

Arthropod Glossary With Emphasis On Spiders, Scorpions, and Insects

As promised, below is an extensive glossary gleaned from a number of books. However, the scorpion definitions were adapted almost entirely from Polis (1990).

Scientists generally try to be as concise as possible when writing glossaries. This often works for other scientists, but may leave others scratching their heads. To counter this, many terms have been further defined. We'll print this once in the Forum Magazine, and then make a downloadable PDF file available free on the ATS website. That file will be updated and expanded as time passes.

abdomen - The posterior of the three body divisions in insects; the posterior half, or opisthosoma in spiders and other arachnid orders with two major body divisions.

accessory gland - A secretory organ associated with the reproductive system in some arthropods.

accessory pulsatile organ - Contractile organs that function to pump hemolymph into and out of appendages in insects, such as legs and wings.

acuminate - Tapering to a long point.

acute - Pointed; forming an angle of less than 90°.

adaptive behavior - Behavior patterns that make an organism more fit to survive and reproduce in its natural state.

adectitious - A type of insect pupa in which the mandibles are immovable and nonfunctional.

aedeagus - The male insect intromittent organ, the distal part of the phallus, penis plus parameres in insects.

aestivation - Dormancy during a warm or dry season.

agamic - Reproducing parthenogenetically, without mating (no male gametes).

agonistic behavior - Behavior patterns used during a conflict with a conspecific, usually indicating whether an individual is going to submit to the other animal or fight if the other does not submit.

alcithal ovum - An ovum that does not possess yolk in insects.

alinetum - The notal plate of the mesothorax or metathorax of a pterygote (winged) insect.

allometry - Differential growth in cuticular structures, whether with reference to structural growth rates differing between male and female (sexual allometry) or with reference to differing growth rates of a single structure at different periods in the life cycle.

allopatric distribution - The distribution of two or more populations or taxa with non-overlapping (separate) geographic ranges.

allopatric speciation - The formation of new species by a process involving geographic barriers (geographic separation).

allopatry - Populations or species with non-overlapping geographic distributions (geographic separation).

amensalism - A type of symbiosis between individuals of different species where one is harmed and the other is not harmed nor benefits.

ametabolous - Without metamorphosis, usually attributed by some to the more primitive orders or insects, others consider it simple or incomplete metamorphosis.

amnion - The second of the two extraembryonic membranes appearing during embryonic development in apoikogenic scorpions, derived from the epiblast of the germ band.

anal - Pertaining to the last abdominal segment in most arthropods (bearing the anus).

annulated - With ring-like segments or divisions.

anteapical - Just proximad of the apex.

antecosta (plural antecostae) - An internal ridge on the anterior portion of a tergum or sternum that serves as the site of attachment of the longitudinal muscles in insects.

antecostal suture - An external groove that marks the position of the internal antecosta.

antenna (plural antennae) - A pair of segmented appendages located on the head above the mouthparts in insects, crustaceans, and myriapods usually sensory in function.

antennal club - The enlarged distal segments of a clubbed antenna in insects.

antennule - The first antennae of crustaceans.

antepenultimate instar - The instar before the penultimate instar in spiders and others.

anterior lateral eyes - In spiders, the (usually two) lateral eyes in the front row of eyes.

anterior median eyes - In spiders, the (usually two) eyes in the middle of the anterior row of eyes.

anterodorsal - In the front and at the top or upper side.

anteromesal - In the front and along the midline of the body.

anteroventral - In the front and underneath or on the lower side.

anus - The posterior opening of the alimentary (digestive) tract.

aorta - The anterior non-pulsatile portion of the dorsal blood vessel.

apical - At the end, tip, or outermost part.

apodeme - An invagination of the body wall forming a rigid process that serves for muscle attachment and for the strengthening of the body wall.

apoikogenic development - The type of embryonic development in which the fertilized ova develop in the ovariterus in scorpions.

apolysis - The separation of the epidermis from the cuticle (part of the process of molting).

apomorphy - A derived character state, a character considered advanced in an arthropod, as opposed to primitive.

apophysis (plural apophyses) - A tubercular or elongate process of the body wall, either external or internal; a prong-like protuberance arising from the inner surface of the pedipalp-chela manus in some male bothriurid scorpions.

apotele - The distal segment of the leg, bearing the ungues and the dactyl in insects.

apterous - Wingless.

apterygote - A primitively wingless insect, primitively implies the taxa never had wings.

aquatic - Living in water.

arcuate - Bent like a bow, or arched.

arhabdomeric cells - In the eyes of scorpions, cells lying outside the rhabdom and carrying impulses from the eye to the brain.

arista - A large bristle, usually dorsally located, on the apical antennal segment in Diptera.

arolium - (plural *arolia*) A pad-like structure at the apex of the last tarsal segment, between the claws; a pad-like structure at the base of each tarsal claw in some insects (Heteroptera).

arrhenotoky - A form of parthenogenesis in which females are produced from fertilized eggs, males from unfertilized eggs in insects, such as honey bees.

arrhythmic activity - Activity that does not exhibit any clear cyclical pattern.

articulation - A joint as between two segments or structures.

aspirator - A device with which insects may be picked up by suction.

asymmetrical - Not alike on the two sides.

asynchronous muscle - A rapidly contracting muscle in which several contractions are initiated by a single neuronal impulse.

atrium (plural atria) - A chamber; a chamber just inside a body opening.

atrophied - Reduced in size, rudimentary.

attenuated - Very slender and gradually tapering distally.

autotomy - In spiders and harvestmen, the voluntary removal of a leg or pedipalp.

axillary sclerites - The small sclerites at the base of the wing that translate deformations of the thorax into wing movements.

band - A transverse marking broader than a line.

basad - Toward the base.

basement membrane - A noncellular membrane underlying the epidermal cells of the body wall.

