

GLOSSARY OF TERMS

abdomen

Posterior-most body segment of an arthropod; body region between the chest and the pelvic region in larger animals (Fig. 6, 9).

adventitious

A structure that is formed in an unusual place or manner, or in response to an external cause. For example, roots growing from stem nodes, or buds forming on a mature tree trunk after pruning.

annual

Something that is yearly in occurrence, or is completed in one year. An annual plant is one that completes its life cycle (seed to fruit) in one year.

antenna (plural: antennae)

Paired sensory organs, located on the head of arthropods. Antennae vary greatly among species, in appearance shape and size.

appendage

A body part of a plant or animal that projects externally and has a distinct appearance and function, and is usually smaller in size and importance than the main part to which it is attached. For example, a leg in animals, or a twig in plants.

arthropod

An animal belonging to phylum Arthropoda, a group of invertebrate animals (lack vertebral column) that are characterized by jointed appendages, hard exoskeleton and segmented body. Include arachnids (spiders, scorpions, ticks, mites, etc.), crustaceans (crabs, shrimp, etc.), insects (ants, flies, bugs, beetles, butterflies, etc.) and myriapods (centipedes and millipedes).

awn

A slender bristle-like structure at the tip of a plant leaf or fruit, such as at the tip of the spikelets in grasses.

axil

In plants, the upper angle between a twig or leaf and the stem from which it is growing (Fig. 3).

axillary bud

A bud formed in an axil (see above) of a plant (Fig. 3).

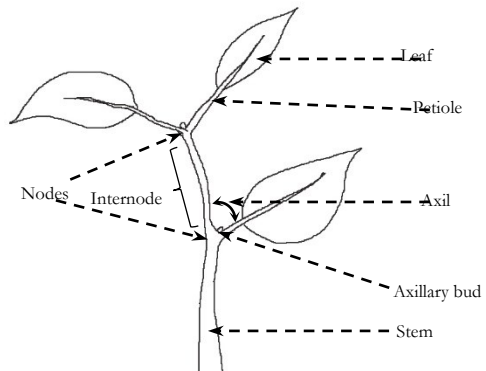


Fig. 3. Diagram of a plant stem showing various

beneficial

Any animal or plant that benefits humans or human concerns. For example, bees which serve as pollinators of crops; predatory insects (also called natural enemies) such as lady beetles which prey on crop pests; plants which attract bees.

biennial

Something that occurs every two years, or is completed in two years. A biennial plant is one that takes two years to complete its life cycle (seed to fruit), and usually flowers in the second year.

bract

A modified leaf at the base of a flower, often very different in appearance from other normal leaves.

brood

All the young ones of an animal (particularly referring to insects or birds) that are born or hatched at the same time.

calyx (plural: calyces)

A group of sepals of a flower or the outermost layer of floral parts. The calyx covers the unopened flower bud, and is found at the base of the opened flower.

carnivore

An animal (or plant) that feeds exclusively on other animals.

caterpillar

The larva or young one of a butterfly or moth. They are distinctly different from the adults in appearance, movement, food preference and feeding methods. Caterpillars are mostly elongated and have a distinct head and a segmented body, often with defensive or cryptic colorations, shapes and structures, such as thorns or hairs. They have 3 pairs of legs, and a varying number of fleshy 'prolegs', which help in movement.

cephalothorax

The body region in some arthropods such as spiders and scorpions, which is comprised of the head and the thorax (Fig. 5, 6).

chelicera (plural: chelicerae)

The mouthparts of some arthropods such as scorpions and spiders, which are modified for grasping and cutting up prey. Some chelicerae contain, or are connected to venom glands and are used to inject venom into a victim during a bite (Fig. 5, 6).

chrysalis

The pupa of a butterfly (see 'pupa').

cocoon

A casing of silk, and sometimes in combination with other materials, constructed by the final larval stage of certain insects, inside which they pupate (see 'pupa').

colony

A group of plants or animals that grow or nest together. In animals, many activities are carried out together, such as foraging for food, protecting the colony and raising the young.

