Of all the creepy-crawlies on God’s Earth, I suspect that scorpions are the most widely shunned, feared, misunderstood, and killed on sight. I have to admit to having had such reactions myself on first arriving in Auroville, but over the years I have gradually changed my view of them, and my resultant behaviour. I can’t say that they are endearingly loveable, though some people in the West do keep them as exotic pets, but familiarity does at least evoke respect and admiration!

First point to make is that scorpions are not insects. They are a diverse and highly successful order of Arachnids (the spider family, having eight legs and often up to four pairs of eyes). I say successful, because not only have they been around for well over 400 million years, from the time of a huge two-metre-long (6½ft) sea scorpion, but they have diversified into some 1,500 species, ranging in size from 12mm/½in. to 20cms/8in., and come equipped with some remarkable characteristics.

Habitat

Though mostly associated with and common in dry desert-like environments, scorpions are found also in tropical forests, caves (often blind species), inter-tidal zones and a variety of other habitats from geographical locations as far north as England to as far south as Patagonia at the tip of South America. None exist, however, in the northern tundra or the polar regions. They prefer to live in areas where the temperatures range from 20°C to 37°C (68°F to 99°F), but may survive from freezing temperatures to the desert heat. To illustrate this point, scorpions that live in high Asian mountains, scorpions from Patagonia in South America and small scorpions from Central Europe can all survive winter temperatures as low as −25°C/−13°F, while in Turkmenistan there are even species able to tolerate temperatures varying from −31°C/−24°F to +50°C/122°F! Commonly they are found hiding during daytime under rocks or logs, but many species also form burrows, sometimes as deep as 40cms/16in. into the earth. Burrowing to cooler layers reduces water loss, cuts down their metabolic needs, and also reduces the risk of predation.

Predators

Regarding the last point above, it may come as a surprise to learn that no fewer than 124 vertebrates and 26 invertebrates are known to prey on scorpions! The list includes certain monkeys, foxes, rats, owls, shrews, lizards, spiders, crickets, beetles, ants, centipedes and other scorpions, to name just a few. The reason is probably their relatively large nutrient-packed bodies, combined with their wide distribution, abundance and predictable ground behaviour. Their venomous sting (or telson) seems to have little effect on most such predators, though it’s interesting to note that their larger attackers often ‘neutralise’ them first by biting off the tail!
Diet
Regarding their own feeding habits, they normally take only live prey, though in laboratories adults occasionally accept freshly killed prey. They either lie in wait in their burrow entrance or in areas of open ground, or go out stalking. A few will feed by day, though the vast majority feed only at night, emerging at dusk and remaining active for several hours until gorged. (As pets, incidentally, they can be overfed!) They then return to their lairs and become very inactive, entering a sort of catatonic state in which they can even be attacked and killed by lesser creatures like crickets. They can survive long periods between feeding, at least two weeks for most species, but there are some that can go for much longer, even for 6 to 12 months. In short, they are extremely tough and hardy.

Scorpions catch and immobilise their prey with their pincers. Some, but not all, use their sting to subdue or kill prey. The victim is then crushed or torn open with their jaws, following which – because they can only ingest food in liquid form – it is injected with a digestive fluid i.e. digestion occurs outside their body. The resulting liquid is then sucked up for internal absorption. They can temporarily increase their body weight by anything from 10% to 35% at a single feeding. Prey may include insects, spiders, snails, small vertebrates, termites, lizards, frogs, young snakes and other scorpions, depending on habitat and species. Usually they don’t emerge to feed if it’s raining or for a day or two after rain. Emergence is also affected by humidity, temperature, moonlight and courtship cycles.

Toxicity
The toxicity of scorpions varies considerably. In some 25 species (none in India) their sting can be lethal. By far the most painful of our local ones, as some of us have learned on more than one occasion, is the earth-coloured species commonly found under bricks and stones. The huge crayfish-like black one (of the genus Heterometrus, to honour it with its Latin name), which can hiss ominously when provoked and is one of the world’s largest scorpions, is apparently less painful. The venom, which in deadly species may be as powerful as a cobra’s, is neurotoxic and paralyses the heart and respiratory muscles of victims. Altogether there are probably no more than 4 or 5 species of scorpion in the Auroville area. Nowhere in the world are more than 8 species known to co-exist. (The black so-called ‘Whip Scorpions’, which are not in fact scorpions at all, are covered in a separate article at the end of this ‘Other creatures’ section.)

Reproduction
Most scorpions reproduce sexually, and most species have male and female individuals. However, some species (including wonderfully named Hottentotta hottentotta) reproduce by parthenogenesis, a process in which unfertilised eggs develop into living embryos.

Where normal male-female reproduction occurs, one of the most fascinating behavioural characteristics of scorpions is their elaborate courtship ritual. Normally this occurs on moonless nights in an area of open ground, and typically begins with the male and female locating and identifying each other using a mixture of pheromones and vibrational communication. Once they have satisfied each other that they are of opposite sex and of the correct species (good vibes?), which can take up to 15-20 minutes, mating can commence.

First, the male confronts the female face to face, seizes her pincers in his own, and begins a “promenade à deux”. Back and forth they dance and shuffle, stings raised high in the air and sometimes touching each other. In reality what is happening is that the male, who has no means of directly inseminating the female, is leading the female around while he searches for a suitable place to deposit his sperm packet alias spermatophore. The ritual can involve several other behaviours, such as juddering and a “kiss” in which the male’s clawlike mouthparts grasp the female’s in a smaller, more intimate version of his grasping her pincers.

