The Proper Care of Scorpions

By Doug Anderson. Copyright 2010.

Because of my disability, I was always close to the ground. As a result I developed an intense fascination for bugs and creepy crawlies and all things mothers wished their sons didn’t have a fascination in. I did a school project on scorpions when I was in std. 4 (12 years of age). I subsequently joined a nature club called The Spider Club of Southern Africa. I was given a burrowing scorpion (Opisthothalmus sp.) by one of the members and by std. 8, I had hundreds of different species: thick tails (Parabuthus sp.), fat tails (Androctonus sp.), burrowing scorpions (Opisthothalmus sp.), tree scorpions (Opisthocanthus sp.) and rock scorpions (Hadogenes sp.) but to name a few. I kept emperor scorpions (Pandinus imperator) and I even had what is considered the deadliest species of scorpion, the Death Stalker (Leiurus Quinquestriatus). I had the smallest species of scorpion, the largest species of scorpion, the longest species of scorpion, and the deadliest species of scorpion all in my collection. My only regret is that I never took enough photographs over the years.

Scorpions are largely misunderstood and stories told about people getting stung hasn’t helped this amazing creature. I think scorpions are one of the most amazing of all the creatures to keep and study.

Some highlights from keeping and studying scorpions include listening in the dark how tree scorpions tap on the bark to communicate with each other, hearing a scorpion stridulate for the first time, seeing a Parabuthus transvaalicus squirt its venom, witnessing scorpions doing the mating dance, watching a mother scorpion give birth and witnessing a scorpion shed its exoskeleton.

Keeping and studying scorpions is very rewarding and with roughly 1400 species on the planet, there is an incredible variety to keep you busy. There are not many places where scorpions don’t occur. I appreciate that scorpions need to be collected from the wild for scientific purposes, but I do not believe in over collecting from the wild, thereby destroying the little eco-systems that exist in the wild. There are many collectors and breeders around the world that could supply you with captive bred stock.

Of course, not all countries allow importation of scorpions but I am sure you will come right through your local nature clubs. Some countries also do not allow the keeping (without permits) and selling of local species. Best check out the laws in your country – again, your local nature clubs should be helpful.

Before I get into the actual keeping of scorpions, let me give you an idea of what this creature is and where it fits into the animal kingdom.

Scorpions are predatory arthropod animals of the order Scorpiones within the class Arachnida. They have eight legs and are easily recognized by the pair of grasping claws/Chelae/pincers and the segmented tail, carried in a characteristic forward curve over the back, ending with a venomous stinger. Only 25 species have venom capable of killing a human being. Scorpions are found widely distributed south of about 49 degrees North except Antarctica and New Zealand.
Scientific classification of some common Scorpions found in captivity:

Scorpions include 16 families, 159 genera with about 1260 described species worldwide. This is obviously too much to list here, so I have given a broad scientific classification with finer details of some South African scorpions and some of the most common scorpions in the pet trade.

**Kingdom:** Animalia

**Phylum:** Arthropoda

**Class:** Arachnida

**Order:** Scorpiones

**Superfamily:** Scorpionoidae

**Family:** Scorpionidae (burrowing scorpions)

4 Genera and 131 species. Found in Africa, Asia and Australia

Genera found in captivity include:

Opisthathalmus (Burrowing Scorpion from South Africa)

Pandinus (Emperor Scorpion)

Heterometus (Asian Forest Scorpion)
**Family:** Liochelidae

12 Genera, 87 species. Inhabit all continents except North America.

Some genera found in captivity include:

- Opisthachanthis (Tree Scorpion)
- Hadogenes (Rock Scorpion)
- Cheloctonus (Burrowing Scorpion)

**Superfamily:** Buthoidae

**Family:** Buthidae (thick tailed scorpions). Widespread – areas not found include New Zealand and Antarctica. Includes over 80 Genera and 800 species!!!!

Genera kept in captivity include:

- Parabuthus
Androcotonus

Uroplectes

Hottentotta

Leiurus

Centruroides
**Superfamily:** Iuroidea

**Family:** Caraboctonidae (hairy scorpions)

5 Genera, 19 species. Found in parts of North and South America.

Genera kept in captivity include:

**Genus:** Hadrurus (Desert Hairy Scorpion)

**Superfamily:** Chactoidea

**Family:** Vaejovidae

16 Genera, 164 Species. Found in Central America, SW Canada, USA and Mexico. Found often in captivity,
Anatomy of a scorpion:

The anatomy of a scorpion is quite interesting.

