

= Redback spider =

The redback spider (*Latrodectus hasseltii*) is a species of venomous spider indigenous to Australia. It is a member of the cosmopolitan genus *Latrodectus*, the widow spiders. The adult female is easily recognised by her spherical black body with a prominent red stripe on the upper side of her abdomen and an hourglass @-@ shaped red / orange streak on the underside. Females have a body length of about 10 millimetres (0 @. @ 4 in), while the male is much smaller, being only 3 ? 4 mm (0 @. @ 12 ? 0 @. @ 16 in) long.

Mainly nocturnal, the female redback lives in an untidy web in a warm sheltered location, commonly near or inside human residences. It preys on insects, spiders and small vertebrates that become ensnared in its web. It kills its prey by injecting a complex venom through its two fangs when it bites, before wrapping them in silk and sucking out the liquefied insides. Male spiders and spiderlings often live on the periphery of the female spiders' web and steal leftovers. Other species of spider and parasitoid wasps prey on this species. The redback is one of few arachnids which usually display sexual cannibalism while mating. The sperm is then stored in the spermathecae, organs of the female reproductive tract, and can be used up to two years later to fertilise several clutches of eggs. Each clutch averages 250 eggs and is housed in a round white silken egg sac. The redback spider has a widespread distribution in Australia, and inadvertent introductions have led to established colonies in New Zealand, Japan, and in greenhouses in Belgium.

The redback is one of the few spider species that can be seriously harmful to humans, and its preferred habitat has led it to being responsible for the large majority of serious spider bites in Australia. Predominantly neurotoxic to vertebrates, the venom gives rise to the syndrome of latrodectism in humans; this starts with pain around the bite site, which typically becomes severe and progresses up the bitten limb and persists for over 24 hours. Sweating in localised patches of skin occasionally occurs and is highly indicative of latrodectism. Generalised symptoms of nausea, vomiting, headache, and agitation may also occur and indicate severe poisoning. An antivenom has been available since 1956, and there have been no deaths directly due to redback bites since its introduction.

= Taxonomy and naming =

= Common names =

The common name "redback" is derived from the distinctive red stripe along the dorsal aspect of its abdomen. Other common names include red @-@ striped spider, red @-@ spot spider, jockey spider, Murra @-@ ngura spider, Kapara spider and the Kanna @-@ jeri spider.

= History =

Before DNA analysis, the taxonomy of the widow spider genus *Latrodectus* had been unclear ? changes in the number of species reflect the difficulty of using morphology to determine subdivisions within the genus. Substantial interest in their systematics was most likely prompted by the medical importance of these venomous spiders. Swedish arachnologist Tamerlan Thorell described the redback spider in 1870 from specimens collected in Rockhampton and Bowen in central Queensland. He named it *Latrodectus hasseltii* in honour of colleague A.W.M. van Hasselt. In the same paper, he named a female from Cape York with an all @-@ black abdomen *L. scelio*, now regarded as the same species. These specimens are in the Naturhistoriska Riksmuseet in Stockholm.

German arachnologist Friedrich Dahl revised the genus in 1902 and named *L. ancorifer* from New Guinea, which was later regarded as a subspecies of the redback. Another subspecies, *L. h. aruensis*, was described by Norwegian entomologist Embrik Strand in 1911. Subspecies *indica* (of *L. scelio*) had been described by Eugène Simon in 1897, but its origin is unclear. Frederick

Octavius Pickard @-@ Cambridge questioned Dahl 's separating species on what he considered minor anatomical details but Dahl dismissed Pickard @-@ Cambridge as an " ignoramus " . Pickard @-@ Cambridge was unsure whether *L. hasseltii* warranted species status , though he confirmed *scelio* and *hasseltii* as a single species , other researchers such as Ludwig Carl Christian Koch noting the differences to be inconsistent . The redback was also considered by some to be conspecific with the katipo (*L. katipo*) , which is native to New Zealand , though Koch regarded them as distinct .

Reviewing the genus *Lactrodectus* in 1959 , arachnologist Herbert Walter Levi concluded that the colour variations were largely continuous across the world and were not suitable for distinguishing the individual species . Instead , he focussed on differences in the morphology of the female sexual organs , and revised the number of recognised species from 22 to 6 . This included reclassifying the redback and several other species as subspecies of the best @-@ known member of the group , the black widow spider (*Latrodectus mactans*) , found in North America and other regions . He did not consider the subspecies *L. h. ancorifer* , *L. h. aruensis* and *L. h. indicus* distinct enough to warrant recognition . Subsequently , more reliable genetic studies have split the genus into about 30 species , and the redback has no recognised subspecies in modern classifications .

