralysis ticks can be found at any time of year, but there are distinct seasonal peaks for each stage. For a more detailed explanation of tick feeding and development see the Ticks -General fact sheet.

Development

In autumn and winter tiny Australian Paralysis Tick **larvae** ('seed' or 'grass' ticks) cluster on, or close to the ground. When they first attach to their hosts they are barely visible (0.5mm) until after feeding for several days when they have become engorged. Often it is not realised that these tiny ticks are actually the same species as the much larger adults. For the lucky larvae that manage to clamber aboard a host and feed successfully, this is only their first of three separate feeds they will need to complete their life cycle. After feeding to engorgement (4 to 6days) the bloated larvae detach and drop to the ground where they moult to the nymph stage. The intense irritation caused by many attached larvae is often referred to as "scrub itch", although this is not the same as classic scrub itch which is caused by chigger mites (Trombiculoidea).

The pinhead-sized **nymphs** are just big enough to be seen (1.2 mm) when they attach. They mostly appear in the driest and coolest months. After they have fully fed they are slightly bigger than the head of a coloured pin.

Adult paralysis ticks mostly appear from September to midsummer. Adult females (4 mm) can be distinguished from other commonly-encountered tick species by their exceptionally long mouthparts (ca.1mm long), the absence of any coloured markings on the dorsal shield, and by the first and last legs being darker than other legs. Body colour is affected by feeding and is not reliable for tick identification.



Paralysis tick feeding. The hypostome is fully inserted in the wound that it has cut and the palps are splayed across the skin. Image: QM.



Semi-engorged female paralysis tick. Only the sac-like body has increased in size – the hard shield remains the same size throughout feeding. Image: QM.



Underside of a female paralysis tick. Image: Geoff Thompson.

Male paralysis ticks may occasionally clamber onto people, but unlike females, they almost never feed on humans or other vertebrate hosts. However, like little vampires, they steal blood from their engorged female counterparts. This unusual choice of host is reflected in their mouthparts which are short and poorly developed in males. Engorged female ticks often bear feeding scars from males piercing their body wall. One female was recorded with 15 such scars!



The short mouthparts of a male paralysis tick. Image: David Walter.

Tick Bite

Local itchiness and a hard lump at the bite site usually occur after paralysis tick bite. More widespread immune responses from the bite site can occur. These include severe allergic reactions which are the only immediate serious medical implications of tick bite. People who have severe allergy to ticks, or who are showing escalating reactions after repeated tick exposure, should scrupulously avoid being bitten.

Fortunately disease transmission by ticks is rarely reported in Australia. However, at least three agents of disease may be transmitted by human-biting ticks in Queensland. Seek medical attention if unexplained or unusual symptoms (e.g. fever, spreading rash or a black scab) follow tick bite. Ideally keep and preserve ticks for up to 4 weeks after removal. In the rare instances when disease develops, such specimens may be helpful for disease diagnosis and research.

Tick Paralysis

All stages of the Australian Paralysis Tick produce paralysis toxin while feeding but only adult females and especially females which have fed for 4 days or more produce enough toxin to cause paralysis. It seems almost any mammal or bird can succumb to paralysis although many native marsupials show a strong resistance. Bandicoots acquire a particularly strong resistance to tick paralysis toxin.

In 'ticky' areas daily checking of pets is recommended. Do not assume that a pet that has previously carried ticks is always resistant. Experienced veterinarians have noted supposedly resistant dogs succumbing to paralysis from a single tick. Once paralysis symptoms are evident the condition is dangerously advanced and requires immediate veterinary care.

It is unlikely that an adult human would become paralysed however young children are more vulnerable, because they may not communicate the presence of ticks and a paralysis tick may then feed uninterrupted for many days. Thus it is important to inspect young children after visiting tick-prone areas, including inspecting concealed sites such as beneath the hairline. Seek immediate medical attention if there are any signs of paralysis.

A two-year old girl had this engorged female paralysis tick feeding on her neck, hidden beneath her long hair. When taken to hospital she was seriously ill and showing paralysis, but later made a full recovery. Image: Anthony O'Toole.



Tick prevention

When venturing into tick-prone areas, a standard repellent should be applied to exposed or accessible areas of skin including waist, ankles and neckline. Long trousers are useful in reducing the chances of ticks attaching especially if cuffs are tucked into socks. Wearing long-sleeved shirts will assist further.

Paralysis tick removal

The ideal way to remove ticks is to kill them with several applications of a pyrethroid or pyrethrin insecticide applied directly on the tick and then let the dead tick shrivel and fall out by itself. However, there are only a few appropriate insecticides approved for use on human skin in Australia. Anti-scabies cream is a suitable preparation (e.g. 'Lyclear'). Note that repellents do not work because they do not contain insecticide. Apply at least twice, with a minute between applications. This should kill the tick (its legs will stop moving). Once it is dead the tick can be just left to fall out by itself although this may take a day or more if the tick is deeply embedded. Do not apply kerosene or similar chemicals to ticks as these do not achieve the principal aim which is to kill the tick quickly, and are also suspected to cause the tick to disgorge further secretions.

If an appropriate pyrethroid or similar preparation is not available then the tick will need to be pulled out. To pull ticks out, grip the 'head' region with fine tweezers and pull firmly and steadily. It is difficult to pull out Australian Paralysis Ticks without breaking their long mouthparts. However, if mouthparts detach they are simply dead; they cannot produce toxin or continue to burrow. Because mouthparts tend to be deeply embedded in an inflamed wound they may take several days to slough out; treat the bite site with antiseptic.



Paralysis tick mouthparts showing hypostome flanked by the sensory palps. Image: Geoff Thompson.

Trying to pull out tiny larval ticks ("seed" or "grass" ticks) is difficult and often impossible. This option is only available if you have fine tweezers and a magnifying glass. It is better to kill larval paralysis ticks with anti-scabies cream or by swabbing with several applications of rubbing alcohol.

Further Information

Australian Paralysis Ticks <http://www.ozemail.com.au/~norbertf>
Westmead Hospital <http://medent.usyd.edu.au/fact/ticks.htm>
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