Scorpion Anatomy Diagram. Dorsal (upper) view:

Legs

Generally, the leg is divided into:
coxa (closest to sternum), trochanter, femur, patella, tibia, basitarsus and tarsus. It ends with the pair of ungues (lateral claws).
Used for locomotor function and may be used to dig.
**Pedipalps (includes claws)**

The pedipalp is divided into: coxa, trochanter, femur, patella, tibia and tarsus. The tibia and tarsus forms the chelae of the pedipalp. The pedipalp contains many hairs (setae). The setae give spatial orientation. The pedipalps are used to grasp prey and for defence against predators. The pedipalps are also used to grasp female chelae while mating.

A peculiar gill like structure. The function of the pectines is sensory. It is one of the most convenient means of determining sex of some species. Pectines are larger and longer in males.
Chelicera

Divided into 3 segments: coxa, tibia (fixed finger), tarsus (movable finger). Used to grasp and crush prey before sucking it.

Carapace

The dorsal carapace is called tergite while the ventral is called sternite. They are joined by a whitish membrane called pleural membrane which would be stretched when the scorpion is very full or pregnant.

Mesosoma (body)

The mesosoma is divided into 7 segments.

Metasoma (tail)

The metasoma is divided into 5 segments and the sting. The sting is called the telson. There are generally 2 venom glands under voluntary control within the telson. The telson ends with a hypothermic needle like sting known as aculeus. The telson is divided into two parts; the vesicle and the aculeus.
**Sternum**

Sternum is the junction where the coxae of most legs meet.

**Genital Operculum**
Genital operculum covers the reproductive organs of the scorpions (genital orifice of females). In the male, the genital operculum is usually partially or completely separate. A pair of genital papillae may protrude from the posterior part of the operculum for males of some species. This is another key sex dimorphism region.
**Spiracle**

Small external opening of a book lung as found in scorpions and spiders. There are four pairs in scorpions and up to two pairs in spiders.

**Book Lung**

Type of respiratory organ found in certain air-breathing arachnid arthropods such as scorpions and some spiders. Each book lung consists of a series of thin plates that are highly vascular (richly supplied with blood) and arranged in relation to each other like the pages of a book. The plates extend into an internal pouch formed by the external skeleton that opens to the exterior by a small slit (spiracle). This opening provides extensive surface area for the exchange of oxygen and carbon dioxide with the surrounding air. There are four pairs in scorpions and up to two pairs in spiders.

**Eyes**

When you look at the carapace, you will see a pair of median eyes in the centre and on the sides 1-6 pairs of lateral eyes. Scorpion eyes are simple but have been found to be remarkably sensitive. The median eyes are more sensitive than lateral eyes.
Scorpion Anatomy Diagram Ventral View (under view):

Scorpion Build:

First of all, let me start by saying ALL scorpions are venomous. I often get asked if a particular scorpion or snake is poisonous which is incorrect. The difference is that poison is ingested (taken in through the mouth) and venom is injected into the skin either through a sting (as is the case in the scorpion) or fangs (as is the case in snakes).

How a person reacts to the sting of a scorpion will differ from person to person, much like a bee sting differs from person to person – some might experience pain and swelling while others will have a full blown allergic reaction.

Scorpions have two distinguishing features, i.e. the tail and the pincers (chelae/claws). Scorpions either have big fat pincers, in which case the tail will be thin in comparison or the they will have thin pincers, in which case the tail will be thick in comparison.

Scorpions with fat tails and thin pincers (chelae/claws) are considered as extremely venomous and should therefore be treated with care.

Picture a. Androctonus Australis (Fat tail scorpion). Notice the “fat” tail in comparison to the pincers (chelae). This species is considered one of the most venomous in the world and is responsible for many deaths in North Africa each year.
Picture b. Parabuthus Transvaalicus found in South Africa. This scorpion is venomous. It isn’t the deadliest scorpion in South Africa, but its sting is very painful. Notice the thick tail and thin pincers.

Picture c. Hadogenes species (Rock scorpion). Notice the fat pincers in comparison to the tail. In my experience, this species will rather pinch than sting. I have never been stung or heard of someone being stung by a rock scorpion.