== Placement ==

A member of the genus *Latrodectus* in the family Theridiidae , the redback belongs in a clade with the black widow spider , with the katipo as its closest relative . A 2004 molecular study supports the redback 's status as a distinct species , as does the unique abdomen @-@ presenting behaviour of the male during mating . The close relationship between the two species is shown when mating : the male redback is able to successfully mate with a female katipo producing hybrid offspring . However , the male katipo is too heavy to mate with the female redback , as it triggers a predatory response in the female when it approaches the web , causing the female to eat it . There is evidence of interbreeding between katipo and redbacks in the wild .

== Description ==

The adult female redback has a body around 1 centimetre (0 @.@ 4 in) long , with slender legs , the first pair of which are longer than the rest . The round abdomen is a deep black (occasionally brownish) , with a red (sometimes orange) longitudinal stripe on the upper surface and an hourglass @-@ shaped red / orange streak on the underside . Females with incomplete markings or all @-@ black abdomens occasionally occur . The cephalothorax is much smaller than the abdomen , and is black . Redback spiderlings are grey with dark spots , and become darker with each moult . Juvenile females have additional white markings on the abdomen . The bright red colours may serve as a warning to potential predators . Each spider has a pair of venom glands each attached to each of its chelicerae with very small fangs . Small compared to the female , the male redback is 3 ? 4 mm (0 @.@ 12 ? 0 @.@ 16 in) long and is light brown , with white markings on the upper side of the abdomen and a pale hourglass marking on the underside .

Another species in Australia with a similar physique , *Steatoda capensis* , has been termed the " false redback spider " , but it is uniformly black (or plum) , and does not display the red stripe .

== Behaviour ==

== Web ==

The redback is mainly nocturnal ; the female remains concealed during the day , and spins her web during the night , usually remaining in the same location for most of her adult life . Classified as a gum @-@ footed tangle web , the web is an irregular @-@ looking tangle of fine but strong silk . Although the threads seem random , they are strategically placed for support and entrapment of

prey . The rear portion of the web forms a funnel @-@ like retreat area where the spider and egg sacs are found . This area has vertical , sticky catching threads that run to ground attachments . The vertical strands act as trip wires to initially alert the spider to the presence of prey or threats . They also snare and haul prey into the air when weaker horizontal strands that hold them down , known as guy lines , break when prey thrash around . These webs are usually placed between two flat surfaces , one beneath the other . The female spends more time in the funnel and less time moving around during cooler weather .

= = = Prey = = =

Redbacks usually prey on insects , but can capture larger animals that become entangled in the web , including trapdoor spiders , small lizards , and even on rare occasion snakes . One web was recorded as containing a dead mouse . The woodlouse (*Porcellio scaber*) is a particularly common food item . Developing spiderlings need size @-@ appropriate prey , and laboratory studies show that they are willing to consume common fruit flies (*Drosophila melanogaster*) , mealworm larvae (*Tenebrio molitor*) , muscoid flies and early nymphs of cockroaches . Food scraps and lighting attract insect prey to areas of human activity , which brings the redbacks . Once alerted to a creature becoming ensnared in a trap line , the redback advances to around a leg 's length from its target , touching it and squirting a liquid glutinous silk over it to immobilise it . It then bites its victim repeatedly on the head , body and leg joints and wraps it in sticky and dry silk . Unlike other spiders , it does not rotate its prey while wrapping in silk , but like other spiders , it then injects a venom that liquefies its victim 's innards . Once it has trussed the prey , the redback takes it to its retreat and begins sucking out the liquefied insides , generally 5 to 20 minutes after first attacking it . Redback spiders do not usually drink , except when starved .

Commonly , prey @-@ stealing occurs where larger females take food items stored in other spiders ' webs . When they encounter other spiders of the same species , often including those of the opposite sex , they engage in battle , and the defeated spider is eaten . If a male redback is accepted by a female , it is permitted to feed on the victims snared in the female 's web . Baby spiders also steal food from their mother , which she tries to prevent . They also consume sticky silk as well as small midges and flies . Spiderlings are cannibalistic , more active ones sometimes eating their less active siblings .

