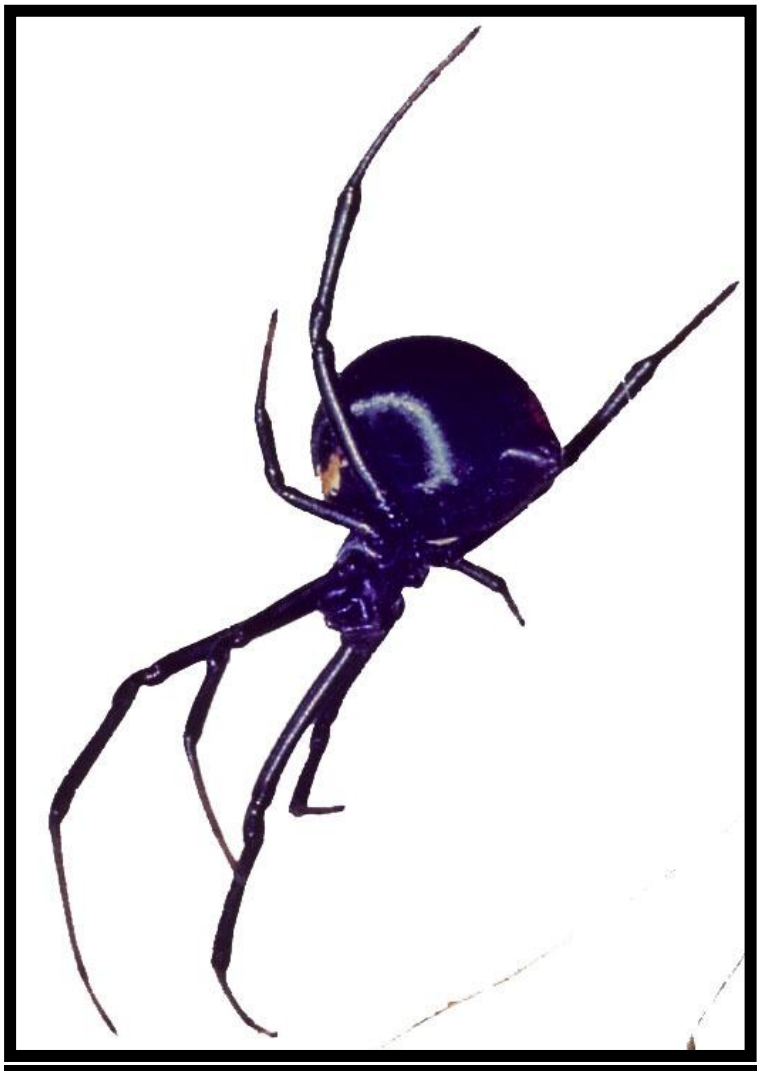
ARE SPIDERS DANGEROUS?

By Astri Leroy



Remember –

SPIDERS DON'T EAT PEOPLE!

INTRODUCING SPIDERS

Spiders are small land-based predators with 8 jointed legs, external skeletons, two main body parts, simple eyes, no wings or antennae. They lay eggs but do not metamorphose. All spiders produce silk and many build beautiful webs.

They are probably the most abundant land-based predators and although insects are the primary prey, some can catch small birds, mammals, reptiles, amphibians and even fish. They are important biological control agents and because they occur in huge numbers they are really effective. You could call them natural insecticides!

Southern Africa with its varied topography, vegetation types and habitats from deserts to forests, mountains to wide grassy plains, man-altered landscapes and wilderness areas - has a huge number and diversity of these little predators. They range in size from the comparatively gigantic baboon spiders or African Tarantulas to adult spiders with body length of less than a millimetre. The majority are modest-sized, inoffensive and keep to themselves. There's at least one and probably more not very far from you now. Don't run away - they're not out to get you! Spiders don't eat people!

VENOM

All spiders produce venom, except members of one small family, the Uloboridae. Spider venom is a mixture of saliva, venom and digestive fluids, used to subdue, kill and digest their prey - usually invertebrates. In general it has little effect on large mammals including people. A bite may hurt at first, can itch for several days but if left to subside without being scratched will disappear with no lasting ill effects. Venom does not persist in the body and the effects of a bite will not recur later. Spiders will only bite if squashed against our skin - they don't even bite in self-defence as some larger creatures do. They do not eat people. They do not make a living from sucking our blood and are not vectors of any human diseases. They cannot lay eggs under our skin and won't make nests in our hair. In fact they will avoid contact with big, dangerous creatures like us at all costs. This means that spider bites are really rare and the effect venom of most spiders on humans is unknown because they simply don't and often cannot bite us.