Picture d. Emperor scorpion. Although this is the largest species of scorpion and the tail might look thick, when you compare it to the pincers, it is still thinner than the pincers.

In some species of scorpion, the thickness of the tail is not much greater to the pincers when comparing and in this instance, if the pincers are thin, then the scorpion is to be considered highly venomous and treated with care.

Picture e. Centruroides species found in America demonstrating thin pincers and a not so thick tail, as found in the fat tail or thick tail scorpions. This scorpion is venomous.
Picture f. Uroplectes species found in South Africa. Notice thin pincer = venemous. The sting from this scorpion isn’t deadly, but it is quite painful.

The idea when keeping scorpions, irrespective of the species is to NOT get stung and actually there is no reason to get stung if you handle them correctly – with a long pair of forceps (tweezers).

Some species of scorpion are docile and will allow handling but I do not recommend this, as in my opinion, this creates unnecessary stress for the scorpion.

**Housing scorpions**

This is the easy part. Most species of scorpions are not fussy in my experience. The basic setup would include:

1. Enclosure
2. Substrate
3. Decoration - Rocks, pieces of wood etc
4. Water bowl
5. Heating pad

Scorpions will naturally try and hide under something like a flat piece of rock or piece of bark or even under a piece of pot – anything it can get under really. If you want to keep scorpions successfully and maybe even breed them successfully, then you will need to match the conditions where they are found.

There are too many scorpions to be that specific here but where you acquire the scorpion should be able to give you an idea of where the scorpion naturally occurs and the type of climate it lives in.

It should be pretty obvious when I say the conditions for keeping a desert scorpion will be different to that of a scorpion found in the jungle.

The common name for the scorpion should already give you an idea of where or at least what conditions it naturally occurs in e.g. Rock Scorpions, Tree Scorpions, Hairy Desert Scorpion, Forest Scorpion and so on.

Picture of Parabuthus Transvaalicus in enclosure, resembling arid environment.
Enclosure

I have seen and I myself have kept scorpions in many types of containers, depending on my financial status at the time. Plastic jars (large and small), glass fish tanks, plastic/glass reptile enclosures will all suffice. The size of the enclosure will depend on the species you are keeping and the “look” you are wanting. For example if you want to keep an emperor scorpion and create the whole forest look with a piece of log inside with fake plants etc, then you will have to go for a fairly large plastic/glass reptile enclosure or fish tank.

I would recommend that whatever enclosure you choose, that it comes with a lid that isn’t easy to take off – like a snap on lid as seen below. The last thing you want is for a scorpion to go missing in your house – it could be a fatal mistake. You also want to make sure that there is sufficient ventilation in the lid. Also bear in mind that scorpions can squeeze themselves through the smallest of gaps and holes. Enquire at your local pet store.

*Please DO NOT place enclosure in an area that received sunlight – the enclosure will get too hot and kill your scorpion. Rather place the enclosure where there is no sun.

![Enclosure images](image.png)

All of these types of terrariums as seen above are sold in pet shops.

Substrate

The type of substrat you use will depend on where the scorpion is found. If the scorpion is found in the tropical jungles of the world, like the Emperor scorpion, then you will want to use peat (which you will also find at your local pet shop). The peat helps to hold moisture in which increases the humidity in the enclosure, thus matching the climating conditions of a tropical jungle.

![Peat image](image.png)

Peat is also sold as a substrate for tarantulas.
If the scorpion is found in the desert, like most thick tail and fat tail scorpions, then you will want to use desert sand which should also be available at your local pet shop.

Desert sand sold at the local pet shop, so beats having to collect it personally in the desert.

Burrowing scorpions, as the name suggests, live in burrows which they dig into hard soil. This is easy to recreate by mixing clay soil with some water and leaving to dry in the sun. I like to start the burrow for the scorpion by pushing 2-3 fingers (width) into the soil at an angle.

Opistothalmus species (Burrowing Scorpion) and burrow entrance.
Decoration

How you decorate your scorpion’s enclosure will also be dependent on the species you are planning to keep. I have always tried to mimic the living conditions of where the scorpion naturally occurs.

For example, Rock scorpions are found in cracks of rocks, between two rocks and so I have always used two pieces of slate onto of each other with a small rock between them, to create a gap in which the scorpion will reside.

