SPIDERS

Spiders are members of a group of invertabrates called arthropod. Arthropoda are the most enduring creatures of all the animal kingdom. There are more known species of Arthropoda than all other kinds of animals. Arthropoda make up approximately seventy five percent of all the animals in the world. They are very adaptable and live everywhere; in the air, land and in water. Spiders have been on the Earth long before birds and mammals appeared. It is thought that spiders were among the first creatures to have left the water to live on land.

Most people mistakenly believe that spiders are insects. Indeed, spiders do have some things in common with insects, such as jointed legs and segmented external skeletons. But the differences between these two Arthropoda are quite evident. Insects have six legs, three body parts with antennae and are usually equipped with wings. A spider has eight legs, two body sections and has no wings or antennae. All spiders have silk glands and make silk for a variety of uses. Spiders' diets consist primarily of insects.

Spiders have two body sections

Cephalothorax or Prosoma

The Cephalothorax is the segment that contains the eyes, mouth (chelicerae), pedipalps, brain, poison glands and stomach. Four pairs of legs are attached to the underside. The cephalothorax is covered with a protective outer covering called the carapace.

Eyes

Although most spiders have eight eyes, the number of eyes can vary between six, four, two and one, depending on the species. The position of the eyes differ among the various species. Their number, arrangement and positions on the head can be used to identify the species to which the spider belongs. A spider's eyesight is very limited. They do not see much detail but can distinguish shades of light and dark. Spiders rely more heavily on their sense of touch than their sight.

Jaws, Mouth, and Pedipalp

Located at the front of the cephalothorax are the mouth, jaws (chelicerae) and a pair of short leg-like appendages (pedipalp). The two jaws have claw-like end joints that hinge like

the blade of a jackknife. The chelicerae contain needlelike fangs used by the spider to pierce its prey. Venom flows through the fangs and into the prey. Having paralyzed its victim, the spider uses its jaws and pedipalp to crush the body while flooding it with fluid that predigests the tissue. This predigested liquid is then sucked into the stomach through a very small mouth. This process can take hours.

Attached to the underside of the cephalothorax are four pairs of legs. Each of the spider's eight legs have seven segments held together with joints. The end segments usually have two or three claws. To walk a spider moves the first and third leg on one side along with the second and fourth legs on the other side. After these legs complete the stride, the remaining legs move forward. There is hair on a spider's legs. Some spiders secrete a sticky substance from the top segment of the leg. This sticky substance enables the spider to walk up slippery surfaces.

The cephalothorax and abdomen are joined together by a thin stalk called a pedicel.

Abdomen or Opisthosoma

The abdomen is the segment which contains the heart, digestive tract, reproductive organs and book lungs and silk glands. Appendages called spinnerets are visible externally on most spiders. They are the apparatus which spins and disperses the silk. The upper portion of the abdomen is covered by a protective armor that is not as tough as that which covers the cephalothorax.

Book lungs and/or tracheae

Spiders breathe through either book lungs (two pair or one), tracheae or both. Tracheae are a system of tubes that carry air throughout a spider's body. Book lungs are organs which contain folds of thin tissue that resemble pages of a book. The air is brought into the lungs through slits along the underside of the abdomen. The spider's blood circulates inside this page-like tissue and exchanges carbon dioxide for the oxygen that collects in between the tissue. From the lungs the oxygenated blood goes to the heart. The heart disburses the blood through a network of spaces in the tissue throughout all parts of the body.

Spinnerets

Silk is produced in the silk glands. It begins as a liquid substance which flows through a series of tubes and out fingerlike

appendages called spinnerets. The spinnerets are set close together and are composed of hundreds of tubes tipped with flexible nozzles. These spinnerets are located at the end of the spider. The number of spinnerets are varied among species, The majority of species have six spinnerets, but some spiders have as many as eight or as few as two.

When the silk leaves the spinnerets it is in liquid form. To make a strand of silk the spider deposits the liquid to something outside its body and then moves away. The process of stretching the liquid makes a strong strand of silk. A spider can weave a series of intricate patterns by moving its spinnerets.

Spiders use their silk in a variety of ways. Spiders can use their silk to protect its eggs, to make traps for insects, and to build nests. Most spiders have a strand of silk trailing behind them at all times. Much like the safety ropes protect a mountain climber, this strand serves as a life line for the spider and prevents the spider from a life threatening fall. Newborn spiders use their silk for transportation. They climb to an elevated spot and release silk, as the silk lengthens the wind will lift the spider off its perch and carry it to a new area.