= = = Life cycle = = =

Spiderlings hatch from their eggs after about 8 days and can emerge from the egg sac as early as 11 days after being laid , although cooler temperatures can significantly slow their development so that emergence does not occur for months . After hatching they spend about a week inside the egg sac , feeding on the yolk and molting once . Baby spiders appear from September to January (spring to early summer) . Male spiders mature through five instars in about 45 ? 90 days . Females mature through seven ? eight instars in about 75 ? 120 days . Males live for up to six or seven months , while females may live between two and three years . Laboratory tests have shown that redbacks may survive for an average of 100 days , and sometimes over 300 days without any food , those starved at 10 ° C faring better than those kept without food at 25 ° C. Spiders are known to reduce their metabolic rates in response to starvation , and can distend their abdomens to store large amounts of food . Redbacks can survive temperatures from below freezing point to 40 ° C , though they do need relatively warm summers , with temperatures of 15 to 25 ° C for two to three months , to survive and breed .

Redback spiderlings cohabit on the maternal web for several days to a week , during which time sibling cannibalism is often observed . They then leave by being carried on the wind . They follow light and climb to the top of nearby logs or rocks before extending their abdomens high in the air and producing a droplet of silk . The liquid silk is drawn out into a long gossamer thread that , when long enough , carries the spider away . This behaviour is known as ballooning or kiting . Eventually , the silken thread will adhere to an object where the young spider will establish its own web . They

sometimes work cooperatively , climbing , releasing silk and being carried off in clusters . Juvenile spiders build webs , sometimes with other spiders .

= = = Reproduction = = =

Before a juvenile male leaves its mother 's web , it builds a small sperm web on which it deposits its sperm from its gonads and then collects it back into each of its two palps (copulatory organs) , because the gonads and palps are not internally connected . After it moults into its last instar , it sets off wandering to seek a female . The male spider does not eat during this period . How males find females is unclear , and it is possible they may balloon like juveniles . A Western Australian field study found that most males took 6 to 8 weeks to travel around 3 to 3 @. @ 5 metres (9 @. @ 8 to 11 @. @ 5 ft) with occasional journeys of over 8 m (26 ft) , but that only around 11 ? 13 % successfully found a mate . They are attracted by pheromones , which are secreted by unmated sexually @-@ mature female redback spiders onto their webs and include a serine derivative (N @-@ 3 @-@ methylbutyryl @-@ O- (S) -2 @-@ methylbutyryl @-@ L @-@ serine) . This is thought to be the sole method by which males assess a female 's reproductive status , and their courtship dismantles much of the pheremone @-@ marked web .

During mating , the male redback attempts to copulate by inserting one of its palps into the one of the female 's two spermathecae (sperm storage organs) , each of which has its own insemination orifice . It then tries and often succeeds in inserting the other palp into the female 's second orifice . The redback spider is one of only two animals known where the male has been found to actively assist the female in sexual cannibalism . In the process of mating , the much smaller male somersaults to place his abdomen over the female 's mouthparts . In about two of three cases , the female fully consumes the male while mating continues . Males which are not eaten die of their injuries soon after mating . Sacrifice during mating is thought to confer two advantages to the males . The first is the eating process allows for a longer period of copulation and thus fertilisation of more eggs . The second is females which have eaten a male are more likely to reject subsequent males . Although this prohibits future mating for the males , this is not a serious disadvantage , because the spiders are sufficiently sparse that less than 20 % of males ever find a potential mate during their lifetimes , and in any case , the male is functionally sterile if he has used the contents of both of his palps in the first mating .

Some redback males have been observed using an alternative tactic that also ensures more of their genetic material is passed on . Juvenile female redbacks nearing their final moulting and adulthood have fully formed reproductive organs , but lack openings in the exoskeleton that allow access to the organs . Males will bite through the exoskeleton and deliver sperm without performing the somersault seen in males mating with adult females . The females then moult within a few days and deliver a clutch of fertilised eggs .