Rock scorpions in familiar living conditions – rocky environment.
Tree scorpions for example reside under the bark of trees and so when you are decorating your scorpion’s enclosure, if it is a tree scorpion, then you can use bark. Whether it be bark or stone, make sure that you rid it of any potential little creatures like mites that might be harmful to your scorpion. This can be achieve by briefly soaking or wetting it with hot water.

Tree scorpion in its natural habitat – under the bark of trees. This can easily be replicated in a scorpion terrarium.
Thick tail and Fat Tail scorpions and other species of Buthids will reside under anything. They wander around a lot, usually in arid regions. Desert sand with a piece of rock or wood to hide under would be perfect for these type of scorpions. Normal fish tank sand will also suffice for these species of scorpion. If you really want to be fancy, you can collect sand from the area where the scorpion occurs and use that as the substrate for your scorpion enclosure.

Parabuthus Traansvaalicus and Parabuthus Capensis pictured above all living fine on fine sand, with pieces of wood to hid under.
**Water Bowl**

Scorpions do need water. You could spray water against the walls of the enclosure and you will find that scorpions will drink the water droplets off the walls of the enclosure and off rock etc. You could use the lid of a jar as a water bowl. You do not want to use something that is deep as a water bowl and you don’t want to use something that is bigger than the scorpion as a water bowl (incase the scorpion gets stuck in it).

![Rock Scorpion drinking water using its Chelicerae.](image)

**Heating Pad**

Depending where you live, scorpions will appreciate some heat. Some species can tolerate higher temperatures than others, for example Desert Scorpions. 75 – 80 F (24 – 27 C) temperature range will suffice for most scorpions.

![Heating Pad.](image)

Heating pad to be placed UNDER the enclosure NOT inside. This allows you to move more or less of the enclosure over the heating pad, depending how much heat is required. The scorpion enclosure should have a hot and cold side so the scorpion can move away from the heat if it is too much or toward the heat if it is too little.

**Humidity**

Humidity/Temperature Guage. 50 – 70% humidity for Desert Scorpions, 70 – 90% for Tropical Forest Scorpions.
Feeding

There are breeders world-wide who breed feeder insects and so I would advise feeding captive bred feeder insects to your scorpions rather than wild caught insects. Wild caught insects may be carrying insecticides which could be harmful for your scorpion.

Offer your scorpion food once a week or every second week. Monitor its feeding. Don’t get stressed if it goes a few weeks without feeding, particularly if your scorpion is “fat”. A “fat” scorpion can be identified by the plura on the sides bulging.

Pictures of a well fed scorpion – notice the pleura on the side of scorpion.

Types of feeder insects

Crickets, mealworms, giant mealworms, cockroaches are all good feeder insects for scorpions.

Picture 1 showing scorpion eating a cockroach. Picture 2 showing chelicerae (mouthparts) and pincers.
Breeding

Breeding scorpions is something to be tackled by the more experienced keeper. The first obvious thing to be able to breed scorpions is to make sure that you have a male and female of the same species.

Differentiating between male and female scorpions

Differentiating features between male and female scorpions differs from species to species. In some species like Rock Scorpions it is easy to identify male from female by looking at the pincers and length of tail. In Uroplectes species, the male has a much longer tail and slender body in comparison to female. In Parabuthus species, the male has a bulb on the pincer whereas the female has a flat pincer.

Female Hadogenes – short tail segments
Male Hadogenes – long tail segments

Male Uroplectes – longer tail segments
Female Uroplectes – short tails segments

Male Parabuthus sp. – notice bulb on pincers
Female Parabuthus sp. – thin pincers
1. Parabuthus species mating (female on the left – thin pincers; male on right – bulbous pincer)

The pectines are used to sex many species of scorpions, such as Emperor Scorpions. The pectines in male scorpions are larger and longer than that of females.

Ventral view of a scorpion, showing pectines.

There are roughly 1400 species of scorpions on planet Earth. Scorpions are found everywhere except New Zealand and Antarctica. Lifespan of a scorpion can range anywhere from around 2 years – 25 years of age.

Sexual maturity is reached after around 6 molts (which is usually around a few years in the wild but can be as little as a year in captivity depending on the species.