crepuscular

Animals that are mostly active during twilight hours (dawn or dusk).

diurnal

Animals that are mostly active during daylight hours.

dorsal

The upper side or back of an animal, plant, or organ.

dorso-ventrally flattened

The condition of the upper and lower sides of the body of an animal, plant or organ being compressed together (as opposed to the lateral sides). An example of a dorso-ventrally flattened insect is a cockroach.

drone

Male insects of the order Hymenoptera (bees, wasps and ants). Their primary function is to mate with the mature females.

elytra

The hardened shell-like front wings of a beetle.

envenomation

An action by which venom (toxic material) is injected into an animal or plant body; usually occurring through the teeth/fangs (bite) or stinger (sting) of a venomous animal.

exoskeleton

The hardened outer shell-like covering which protects and supports the body and its internal organs, such as in arthropods (as opposed to an internal or endoskeleton in vertebrates).

fang

A long and pointed tooth in many animals (canines in mammals), which is used to bite or tear prey. Fangs in some animals, are hollow and are used to inject venom into the prey, such as in snakes.

forage

The process (in animals) of searching for food or nesting materials. May also refer to plant material used as feed for livestock, for example: forage grasses.

gaster

In Hymenopteran insects (wasps, bees and ants), the enlarged portion of the abdomen, beyond the narrow and constricted part known as the 'petiole' or 'waist' (Fig. 4).

gregarious

Animals that live in groups (as opposed to those who live individually, which are called 'solitary').

grub

The young ones (larvae) of certain insects, mostly beetles and wasps. Grubs are characterized by a plump, segmented body, dark head and 3 pairs of legs.

habit

The behavior patterns of an animal that help to describe it, for example, blood sucker, scavenger, decomposer, pollinator, etc.

habitat

The environments in which an animal lives or may be found, for example, subterranean (underground), arboreal (in trees), aquatic (in water), terrestrial (on land), etc.

head

In animals, the first or anterior-most body part or region, which usually contains the brain and bears important sensory structures.

In plants, the inflorescence (flowering head) of many plants, especially grasses.

hemelytra

The front wings in true bugs (Heteroptera under Hemiptera), in which the basal part is tough and leathery, while the tip region is thin and membranous. The term means hemi-elytra, or half-elytra, referring to the fully hardened front wings of beetles called elytra.

hemimetabolous

Of an arthropod undergoing 'incomplete metamorphosis' which includes three distinct stages: egg, nymph, and adult and there is no pupal stage. The young ones (nymphs) often resemble the adults but lack wings and cannot reproduce.

herbivore

An animal that feeds exclusively on plants.

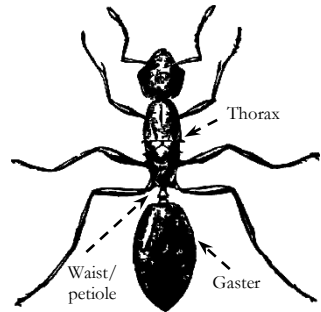


Fig. 4. Diagram of ant showing waist
(Public domain image)

holometabolous

Of an arthropod undergoing 'complete metamorphosis' which includes four distinct stages: egg, larva, pupa and adult. All four stages are distinctly different from each other in appearance habits and habitats.

honeydew

Sweet, sticky secretion from certain plant sap-sucking insects such as aphids, mealybugs, whiteflies, and soft scales, consisting of modified plant sap. Honeydew often covers the leaves, stems and fruits of the host plants and even drips down to the ground below. It attracts other insects such as ants, and the black sooty mold, a fungus which grows on the honeydew.

host

A plant or animal that serves as a source of food and habitat for another organism.

immature

A young one, or an individual that is not fully developed or capable of reproducing.

inflorescence

The complete flowering head of certain plants, which is composed of a group of flowers arranged in specific patterns on a central stalk. (This is different from plants that produce solitary or individual flowers).

internode

The part of the stem of a plant, between two successive nodes (Fig. 3).

instar

The larval or nymph stage of an immature insect between successive molts.

invasive

Of a plant or animal that is introduced to a new area, and multiplies and spreads so much and so rapidly, that it displaces and outcompetes the existing plants or animals. Invasive species pose a great threat to the natural ecosystem and can cause significant disturbances in the ecological balance, by affecting several other plants and animals that depend on existing or native species.

juvenile

A young one, or an individual that is not fully developed or capable of reproducing.

larva (plural: larvae)

The immature form of certain arthropods and other animals, that is typically different in appearance, habits and habitats as compared to the adult. Larvae hatch from eggs, pass through a series of molts and then become pupae, before turning into adults.