Once the female has mated , the sperm is stored in one or both of her spermathecae . The sperm can be used to fertilise several batches of eggs , over a period of up to two years (estimated from observations of closely related species) , but typically restarts the female 's pheromone production advertising her sexual availability about three months after mating . A female spider may lay four to ten egg sacs , each of which is around 1 cm (0 @. @ 39 in) in diameter and contains on average around 250 eggs , though can be as few as 40 or as many as 500 . She prepares a shallow concave disc around 3 mm (1 ? 8 in) in diameter before laying eggs into it over a period of around five minutes before laying more silk to complete the sac , which becomes spherical , the whole process taking around one and a quarter hours . She can produce a new egg sac as early as one to three weeks after her last .

= = Distribution and habitat = =

The World Spider Catalog gives the distribution of the redback spider as Southeast Asia to Australia , and New Zealand . It is probably native to Australia ; however , it has been suggested that it may have been spread to Australia by human activities , because it was first found at seaports .

Queensland researchers Robert Raven and Julie @-@ Ann Gallon also argued its preference for habitats altered by humans to be further evidence of this . Spider expert Barbara York Main queried that were it indeed introduced , it would be odd that Australia was missing from the worldwide distribution of *Latrodectus* species . The redback 's close relationship with the New Zealand katipo also supports the native status of both in their respective countries .

The species was known by 1850 in South Australia , only 14 years after European settlement there , but had not been reported in early spider collections in other colonies . Outside urban areas , the redback is more often found in drier habitats ranging from sclerophyll forest to desert , even as harsh as the Simpson Desert . It became much more common in urban areas in the early decades of the 20th century , and is now found in all but the most inhospitable environments in Australia and its cities . It is particularly common in Brisbane , Perth and Alice Springs . The redback spider is commonly found in close proximity to human residences . Webs are usually built in dry , dark , sheltered sites , such as among rocks , in logs , tree hollows , shrubs , old tyres , sheds , outhouses , empty tins and boxes , children 's toys or under rubbish or litter . Letterboxes and the undersurface of toilet seats are common sites . Populations can be controlled by clearing these habitats , squashing the spiders and their egg sacs , and using pesticide in outhouses . The CSIRO Division of Entomology recommends against the use of spider pesticides due to their toxicity , and because redbacks are rapid recolonists anyway .

Spiders in the French territory of New Caledonia in the Pacific were identified as *L. hasselti* in 1920 , based on morphology . Their behaviour differs from Australian redbacks , as they do not engage in sexual cannibalism and are less prone to biting humans . The first recorded envenomation in New Caledonia was in 2007 .

= = = Introductions = = =

The redback spider 's affinity for human @-@ modified habitat has enabled it to spread to several countries via international shipping and trade . Furthermore , its tolerance to cold means that it has the ability to colonise many temperate countries with a winter climate cooler than Australia . This is concerning due to the risks to people being bitten who are unaware of its venomous nature , and also to the conservation of local threatened insect species that the redback might prey upon .

Redback spiders are also found in small colonies in areas of New Zealand . They are frequently intercepted by quarantine authorities , often among steel or car shipments . They were introduced into New Zealand in the early 1980s and now are found around Central Otago (including Alexandra , Bannockburn and near Wanaka) in the South Island and New Plymouth in the North Island . Authorities in the United Arab Emirates warn residents and visitors of redback spiders , which have been present since 1990 . Colonies have also been established in greenhouses in Belgium , and isolated observations indicate possible presence in New Guinea , the Philippines , and India . Some redbacks were found in Preston , Lancashire , England , after a container of parts arrived from Australia ; some may have escaped into the countryside before pest controllers could destroy them . One redback was recently found in a back garden in Dartford in Kent . Two females were discovered in the Iranian port city of Bandar Abbas in 2010 .

There is an established population of redback spiders in Osaka , Japan , thought to have arrived in cargoes of wood chips . In 2008 , redback spiders were found in Fukuoka , Japan . Over 700 have been found near the container terminal in Hakata Bay , Fukuoka City . Dispersal mechanisms within Japan are unclear , but redbacks are thought to have spread by walking or by being carried on vehicles . In September 2012 , a woman was hospitalised after being bitten in the Higashi Ward of Fukuoka City . Signs warning about redback spiders have been posted in parks around the city , as Japan previously had no dangerous spiders .

= = Predators and parasitoids = =

The black house spider (*Badumna insignis*) , daddy @-@ long @-@ legs spider (*Pholcus phalangioides*) and the giant daddy @-@ long @-@ legs spider (*Artema atlanta*) are known to

prey on the redback spider , and redbacks are often absent if these species are present in significant numbers . *Agenioideus nigricornis* , a spider wasp , is a parasitoid of the adult redback . Other wasps of the families Eurytomidae and Ichneumonidae parasitise redback eggs , and mantid lacewings (Neuroptera and Mantispidae) prey on redback eggs .