Picture a. Scorpion has started to pull itself out of its old skin (exoskeleton). Picture b. Scorpion has totally shed its exoskeleton.
The Mating Dance

Scorpions mate by doing a “dance”. The male quickly grasps the pincers of the female and begins a shaking action known as "juddering". The male may also use his chelicerae to grasp the female’s chelicerae – almost the scorpion equivalent of a kiss.

Picture a. (Pandinus sp.) the male (left) has grasped the female (right) with his pincers /chela and chelicerae. The mating “dance” has begun. The mating ritual can last anywhere from a few minutes – over 24hrs.

Picture b. (Parabuthus sp.) the male (bottom) grasps the female’s pincers (top) as part of the mating “dance”.

Then, after a short shoving match, the male deposits a spermatophore onto the substrate and positions the female over the packet of sperm. The female lowers her abdomen and picks up the spermatophore into her genital opening. The two separate and often beat a hasty retreat in opposite directions.

Spermatophore deposited on a hard surface by the female.

After a gestation period of around 5 - 18 months, a litter ranging in size from a dozen to a few dozen young scorpions is produced. The young grow in the mother, are born live, and then will climb onto the mothers back. They are white at first, becoming darker when they molt. The baby scorpions will remain on the mother’s back for a week or two and then they will shed. After their first shed, the baby scorpions are ready to leave the mother and fend for themselves.
Picture a. Female Androctonus Australis with newly born baby scorpions.

Picture b. Female Emperor scorpion with newly born baby scorpions.

Picture a. Close-up of newly born emperor scorpions.

Picture a. New born Baby scorpions.
Pictures a. Baby scorpions, already a few weeks old, showing colour of adult. The colour gets darker with every shed.

Keep the mother scorpion well fed once she has had babies, otherwise the baby scorpions might just become dinner. Baby scorpions can be fed on pin-head crickets. Some cannibalism might occur amongst the babies.

As the baby scorpion grows, it will need to shed its old skin (exoskeleton). This process called ecdysis, happens quite often in juvenile scorpions and less frequently in adults.

Baby scorpions after their first shed (old exoskeleton next to baby scorpion).

Once the scorpion is sexually mature, shedding stops. Baby scorpions often die when they are in the process of shedding. This happens because they are unable to free themselves from their old skin due to lack of moisture / humidity. You might want to increase the humidity slightly when raising baby scorpions. You might want to provide wet cotton wool or water crystals as a source of water for the baby scorpions – this will prevent drowning in water bowl.

Water crystals / jelly sold for tarantulas at your local pet shop.

Once the baby scorpions have shed, they can survive on their own – they are simply a miniature version of the adult. Everything that applies to keeping adult scorpions will apply (in principle) to keeping juvenile scorpions.
Scorpion Stings and Venom

Most scorpion venom is of the neurotoxic type. The most toxic venemous stings come primarily from the Buthidae family. Every person will react differently to a scorpion sting.

The venom of *Androctonus australis* and *Leiurus quinquestriatus* are considered the most toxic.

Stings from scorpions in the Scorpionidae Family can be quite painful but not fatal.

Rule of thumb: thick tail, thin pincers = highly venomous

Thin tail, fat pincers = not so venomous

The moral of the story is DON'T get stung. If you do, phone your doctor or go to Emergencies immediately (Particularly if it is from a scorpion in the Buthidae Family)

**Basic treatment of a scorpion sting**

1. Apply ice or ice pack to area of sting
2. Apply antiseptic cream – this will prevent infection down the line
3. Wrap area of sting in bandage as well as a bit above and below sting (not too tight)
4. Consult your physician

**Possible local effects of a scorpion sting are:**

1. Pain at the site of sting. Some species causes unspeakable pain.
2. Itchiness which may be masked by pain. Redness at sight of sting.
3. Slight to medium swelling.

**Early systemic effects includes:**

1. Sweating.
2. Pallor (paleness of skin).
3. Tachypnea (fast breathing).
4. Tachycardia (fast heart beat).
5. Hypertension (heightened blood pressure).
6. Salivation (uncontrolled saliva production).
7. Respiratory wheezing.
8. Blurred vision.
9. Slurred speech.
10. Drowsiness.

If you get stung, don’t be the hero and leave it. If you are unsure, see a physician. Try and keep the scorpion and take it with you for identification purposes.