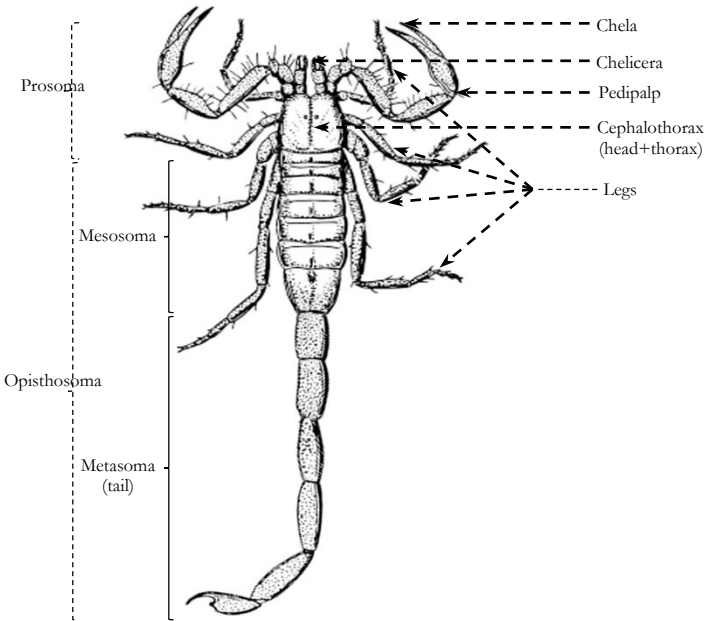


Fig. 5. Diagram of a scorpion showing various body parts
Source: Pearson Scott Foresman (Public domain)

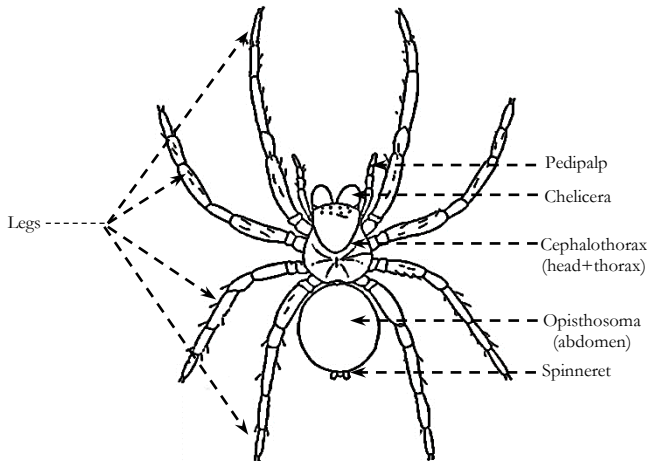


Fig. 6. Diagram of a spider showing various body parts
Source: Dippenaar-Schoeman, A.S. & Jocque, R.1997. African Spiders. An Identification Manual. Plant Protection Research Institute, Handbook No.9.

lateral

Of the side parts of an animal, plant or organ.

laterally flattened

The condition of the left and right sides of the body of an animal, plant or organ being compressed together (as opposed to upper and lower sides). An example of a laterally flattened insect is a flea.

mandible

Jaws in animals, or the forward-most pair of mouthparts in some arthropods such as insects. Mandibles serve to grasp, crush, or cut food, or to defend against predators. Arthropod mandibles typically move horizontally unlike those of vertebrates, which move vertically.

mesosoma

The middle part/region of the body in certain arthropods, also called the thorax in many. It bears the legs, and wings in the case of winged insects. In scorpions, the mesosoma is actually the first or enlarged part of what appears to be the abdomen, and the metasoma, is the tail (Fig. 5).