Molting

To grow the spider must shed its hard outer skeleton. This process is called molting. A spider usually molts four to twelve times before maturity. For a short time after a molt the spider is very vulnerable because its new skeleton is soft. It takes several hours for its new coat to become strong enough for protection.

TARANTULA

There are approximately 37,000 species of spiders that have been identified to date. It is thought that there are untold numbers yet to be named. Spiders live all over the world and can thrive in the most unlikely and toughest of conditions. There are spiders that are as small as .16 inch and as large as 11 inches (including leg span). The tarantula is among the largest spiders in the world. They belong to a group of spiders called *Mygalomorphae.* They are distinguished from other spiders by their spinnerets. They have only two large spinnerets and two very small ones.

Tarantulas can be found in a variety of locations throughout the world. Many species of tarantulas can be found living in tropical climates. The warm humid conditions provides perfect living conditions for these creatures. Many tropical tarantulas live in trees.

A number of tarantulas live in hot arid desert areas of the world. These desert dwellers make their homes in burrows underground. During the hot daylight hours they stay cool in the deep recesses of their underground habitat. In the cool of the evening, these tarantulas crawl out of their burrows to wait for an edible creature to amble nearby.

Tarantulas are very hairy. Their body is covered with long bristlelike hairs called setae. Some of the hair have sensory nerves at their hollow base. These hairs can be sensitive to motion and temperature. Tarantulas are sensitive to vibrations transmitted through the ground. Vibrations can help them detect nearby prey and also to sense when danger is nearby. Located around the mouth and chelicerae are hairs which are capable of sensing chemicals. This sense roughly corresponds to a combined sense and taste in animals. There is also hair located under the abdomen which has sharp tips with microscopic barbs. When it is threatened the spider can push these hairs into its attacker, causing itching or pain. These hairs are called urticating hairs.

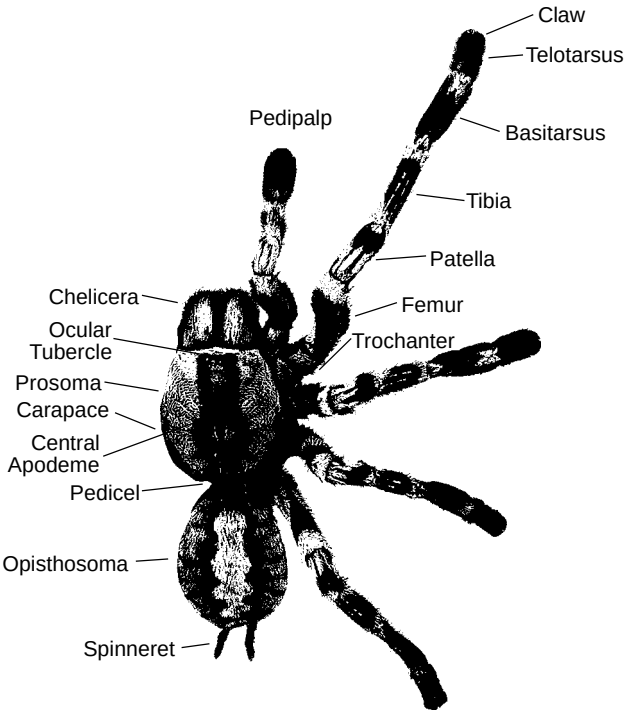
A tarantula's pedipalps are loaded with sensory hair. The spider uses its pedipalps to feel its way when it walks. When a tarantula feels threatened it will rear up on its hind legs raise its pedipalps in the air, exposing its opened fangs. Some spiders can also make a hissing or buzzing sound when threatened. They make this sound by rubbing their chelicerae together. This sound is called stridulation.

All spiders spin silk and the tarantula is no exception. They use silk for many reasons. They sometimes line their nest with silk. Female tarantulas make eggsacs to hold its eggs, males make a temporary web to hold its sperm while searching for a female. Some spiders spin silk over the entrance to its burrow to guard against intruders. If they are going to leave their burrow, they produce drag lines to help them find their way home.