= = Bites to humans = =

= = = Incidence = = =

The redback spider is responsible for far more envenomations requiring antivenom than any other creature in Australia . Estimates of the number of people thought to be bitten by redback spiders each year across Australia range from 2 @, @ 000 to 10 @, @ 000 . The larger female spider is responsible for almost all cases of redback spider bites . The smaller male was thought to be unable to envenomate a human , although some cases have been reported ; their rarity is probably due to the male 's smaller size and proportionally smaller fangs , rather than the male being incapable of biting or lacking potent venom . The bite from both juvenile and mature females appear to have similar potency . The male bite usually only produces short @-@ lived , mild pain . Most bites occur in the warmer months between December and April , in the afternoon or evening . As the female redback is slow @-@ moving and rarely leaves her web , bites generally occur as a result of placing a hand or other body part too close to the web , such as when reaching into dark holes or wall cavities . Bites often also occur when a hidden spider is disturbed in objects such as clothes , shoes , gloves , building materials or garden tools .

A 2004 review reported 46 % of bites occurring on distal extremities of the limbs , 25 % on proximal areas of limbs (upper arms and thighs) , 21 % on the trunk , and 7 % on the head or neck . In some cases the same spider bites a victim multiple times . Historically , victims were often bitten on the genitalia , though this phenomenon disappeared as outhouses were superseded by plumbed indoor toilets . Conversely , bites on the head and neck have increased with use of safety helmets and ear muffs . Precautions to avoid being bitten include wearing gloves and shoes while gardening , not leaving clothes on the floor , and shaking out gloves or shoes before putting them on . Also , children can be educated not to touch spiders .

= = = Venom = = =

The redback and its relatives in the genus *Latrodictus* are among the most dangerous spider genera , alongside funnel @-@ web spiders (*Atrax* and *Hadronyche*) , mouse spiders (*Missulena*) , banana spiders (*Phoneutria*) and recluse spiders (*Loxosceles*) . Venom is produced by holocrine glands in the spider 's chelicerae (mouth parts) . Venom accumulates in the lumen of the glands and passes through paired ducts into the spider 's two hollow fangs . The venom of the redback spider is thought to be similar to that of the other *Latrodictus* spiders . It contains a complex mixture of cellular constituents , enzymes and a number of high @-@ molecular @-@ weight toxins , including insect toxins and a vertebrate neurotoxin called alpha @-@ latrotoxin , which is active in humans .

In vertebrates , alpha @-@ latrotoxin produces its effect through destabilisation of cell membranes and degranulation of nerve terminals , resulting in excessive release of neurotransmitters , namely acetylcholine , norepinephrine and GABA . Excess neurotransmitter activity leads to the clinical manifestations of envenomation , although the precise mechanisms are not well @-@ understood . Female redbacks have an average of around 0 @. @ 08 ? 0 @. @ 10 mg of venom , and experiments indicate that the median lethal dose (LD50) for mice at room temperature is 10 ? 20 % of this quantity (0 @. @ 27 ? 0 @. @ 91 mg / kg based on the mass of the mice used) , but that it is considerably more deadly for mice kept at lower or higher temperatures . Pure alpha @-@ latrotoxin has an LD50 in mice of 20 ? 40 µg / kg .

The specific variant of the vertebrate toxin found in the redback was cloned and sequenced in 2012

, and was found to be a sequence of 1180 amino acids , with a strong similarity to the equivalent molecule across the *Latrodectus mactans* clade . The syndromes caused by bites from any spiders of the *Latrodectus* genus have similarities ; there is some evidence there is a higher incidence of sweating , and local and radiating pain with the redback , while black widow envenomation results in more back and abdominal pain , and abdominal rigidity is a feature common with bites from the west coast button spider (*Latrodectus indistinctus*) of South Africa .

One crustacean @-@ specific and two insect @-@ specific neurotoxins have been recovered from the Mediterranean black widow (*L. tredecimguttatus*) , as have small peptides that inhibit angiotensin @-@ 1 @-@ converting enzyme ; the venom of the redback , although little @-@ studied , likely has similar agents .