metamorphosis

The complete series of changes in form that takes place during the life cycle of some animals (typically in insects), as they develop from egg to adult.

metasoma

The posterior-most part/region of the body in certain arthropods, also called the abdomen in many. It contains most of the vital organ systems such as digestive, circulatory, respiratory, excretory and reproductive systems. In scorpions, the mesosoma is actually the first or enlarged part of what appears to be the abdomen, and the metasoma is the tail (Fig. 5).

microorganism

An organism of microscopic size, or one which needs to be magnified for observation and identification. Common examples are bacteria, viruses, mycoplasmas, fungi, nematodes, etc. but microscopic plants and animals also exist.

molt

The shedding of skin before entering another stage of growth, in certain animals.

monophagous

Of a plant-feeding animal that feeds exclusively on one particular plant species.

mulch

A layer of material placed on the soil surface to conserve moisture and prevent weed growth.

natural enemies

Animals (including microorganisms) that attack and kill organisms that are harmful to humans or human concerns, and are therefore considered beneficial. Examples include wasps and lady beetles that feed on pest insects, and microorganisms that cause diseases in pest insects.

nectar

A sweet, sugary liquid produced by plants in glands called 'nectaries' (see below). Nectar attracts pollinators and other animals, which in turn benefit the plant by way of pollination or protection against plant feeders. It also serves as food for predatory insects such as certain wasps which feed on nectar, but hunt pest insects as food for their young. Nectar is the sugar source for honey produced by honey bees.

nectary

A gland that secretes nectar, which can be located within or outside flowers (extrafloral).

nocturnal

Animals that are mostly active during the night, or in complete darkness.

nodes

The parts on a plant stem from which leaves grow (Fig. 3).

nymph

The immature form of certain arthropods and other animals, that is typically similar in appearance, habits and habitats as compared to the adult, except that they are smaller, wingless and not capable of reproduction. Nymphs hatch from eggs, pass through a series of molts and then become adults, without passing through a pupal stage.

oligophagous

Of a plant-feeding animal that feeds only on a group of related plant species.

omnivore

An animal that feeds on a wide variety of food material of plant or animal origin.

opisthosoma

The posterior part or region of the body in some arthropods such as spiders and scorpions, after the cephalothorax (head+thorax). It is similar to the abdomen in other arthropods, but additionally contains respiratory organs (Fig. 5, 6).

organism

Any living being, plant or animal, unicellular or multicellular, capable of growth and development, reproduction and response to stimuli.

oviparous

Of animals that lay eggs, and little or no other embryonic development takes place within the mother.

oviposit

To lay or deposit eggs.

oviposition

The process of laying or depositing of eggs.

ovipositor

An organ used by some female animals for the purpose of laying eggs. The ovipositor is used for all the processes involved in egg-laying, including movement of the eggs from the female's reproductive system to the outside; probing, sensing and preparation of a suitable site for the eggs; and finally placing them properly. In some cases, it is used to attach the eggs to a surface; in others it is used to burrow or pierce into the host surface or skin before placing the eggs. Ovipositors vary greatly in appearance with species and the purposes for which they are used.

ovoviviparous

Of animals in which embryos develop inside eggs that are retained within the mother's body until they are ready to hatch.

parthenogenesis

Development of eggs without fertilization.

pathogen

A disease-causing organism.

pedipalp (sometimes shortened to palps or palpi)

The two appendages on the front of the head in certain arthropods. They are used as sensory structures, to hold prey while feeding, or during mating. They are very long in some species, for example, some spiders seem to have ten legs and not eight, because the pedipalps look like an extra pair of legs (Fig. 5, 6).

petal

The often brightly colored, showy or distinctly shaped parts of a flower that surround the reproductive parts within. Petals are actually modified leaves, and all the petals of a flower are collectively known as the 'corolla'.

petiole

In plants, a slender stalk that supports a leaf.