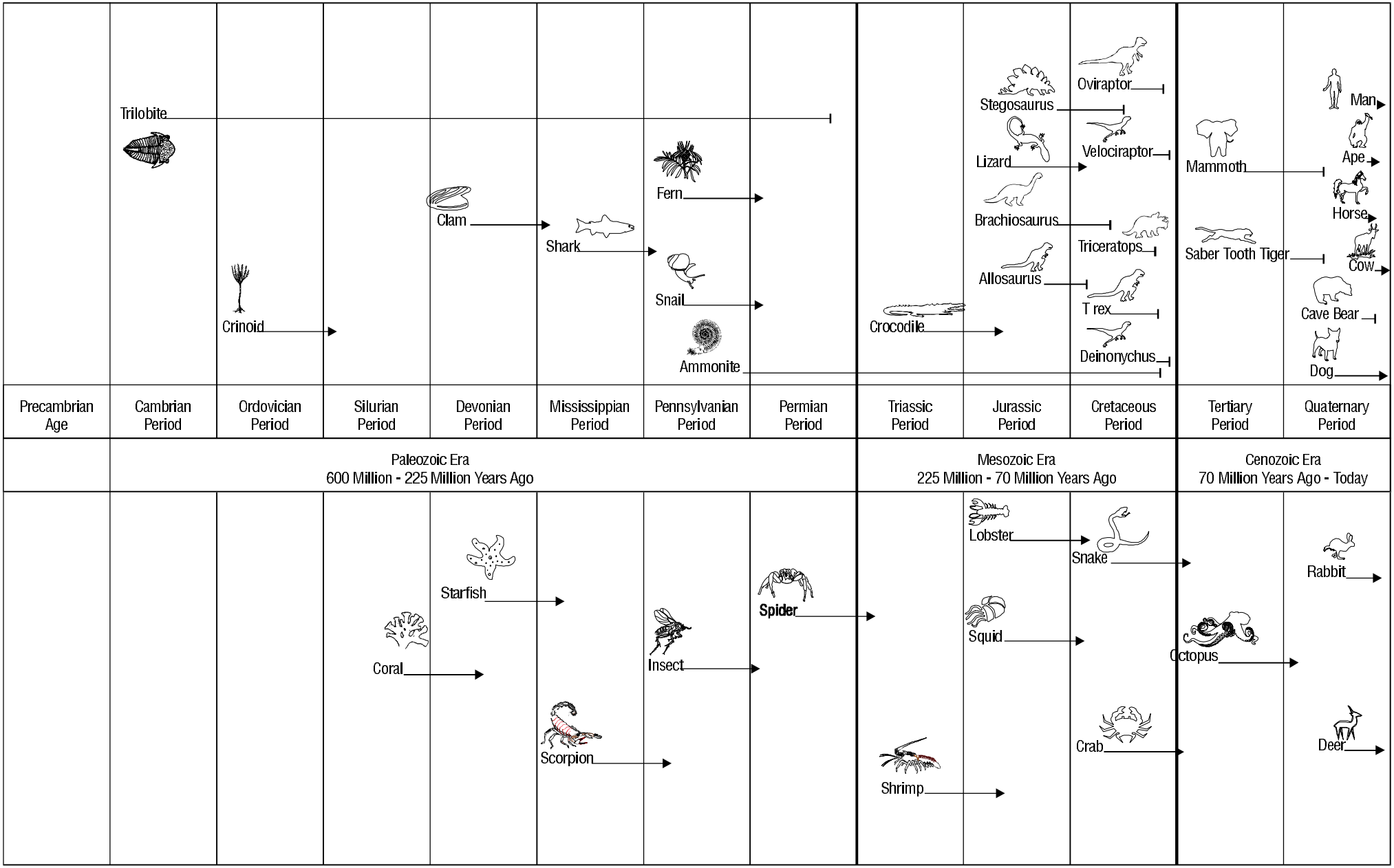
Unlike most spiders, tarantulas eat a variety of small creatures as well as insects. They have been known to eat small frogs and lizards. The tarantula will lay silk strands out around their burrow.These strands serve as trip wires. When potential prey walks into these strands, the tarantula is alerted and emerges from his home to deliver its venomous bite.

After paralyzing its victim, the tarantula delivers digestive enzymes into its victim. This enzyme liquifies its prey. The spiders narrow mouth then sucks its liquified prey into its stomach.

TARANTULA ANATOMY



Time Line



Still Exists

Extinct

Origin and extinction dates are approximate and should only be used for general estimates.

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