Most supposed spider bites turn out to be lesions from bacterial infections or less often to be tick, flea, mosquito or other arthropod bites. Fungal infections or lesions resulting from some underlying medical condition are also sometimes blamed on spiders. People with impaired immune systems are more susceptible to infections and such infections often cannot be diagnosed so medical practitioners take the cautious and correct route of prescribing broad spectrum antibiotics. These work for most bacterial infections with the exception of the difficult-to-treat, deep-seated bacterial infections such as MRSA (methicillin-resistant *Staphylococcus aureus*). Of course antibiotics do not work on fungal or viral infections which need to be treated differently.

There are however a very small number of species in only three of the 71 families of spiders that occur in South Africa that DO have venom of medical significance and these are the spiders shown in this booklet. (We have more than 2000 species of spiders in South Africa)

THE SPIDERS WITH MEDICALLY SIGNIFICANT VENOM

BUTTON OR WIDOW SPIDERS
Black Button Spiders (Widow Spiders)
Family Theridiidae, species
Latrodectus cinctus, Latrodectus indistinctus, Latrodectus karrooensis & Latrodectus renivulvatus

Black Button spiders are regarded as the most dangerously venomous spiders found in southern Africa.
Black button spiders in southern Africa do not have the red double-isosceles-triangle marking under the abdomen but can have a variety of pretty red and gold markings on the upper side, fading in older individuals to a dull red dot above the spinnerets. Egg sacs are smooth, usually spherical, sometimes tear-drop shaped and about the size of a large green pea. Mature female's abdomens are also about pea sized. They make three dimensional webs of very tough silk with a retreat to one side in a variety of sheltered spots, usually outdoors. Males are very small and harmless to humans.

Although they are reluctant to bite, preferring to "play dead" if disturbed, proven button spider bites must be taken seriously and medical attention sought. The potent venom affects the nervous system, causing severe systemic symptoms and local pain but in South Africa there have been no recorded human deaths for more than 7 decades. An antivenin is available in South Africa.

Top: Immature female Black Button spider, *Latrodectus indistinctus*. Below: Mature female Black Button spider with egg sacs and right –underside without red markings, both *Latrodectus renivulvatus.*

Brown Button Spiders (Widow Spiders)
***Latrodectus geometricus* and *Latrodectus rhodesiensis Family* Theridiidae**

Brown Button spiders, despite their name, can be creamy white to very dark blackish brown. They do have a red or orange double-isosceles-triangle marking under the abdomen. Egg sacs of the Rhodesian Button spider are spherical, large and fluffy. The much more common Brown Button Spider's egg sacs are spherical and covered in little silken spikes. They make three dimensional webs of very tough silk with a retreat to one side in a variety of sheltered spots. Brown Button Spiders are common, widespread and often found in and around human habitation. Males are very small and harmless to humans.

Venomous

Brown button spider venom is similar to that of black button spiders but less potent. They are reluctant to bite, preferring to "play dead" if disturbed. Medical attention should be sought if symptoms occur although there are only a few known cases of Latrodectism from the bite of a brown Button Spider that have needed treatment. The antivenin for all cases of Latrodectism is available in South Africa. No human deaths have been recorded.

Brown Button spider *Latrodectus geometricus* pale individual with typical spiky egg sacs

John Leroy.

Brown Button Spider *Latrodectus geometricus* dark individual

Rhodesian Brown Button Spider *Latrodectus rhodesiensis* this species makes large fluffy egg sacs

TREATMENT OF BUTTON/WIDOW SPIDER BITES (Neurotoxic venom)

Hospitalisation and monitoring of vital signs for at least 24 hours

There are no investigations of value in establishing the diagnosis

If symptoms develop (they don't always) they should at first be treated symptomatically and in severe cases Latrodectus spider antivenin obtainable from South African Vaccine Producers (Pty.) Ltd. Tel (011) 386-6000 or 386-6063 must be administered and this should only be done by a trained medical professional. It should be readily available and kept in all hospitals. Calcium gluconate solution can be given intravenously to give some relief from cramps. Patient should be hydrated intravenously.

The bite site must be kept clean, uncovered and not interfered with.
Avoid Opioids and give a Tetanus toxoid.

VIOLIN SPIDERS
Family Sicariidae, genus *Loxosceles*
6 species *Loxosceles bergeri*, *L parramae, L pilosa, L simillima, L speluncarum,* and *L spinulosa*

Violin spiders are smallish to medium-sized, unremarkable free–living nocturnal hunters and a variety of subdued brownish colours. The "violin marking" on the head region is not always visible and is not a reliable identification mark. They don't construct webs to catch their prey but rest under logs and bits of fallen wood etc., by day in a retreat of a few strands of soft, bluish silk. The danger from violin spiders is hugely exaggerated. They will only bite if inadvertently squashed again the skin. The venom is cytotoxic (cell destroying) to humans and can, but seldom does, cause long-lasting necrotic wounds. Bites are not life threatening but medical attention should be sought for **proven** Violin Spider bites. Treatment is supportive and symptomatic. No antivenin is available or necessary.