In certain hymenopteran insects such as wasps and ants, the narrow constricted portion (also called waist) of the abdomen, between the thorax and the enlarged portion called gaster (Fig. 4).

pincer (also called chela, plural: chelae)

Organs at the tips of the front legs in some arthropods, usually with two-halves or arms, which are used to capture and hold prey, carry items, or in courtship, or defense. In some cases they can also be used to inject venom (Fig. 5).

pollen

A powdery substance, typically of shades of yellow, that contain the male reproductive cells of plants. It is produced on thin filament-like structures called stamens, inside the flowers. Pollen is attractive to pollinators, which in turn help in the process of pollination when they visit several flowers.

pollination

The process of transfer of pollen from the male part (stamen) of a flower, to the female part (stigma) of the same or different flower. It is usually carried out by insects visiting flowers, but can also be achieved by wind, rain, or other means.

pollinator

An agent of pollen transfer. Bees are the most common pollinators of plants.

polymorphic

Of a plant or animal that has different forms in the same stage of life. For example, different castes in ants, or even different kinds of worker ants belonging to the same species.

polyphagous

Of a plant-feeding animal that will feed or develop on a variety of unrelated plants.

predator

An animal (including insects and mites) that attacks and kills other animals (prey) and feeds on them.

proboscis

An elongated mouthpart in certain animals, typically used to suck up liquid food. In certain insects such as bugs and mosquitoes, the proboscis is also used to pierce into the host tissue before drawing out sap or blood.

pronotum

A prominent plate/hood/shield-like structure covering the dorsal (upper) side of the thorax (or part of it) in some insects (Fig. 7).

prothorax

The first, or anterior-most of the three thoracic segments of an insect.

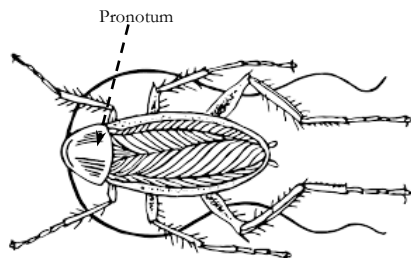


Fig. 7. Diagram of cockroach showing the pronotum
Source: Pearson Scott Foresman (Public domain)

pupa (plural: pupae)

The non-feeding, inactive stage between larva and adult in insects with complete metamorphosis. Pupae are typically enclosed in the final larval skin, which hardens and forms a protective cover over the pupa. Some pupae may be further enclosed in shells or cases made of mud, debris or silk (cocoon) depending on the habit and habitat of the final larval stage. Pupae of certain insects are known by specific terms such as chrysalis (butterflies) or tumbler (mosquitoes).

pupation

The process by which the final larval stage molts and turns into the pupa.

rhizome

A fleshy underground stem, typically growing horizontally (parallel to the ground surface). Rhizomes have nodes, similar to above-ground stems, and they can form roots and shoots at these nodes to produce new plants.

rodent

An animal belonging to the order Rodentia under the class Mammalia (mammals). Most rodents are small, furry animals with short legs and a long tail. Their most characteristic features are their continuously growing front teeth, one pair on both upper and lower jaws.

sanitation

The process of cleaning with the aim of removing disease-causing microorganisms from any surface, object or area. Examples of sanitation include removal and destruction of infected plant parts, wiping down work surfaces with disinfectant, and cleaning of tools and field equipment.

sedges

A group of grasslike, herbaceous plants belonging to the plant family Cyperaceae. Unlike grasses, sedges have unjointed stems that arise in groups of three and are usually solid and triangular in cross-section. (Grass stems arise in groups of two and are usually hollow and round/oval in cross-section).

segment

One of the parts into which a larger object can be divided. In the case of arthropods, the body can be divided into different regions, each of which can further be divided into segments, for example, abdominal segments are the segments of the abdomen. Other appendages can also be divided into segments, for example, the antenna.

sepal

The outermost layer or whorl, of floral parts, after the petals. The sepals together form the 'calyx', which covers the unopened flower bud, and later the individual sepals can be seen at the base of the opened flower.

skeletonize

To remove leaf tissue between the veins, leaving the network of veins intact, as done by some leaf-feeding pests.

sooty mold

A black, soot-like fungus that grows on honeydew, a sweet, sticky material secreted by some plant sap-feeding insects. Sooty mold creates an unsightly, black coating on all the surfaces which are covered with honeydew, and often serves as an indicator of sap-sucking pests.

spike

A sharp, pointed object. In plants, refers to the stout and stiff thorns on certain plant parts.

