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## Spiders



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### Defining the spider

Spiders belong to the phylum Arthropoda, along with insects and crustaceans. The order of spiders, Araneae—together with scorpions, harvestmen, and the large order of mites and ticks—make up the class of Arachnida. Spiders differ from other arachnids in having the body divided into cephalothorax and abdomen. About 43,000 spiders are known, but many have yet to be discovered and described.

### Habitat, physiological characteristics, and behavior

Spiders are found in all terrestrial habitats on all continents. Some are even found on or in fresh water. They range from less than 1.0 mm long to tropical tarantula size with leg spread to 25 cm (10 inches). Spiders are more abundant in tropics than in cold countries. They feed on living prey, usually insects. Many spiders hunt their prey, some build burrows with trap doors, others sit camouflaged on plants, and many build webs to snare insects. Hunting spiders may have good eyesight, while web spiders have poor vision but an excellent sense of touch. Fine setae (or hairs) on their legs are sense organs for vibrations. Most spiders are solitary, but in warmer climates some spiders are social, many in a web. Enemies of spiders include some wasps, spiders and birds.

The body of a spider consists of an anterior cephalothorax and a posterior abdomen joined by a pedicel. The cephalothorax contains the brain, stomach, and usually venom glands. The digestive tube, blood vessel, nerve cord, and some muscles pass through the pedicel. The abdomen contains the heart, digestive and reproductive systems, lungs or tracheae, tubes for air, and also silk glands. It is segmented in only one small group of spiders in southeast Asia. At the posterior end it bears usually six spinnerets with spigots, each with a different kind of silk.

There are usually eight simple eyes on the cephalothorax, sometimes fewer. Attached to the cephalothorax anteriorly is pair of short jaws, each with a fang containing a venom duct; four pairs of legs; and between jaws and legs, a pair of short, leg-like palps.

The palps of males are enlarged and modified to pick up sperm previously deposited on a silk strand from openings on the venter of the abdomen. The palps then transfer the sperm into the opening of the female genital area, which in most spiders is the sclerotized epigynum. The epigynum and male palpi are important to the taxonomist to separate species.

The female deposits her eggs wrapped in a waterproof silk sack: only a few eggs in spiders that guard the eggsac up to hundreds in others. Young spiderlings hatch and become mature after 4 to 12 molts. A wolf spider mother carries her egg sac with her and newly hatched spiderlings ride on her abdomen. Most adult spiders live 1–2 years, but female tarantulas may live 20 years.

Unlike other silk-producing animals, spiders use silk in many ways. Most use it to wrap their eggs and some build nursery webs. Young spiders of some groups balloon: they climb up on vegetation, let go of some silk, and float off with the wind. Silk is used by some spiders to line their burrows and sometimes to make trap doors. Spider safety depends on a dragline of silk: if an enemy approaches, the spider can drop quickly. Most important, silk is used for webs to trap insects. A web is built, and some silk lines are coated with sticky silk. The spider may sit at the edge in a silken retreat, from which it responds to vibrations. Bolas spiders attract insects with odor and throw a sticky silk ball at approaching prey. In addition, silk is used to wrap and store prey for future meals.

### **Some types of spiders that may interest you**

Widow spiders (*Latrodectus*), which occur in most parts of the world except for central and northern Eurasia, are venomous. The bite is painful but rarely fatal. In the Americas, the bite of the brown recluse (*Loxosceles*) spiders causes dead tissue in the region of the bite. The bite of *Atrax*, a venomous funnel weaver found in southern and eastern Australia, may be fatal. Large tarantulas of the United States are not venomous but may brush off their irritating setae.

### **Some methods to observe spiders**

Spider webs are easily photographed against the light, or by lightly dusting with corn starch or talcum. To collect spiders, one can sweep vegetation with a butterfly net, or sift ground litter using a cylinder of cloth with a 5-mm (1/4-inch) wire screen on the bottom. A ground trap, an open tin can buried flush with the surface, will catch running spiders. Live spiders can be kept in a terrarium with a dish with water.

## References

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