Here's what Dr Ansie Dippenaar-Schoeman, a world-renowned scientist who has worked with spiders all her life says about them:
"Of the medically important spiders, it is especially the VIOLIN spider that causes the greatest confusion. Over the last years e-mails have been circulating claiming that violin spiders have become a serious problem in South Africa and that their numbers are increasing at an alarming rate.
Violin spiders are regarded as rare spiders by the arachnologists in South Africa with very few specimens recorded from houses. Surveys in South Africa over the last forty years support this statement. In the South African National Collection of Arachnida, which houses more than 140 000 spider specimens collected over a 40-year period, only 120 specimens (0.08% of the collection are violin spiders. Of these 120 specimens, only 11 were collected inside buildings.
Their rarity is confirmed by surveys undertaken over the last six years as part of the South African National Survey of Arachnida (SANSA). Of the more than 10 000 spiders identified annually, violin spiders are rarely encountered.
As part of SANSA, a virtual museum ***www.arc.agric.za:8080*** *is available to the public and it contains photographs of spider submitted – most of which were found in and around house. Of the more than 3000 photographs received to date, only 10 are of Violin Spiders, and five of these were photographed at the same locality in the Free State."* More information is available on the ARC-PPRI website http://www.arc.agric.za/arc-ppri/Pages/Biosystematics/Arachnida-Research.aspx. Go to BIOINFORMATICA then Venomous arachnids.


Loxosceles parramae Gauteng violin spider


A species of violin spider from the Karoo


Loxosceles speluncarum found in caves *Loxosceles pilosa* is also found in caves


Loxosceles simillima savannah Violin Spider, *Loxoscees spinulosa* looks much the same.

SIX-EYED SAND SPIDERS, SIX-EYED CRAB or SIX-EYED DESERT SAND SPIDERS
Family Sicariidae, *Sicarius hahni, Sicarius spatulatus, Sicarius testaceus*

Six-eyed sand spiders are found in arid areas of fine sand where they remain immobile just below the surface. They are restricted to dry sandy habitats and can be found in the soft soil at the mouths of caves and overhangs or in the shelter or rocks. Although their venom is potentially dangerous there have been no proven records of bites in South or southern Africa from these spiders.

Sicarius testaceus a six-eyed sand spider

Tests show that the venom of six-eyed sand spider has both cytotoxic and haemotoxic elements which mean it could cause both tissue damage at the site of the bite and internal haemorrhaging. No human envenomation has been recorded so we simply don't know either what the effects would be or what treatment should be recommended, but probably the same as for violin spiders, i.e. supportive and symptomatic. No antivenin is available.

TREATMENT OF VIOLIN AND SIX-EYED SAND SPIDER BITES
(Cytotoxic venom)

Treatment is given to promote healing and limit secondary infection. The bite site must be kept clean, dry, uncovered and not interfered with. If infection does occur, antibiotics I.V. and a tetanus toxoid should be administered. No antivenin is available for cytotoxic spider bites. There are no investigations of value in establishing diagnosis.

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Sac spiders may be off the hook!

SAC SPIDERS, YELLOW SAC SPIDERS, HOUSE SAC SPIDERS, LONG-LEGGED SAC SPIDERS – these are various common names given to the very common spider *Cheiracanthium furculatum* in the family Eutichuridae

Since the early 1980's bites from the common House Sac spider *Cheiracanthium furculatum* have been believed to be medically important and to cause slow-healing (necrotic) sores. This reputation came about from a study conducted several decades ago using circumstantial evidence. We are not sure how the researchers proved that the sores were caused by a spider bite.
The media got hold of this research, it was repeated many times in both scientific and popular literature and a legend was born. Recent research suggests that their venom does not contain the compound that causes necrosis and that this reputation could be undeserved. (See reference section **Vetter,R.S., Isbister, G.K., Bush, S.P., Boutin, L.J**. Verified bites by yellow sac spider, etc.). House sac spiders are probably no more or less dangerous to humans than any other spider and like all spiders they try their best to avoid contact with us.

Female sac spider *Cheiracanthium furculatum*

Male sac spiders have slimmer abdomens.