When the male has identified a suitable location, or they have made one by clearing away debris from where they are dancing together, he deposits his spermatophore and then guides the female over it. In a quick 30-second movement she takes it up into her body, triggering release of the sperm, which then fertilize her. Once the mating is complete, the two separate and go their individual ways, the male normally
retreating quickly to avoid the possibility of being cannibalised by the female, though sexual cannibalism is actually quite rare among scorpions. Essentially the whole process, which can take from 1 to 24+ hours, depends on the ability of the male to find a suitable place to deposit his spermatophore, because if mating goes on for too long the female may eventually lose interest and break off the process.

It all sounds quite romantic, but a more sanguine possibility behind the male’s opening grip on the female’s pincers may be that she could otherwise grab him and make a meal of him at that stage, in the same way that female spiders and praying mantises often do with their mates.

**Scorpion mothers**

Perhaps the most endearing quality of scorpions is their behaviour towards their young, which they bring forth alive. Unlike most arthropods, females, which normally have just one litter a year, show genuine maternal association. Gestation periods generally vary from two to four months, though certain species may require longer (up to one year). When the mother is ready to deliver she stands high above the ground on her two pairs of hind legs, forms a basket-like cradle with her two pairs of front legs, and catches the young – sometimes referred to as “scorplings” – as they emerge, usually at the rate of 10 per hour. She may have anything from an observed 6 to over 100 per litter (average 8-10), depending on species. The young then climb onto her back, adopt random positions (except in one species, where they all line up nose to tail like lines of railway wagons), and remain there for the next week or two, until their first moult. Before that, they cannot survive naturally without the mother, as they depend on her for protection and to regulate their moisture levels. Especially in species which display more advanced sociability the mother-with-young association can continue for an extended period of time, for two weeks or more.

The young generally resemble their parents. Growth is achieved by periodic shedding of the hard outer body casing or exoskeleton. A scorpion’s developmental progress is measured in instars (how many mouls it has undergone). They typically go through 5-7 mouls/instars to reach maturity in about a year’s time, though one species is known to mature in under six months, and others can take as long as 2-3 years. They may increase in size by anything from 20% to 40% at a moult. Once mature, no further mouls occur.

Immediately after each moult their new exoskeleton is soft, making them specially vulnerable to attack. Meanwhile, they must constantly stretch while the new exoskeleton hardens to ensure that they can move when the hardening is complete.

During the period of carrying the young most females are inactive, though in some species they remain active and forage for food. Except in one rare observed case they don’t directly feed the young, but occasionally the latter will descend from the mother’s back while she is eating, take a quick snack, and re-mount! Scientists also believe that mothers secrete certain nutritional substances to their mounted brood through their skin, but this has yet to be proven. Their life span is usually around 3-4 years, though some species may live for up to 25 years.

**Scorpions as pets**

Now, before you all rush off into the undergrowth or start turning over bricks and stones searching for these adorable new pets, let me add a few last words. Firstly, although some are ‘sociable’ and will live together, others are quite definitely not and need separate housing (*like some humans do!*) Next, scorpions are absolute Houdinis. They can walk up walls and the sides of a wooden box, and can easily push off a lightly capped lid. Their tails are specially strong. Not only can they “stand” up against a slippery surface on the tip of their tail, thereby reaching higher than you would expect, but when held by the last segment/sting/telson (the recommended grip) they can arch their whole body back and upwards to grab at you with their pincers, so use long tweezers. Meanwhile, there’s no truth in the stories about their stinging themselves to death when surrounded by fire, so please don’t expect them to perform that trick for you should you decide to get rid of them (just let them go somewhere well clear of human habitation). In contrast, it is true that they can be frozen into a block of ice, melted out again, and walk away as though nothing had happened!

**If you get stung...**

Finally, if you happen to get yourself stung, first point to note is that there are no deadly species in the Auroville area, in a general sense, though allergic reaction to their venom or the stinging of a small child could possibly have serious consequences. If in doubt consult a doctor. Meanwhile, please remember that the sting was a defensive action on the scorpion’s part; meditate on the good they do eating termites and other insects; and then sweat it out, or try taking some homeopathic medicine for the sting. Left untreated the worst is over in 6-12 hours, and you’ll feel fine – if a bit more respectful – at the end of 24 hours. Alternatively, you can try the village way described in the opening article!
Additional miscellania
* On rare occasions scorpions can be seen with two tails. They are not a different species, merely a genetic abnormality.
* As scorpions are known to glow when exposed to certain wavelengths of UV light, a hand-held UV lamp is a standard tool for nocturnal field surveys of these creatures.
* Scorpion toxins are put to a variety of medical uses, in ailments ranging from rheumatoid arthritis, inflammatory bowel disease and multiple sclerosis to dermatology.
* Culturally, the scorpion is a significant animal which appears as a motif in North African and South Asian art, and especially in Islamic art in the Middle East. It is seen both as an embodiment of evil and as a protective force which counters evil.
* In ancient Egypt the goddess Serket, one of several goddesses who protected the Pharaoh, was often depicted as a scorpion.
* One of the earliest occurrences of the scorpion in culture is its inclusion as Scorpio in the twelve signs of the zodiac.
* In China, where they eat scorpions, fried scorpion is a traditional dish.