The inflorescence (flower cluster) in some plants is called a 'spike' because of its appearance. It consists of numerous flowers without stalks arranged along a single, unbranched central axis.

spikelet

The individual units of the inflorescence (flower cluster) in some plants such as grasses and sedges. Each spikelet consists of one or more flowers arranged in specific patterns along a central axis, and several such spikelets are arranged on a larger central axis to form the full inflorescence.

sting

The process by which an arthropod pierces the skin of an intruder or prey with its stinger. Stinging is usually accompanied by injection of venom, and is used in defense, or to paralyze prey.

stinger (sometimes also referred to as 'sting')

A sharp organ in some animals (mostly arthropods) that is used to pierce into the skin of an intruder or prey and inject venom. It is usually located at the rear end of the animal. In stinging insects, the stinger is actually the ovipositor and therefore, only the females can sting. In other arthropods such as scorpions, both males and females have stingers.

stolon

A horizontal above-ground stem that arises from an axillary bud at the base of certain plants for example grasses. Stolons produce roots and shoots at their nodes, and can be used as a propagating material for these plants.

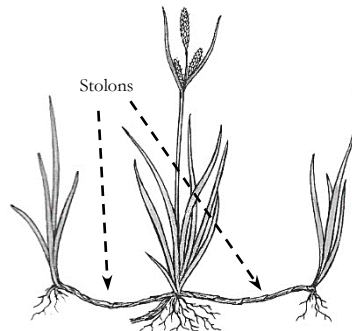


Fig. 8. Diagram of a grass plant with stolons
(Public domain image)

swarm

A large, dense group of insects. Insects swarm to find mates, or to migrate to a new location.

thorax

The second or middle of the three major divisions in the body of an insect, and the one bearing the legs and wings (Fig. 9).

tuber

An enlarged, fleshy, underground stem with buds capable of producing new plants.

vector

An organism able to transport and transmit a pathogen to a host.

vegetative

Plant parts or plant growth not involved in the production of seed, such as roots, stems, and leaves.

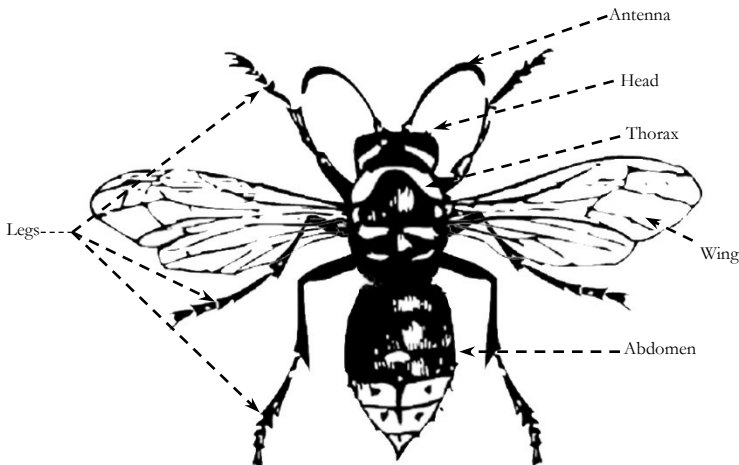


Fig. 9. Diagram of an insect showing various body parts
(Public domain image)

venom

Toxic material produced by an animal that is used to injure another animal in defense, or to paralyze it before consumption.

ventral

The lower or under side of an animal, plant, or organ.

viviparous

Of an animal that gives birth to live young ones that develop inside the body of the mother till they are ready to be born.

waist

In certain hymenopteran insects such as wasps and ants, the narrow constricted portion (also called petiole) of the abdomen, between the thorax and the enlarged portion called gaster (Fig. 4).