== = Antivenom == =

Redback antivenom was developed by Commonwealth Serum Laboratories , then a government body involved with discovering antivenoms for many venomous Australian creatures . Production involves the milking of venom from thousands of redbacks and repeatedly inoculating horses with non @-@ lethal doses of it . The horses ' immune systems make polyclonal antibodies . Blood plasma , containing the antibodies , is extracted by plasmapheresis . The plasma is treated with pepsin , and the active F (ab ') 2 fragments are separated and purified . Each vial contains 500 units of redback antivenom in approximately 1 @.@ 5 ml , which is enough to inactivate 5 mg redback spider venom . The antivenom has been safely administered to women in various stages of pregnancy .

Redback antivenom has been widely used in Australia for decades , although evidence from controlled studies for its effectiveness has been lacking . Further studies are needed to confirm or refute its effectiveness . It appears clinically active against arachnidism caused by *Steatoda* spiders ; however , as these cases are often mild and the evidence of its effectiveness is limited , this treatment is not recommended . Similarly , the antivenom has been effective with those of *L. katipo* , and *L. tredecimguttatus* . Animal studies also support its use against envenomation from other widow spiders , having successfully been tested against venom from *L. mactans* , *L. hesperus* , and *L. tredecimguttatus* (synonym *L. lugubris*) .

== = Signs and symptoms == =

Envenomation from a redback spider bite produces a syndrome known as latrodectism ; a half to two @-@ thirds of people bitten develop significant pain or systemic symptoms . The diagnosis is made from the clinical condition , often based on the victim being aware of a bite and ideally with identification of the spider . Laboratory tests are rarely needed and there is no specific test for the venom or latrodectism .

The redback 's small size means that swelling or puncture marks at the bite site are uncommon . The bite may be painful from the start , but more often only feels like a pinprick or mild burning sensation . Within an hour , a more severe local pain may develop with local sweating and sometimes piloerection (goosebumps) ? these three symptoms together are a classic presentation of redback spider envenomation . Pain , swelling and redness can spread proximally up a limb or away from the bite site and regional lymph nodes may become painful . Some subjects with delayed symptoms may present with a characteristic sweating and pain in the lower limbs , generally below the knees , or a burning sensation in the soles of the feet . This may eventuate even if the person was bitten somewhere else on their body .

Around one in three subjects develops systemic envenomation ; this may occur after a number of hours , or rarely , be delayed for more than 24 hours ; symptoms typically include nausea , vomiting , abdominal or chest pain , agitation , headache , generalised sweating and hypertension . Severe pain usually persists for over 24 hours after being bitten , and symptoms of envenomation may linger for weeks or even months . Rare complications include seizure , coma , pulmonary edema , respiratory failure or localised skin infection . Children , the elderly , or those with serious medical

conditions are at much higher risk of severe effects and death resulting from a bite . Infants have died within hours of a bite , but adult fatalities have taken up to 30 days .

Children and infants may be unable to report being bitten , making it difficult to associate their symptoms with a spider bite . Symptoms seen in infants include inconsolable crying , refusing to feed and a general erythematous rash . Muscle aches and pains , and neck spasm are often seen in children over four years of age .

Unlike those of some other Australian spiders , redback bites do not necrose . Latrodectism has been misdiagnosed as various medical conditions including acute hepatitis , sepsis , testicular torsion or an acute abdomen .

== Treatment ==

Treatment is based on the severity of poisoning from the bite ; the majority of cases do not require medical care , and patients with localised pain , swelling and redness usually only require local application of ice and simple oral analgesia such as paracetamol . Pressure immobilisation of the wound site is not recommended , as the venom spreads very slowly and is not affected . Keeping the victim still to reduce the spread of the venom is beneficial .

Hospital assessment is recommended if simple pain relief does not resolve local pain , or clinical features of systemic envenoming occur . Opioid analgesics may be necessary to relieve pain . Antivenom is generally given for adults suffering severe local pain or symptoms of systemic envenomation consistent with latrodectism , which include pain and swelling spreading proximally from site , distressing local or systemic pain refractory to simple analgesia , chest pain , abdominal pain , or excessive sweating (diaphoresis) . A significant proportion of bites will not result in envenomation or any symptoms developing ; around 2 ? 20 % of bite victims require treatment with the antivenom . In an Australian study of 750 emergency hospital admissions for spider bites where the spider was definitively identified , 56 were from redbacks . Of these , 37 had significant pain lasting over 24 hours , but only six were treated with the antivenom .