NOTES FOR MEDICAL PRACTITIONERS

Rick Vetter (2006) a medical entomologist from the USA says: **"One of the very real problems with arthropod bites is that the bite causes itching, the victim scratches, introduces a secondary bacterial infection from grungy fingernails and such, a horrific wound shows up and then the wound is solely blamed on the arthropod when the real culprit is the bite victim him/herself."**
So when presented with a necrotic lesion think bacterial infection or one of the following possible diagnoses to be investigated before blaming a spider:

ALTERNATIVE DIAGNOSES

Table 1.—A list of medical conditions that have been or could be misdiagnosed as cutaneous loxoscelism. Modified from Swanson & Vetter (2005)

Infections

Atypical mycobacteria

- **Bacterial** Streptococcus - Staphylococcus (especially MRSA) - Lyme borreliosis - Cutaneous anthrax – Syphilis – Gonococcemia Ricketsial disease - Tularemia

Deep Fungal Sporotrichosis – Aspergillosis - Cryptococcosis

Ecthyma gangrenosum (Pseudomonas aeruginosa), Parasitic (Leishmaniasis), Viral (herpes simplex, herpes zoster (shingles)), Vascular occlusive or venous disease, Antiphospholipid-antibody syndrome, Livedoid vasculopathy,
Small-vessel occlusive arterial disease, Venous statis ulcer, Necrotising vasculitis, Leukocytoclastic vaculitis, Polyarteritis nodosa, Takayasu's arteritis, Wegeners granulomatosis, Neoplastic disease, Leukemia cutis, Lymphoma (e.g., mycosis fungoides), Primary skin neoplasms (basal cell carcinoma, malignant melanoma), squamous cell carcinoma),
Lymphomatoid papulosis, Topical and Exogenous Causes, Burns (chemical, thermal), Toxic plant dermatitis, Factitious injury (i.e., self-induced), Pressure ulcers (i.e., bed sores), Other arthropod bites, Radiotherapy, Calcific uremic arteriolopathy, Cryoglobulinemia, Diabetic ulcer, Langerhans'-cell histiocytosis, Pemphigus vegetans, Pyoderma gangrenosum, Septic embolism

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- **Vetter, R.S**. Alleged Spider Bite. Western J. Medicine 173:357-358. 2000 - revised 2006
- **Vetter,R.S., Isbister, G.K., Bush, S.P., Boutin, L.J**. Verified bites by yellow sac spider (Genus *Cheiracanthium*) in the United States and Australia. Am. J. Trop. Med. Hyg., 74(6), 2006, pp. 1043-1048

SUGGESTED FURTHER READING ON SOUTHERN AFRICAN SPIDERS

SPIDERS OF SOUTHERN AFRICA, (2003) by Astri & John Leroy, published by Struik, Cape Town, South Africa.

SPIDERS OF THE KALAHARI, (2010) by Ansie Dippenaar-Schoeman and Almie van den Berg. Plant Protection Research Institute Handbook No. 18. Published by the Agricultural Research Council, Pretoria. Available from ARC-Plant Protection Research Institute, Private Bag X134, Queenswood, 0121 South Africa. E-mail **DippenaarA@arc.agric.za**

FILMER'S SPIDERS, (2010) by Martin Filmer, revised by Norman Larsen, published by Struik, Cape Town, South
Africa.

SPIDERS OF THE SAVANNA BIOME (2013) by Ansie Dippenaar-Schoeman, Stefan Foord & Charles Haddad. University of Venda, Thohoyandou and the Agricultural Research Council, Pretoria. Available from ARC-Plant Protection Research Institute, Private Bag X134, Queenswood, 0121 South Africa. Or e-mail DippenaarA@arc.agric.za and S.H. Foord, University of Venda, Private Bag X5050, Thohoyandou, 0950. E-mail Stefan.foord@univen.ac.za

SPIDERS OF THE GRASSLAND BIOME (2014) by Ansie Dippenaar-Schoeman and Charles Haddad. Plant Protection Research Institute handbook No. 19. Published by the Agricultural Research Council, Pretoria.
Available from ARC-Plant Protection Research Institute, Private Bag X134, Queenswood, 0121 South Africa. E-mail **DippenaarA@arc.agric.za** or C.R. Haddad, Department of Zoology & Entomology, University of the Free State, PO Box 339, BLOEMFONTEIN 9300. E-mail haddadcr@ufs.ac.za

A FIELD GUIDE TO THE SPIDERS OF SOUTH AFRICA (2014) by Ansie Dippenaar-Schoeman. Published by Lapa Publishers, Pretoria.

A visit to the ARC website www.arc.agric.za:8080 will take you to a VIRTUAL MUSEUM where you can identify many common spiders.

The above are aimed at the general nature-lover and although further research has been carried out since it was published and some taxa had not been revised at the time of publication, the following volume is recommended for those who would like to pursue their interest in spiders at a more technical level:

AFRICAN SPIDERS An Identification Manual (1997)
by A.S. Dippenaar-Schoeman & R. Jocqué. Plant Protection Research Institute Handbook No. 9.
Published by the Agricultural Research Council, Pretoria. Available from ARC-Plant Protection Research Institute, Private Bag X134, Queenswood, 0121 South Africa. Or e-mail **DippenaarA@arc.agric.za**

If you would like a presentation on spiders, a spider walk in the veld to look at our amazing spider fauna or would like to know more please visit our website, www.spiderclub.co.za or send us an e-mail to info@spiderclub.co.za
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