The antivenom manufacturer 's product information recommends one vial , although this is often insufficient . Hence current guidelines indicate two vials , with a further two vials recommended if symptoms do not resolve within two hours . The antivenom can be given by injection intramuscularly (IM) or intravenously (IV) . The manufacturer recommends IM use , with IV administration reserved for life @-@ threatening cases . However , toxicologist Geoffrey Isbister has suggested IM antivenom is not as effective as IV antivenom , after finding that IM antivenom takes longer to reach the blood serum . These concerns have led two handbooks to recommend IV in preference to IM administration in Australian practice . Despite a long history of usage and anecdotal evidence of effectiveness , there is a lack of data from controlled studies confirming the antivenom 's benefits . Before the introduction of antivenom , benzodiazepines and intravenous calcium gluconate were used to relieve symptoms of pain and distress , although calcium is not recommended as its benefit has not been shown in clinical trials .

Studies support the safety of antivenom , with around a 5 % chance of an acute reaction , 1 ? 2 % of anaphylaxis and 10 % chance of a delayed reaction due to serum sickness . Nevertheless , it is recommended that an injection of adrenaline be ready and available in case it is needed to treat a severe anaphylactic reaction , and also that the antivenom from the vial be administered diluted in a 100 ml bag of intravenous solution for infusion over 30 minutes . While it is rare that patients report symptoms of envenomation lasting weeks or months following a bite , there are case reports from the 1990s in which antivenom was reported to be effective in the relief of chronic symptoms when administered weeks or months after a bite , however , in the vast majority of cases , it is administered within 24 hours .

== Prognosis ==

In almost all cases , symptoms resolve within a week . Fatalities are very unlikely ; no deaths have been reported since the introduction of antivenom in 1956 , but before this , redback spider bites

had resulted in at least 14 deaths in Australia .

= = Bites to animals = =

Redback spider bites are difficult to diagnose in pets unless witnessed . Dogs appear to have some resistance . They are at serious risk only if bitten many times , and rarely need antivenom . Cats are likely to be more susceptible and require antivenom , which can reverse symptoms very quickly . Guinea pigs , horses and camels are very susceptible . As with humans , the symptoms are predominantly autonomic in nature alongside pain at the bite site . Dogs may also suffer vomiting and diarrhoea , muscle tremors or clonic contractions , and abdominal wall rigidity , while cats may salivate excessively , protrude their tongue or be overexcitable .

= = Historical treatment of bites = =

Most traditional or historical first @-@ aid treatments for redback spider bites are either useless or dangerous . These include making incisions and promoting bleeding , using ligatures , applying alkaline solutions , providing warmth , and sucking the venom out . In modern first aid , incising , sucking , applying bandages and tourniqueting are strongly discouraged . In 1893 , the Camperdown Chronicle reported that a doctor noticed that a severely ill benumbed victim got much better overnight following treatment using injections of strychnine and cocaine ; strychnine had been popular as a snake bite antidote , but it was not effective . As of 2011 , administration of magnesium sulphate was reported to have had some benefit though evidence of effectiveness is weak .

= = Cultural impact = =

Indigenous Australians in New South Wales mixed the venom with that of snakes and pine tree gum to form a broth used to coat spear tips . Slim Newton drew popular attention to redbacks with his song " The Redback on the Toilet Seat " , which won the Golden Guitar at the first Country Music Awards of Australia in 1973 . Newton recalled an occasion when a friend used his outside toilet where the light globe had blown and reported he was lucky there was not a redback spider on the toilet seat . The phrase inspired him to write the song . A sculpture of an impossibly large redback , one of Australia 's big things , was built in 1996 at Eight Mile Plains , Queensland . The Angels 1991 album Red Back Fever takes its name from the spider . Matilda Bay Brewing Company produces a wheat beer called Redback , with the distinctive red stripe as the logo . The redback appears in the name and emblem of the South Australia cricket team . The Airborne Redback , an Australian ultralight trike , was also named after the spider . Redback Boots is an Australian workboot manufacturing company , which uses the spider in its name and logo . In 2006 a redback spider stamp was designed as part of a " Dangerous Australians " stamp series , but was withheld from general circulation by Australia Post due to concerns that the realistic depiction would scare people opening their letter boxes .