Batesian mimics - Palatable species that evolve morphologies and behaviors similar to those of unpalatable species.

beak - The protruding mouthpart structures of a sucking insect; proboscis.

behavioral isolating mechanisms - Differences in behavior (usually courtship) that prevent genetic exchange between members of different populations or species.

bifid - Forked, or divided into two parts.

bilobed - Divided into two lobes.

biological clock - An internal timing mechanism that involves both an internal self-sustaining pacemaker and cyclic environmental synchronizers.

bipectinate - Having branches on two sides like teeth of a comb.

biramous - With two branches; consisting of an endopodite and an exopodite in crustaceans.

bisexual - With males and females.

bituberculate - With two tubercles or swellings.

bivalved - With two valves or parts, clam-like.

blastoderm - The peripheral cell layer in the arthropod egg.

bookgills - The leaf-like gills of a horseshoe crab.

booklung - The paired respiratory organs of some terrestrial scorpions, located in mesosomal segments 3 through 6; paired respiratory organs which open on the abdomen ventrally present in many spiders, other spiders have trachea only or a combination of booklungs and trachea.

boss - A smooth lateral prominence at the base of a chelicera in spiders.

brachypterous - With short wings that do not cover the abdomen.

brain - The anterior ganglion of the nervous system, located above the esophagus; in insects composed of the protocerebrum, deutocerebrum, and tritocerebrum.

brain hormone - A chemical messenger produced by neurosecretory cells in the brain; it activates the prothoracic glands to produce ecdysone.

brood - The individuals that hatch from the eggs laid by one mother; individuals that hatch at about the same time and normally mature at about the same time.

bursa copulatrix - A pouch of the female reproductive system that receives the male genitalia during copulation.

bursicon - A hormone involved in the process of sclerotization.

caecum (plural caeca) - A saclike or tubelike structure, open at only one end.

calamistrum - One or two rows of curved spines on the metatarsus of the hind legs of some spiders.

callus (plural calli) - A rounded swelling.

campaniform sensillum - A sense organ consisting of a dome-shaped cuticular area into which the sensory cell process is inserted like the clapper of a bell.

campodeiform larva - A larva shaped like a dipluran, that is, elongate and flattened, with well-developed legs and antennae, and usually active.

cannibalism - The killing and eating of members of the same species.

capitate - With an apical knoblike enlargement; capitate antenna in insects.

capsule - The part of the spermatophore (or hemispermaphore) that bears the sperm packet in scorpions. It is situated basally to the flagellum or distal lamina; its structure and ornamentation are variable and of considerable taxonomic value.

carapace - The sclerotized plate that covers the cephalothorax dorsally upon which the eyes are located in spiders a hard dorsal covering consisting of fused dorsal sclerites in crustaceans.

carina (plural carinae) - A ridge or keel.

carinate - Ridged or keeled.

caste - With reference to the social insects, physiologically, morphologically, and behaviorally different forms of an organism that perform specialized labor in the colony.

caterpillar - An eruciform larva; the larva of a butterfly, moth, sawfly or scorpionfly.

caudad - Toward the tail, or toward the posterior end of the body.

caudal - Pertaining to the tail or posterior end of the body.

caudal filament - A threadlike process at the posterior end of the abdomen in insects.

cell - A space in the wing membrane partly (an open cell) or completely (a closed cell) surrounded by veins in insects.

central nervous system (CNS) - That part of the nervous system that is condensed and centrally located; for example, the brain and spinal cord of vertebrates and the brain and ganglia of insects.

cephalad - Toward the head or anterior end.

cephalic - On or attached to the head; anterior.

cephalization - The evolutionary trend of the concentration of sensory and other nervous system tissue in the head region of animals.

cephalothoracic mass - The brain of a scorpion, a large neural structure in the cephalothorax, beneath the eyes.

cephalothorax - A body region consisting of head and thoracic segments in arachnids and crustaceans, in arachnids, the anteriormost body region, covered dorsally by the carapace and bearing the chelicerae, pedipalps, and legs.

cercus (plural cerci) - One of a pair of appendages at the posterior end of the abdomen.

cervical sclerite - A sclerite located in the lateral part of the cervix, between the head and the prothorax in insects.

cervix - The neck, a membranous region between the head and prothorax in insects.

character - An inherited trait that is thought to be independent of other traits, used in constructing a phylogeny, any feature useful for segregating a distinguishable organism into its proper category.

character state - The value of a particular taxonomic character, as in present or absent, or a particular measurement. Any of two or more alternative and homologous expressions of a character.

chela - Collectively, the tibia (manus and fixed finger) and tarsus (movable finger) of each pedipalp in scorpions.

chelate - Pincer-like, having two opposable structure, like the pincers of scorpions.

chelicera - Either of the two first post-oral appendages, extending anteriorly from beneath the anterior margin of the carapace, which function in feeding and grooming. In spiders, the fang makes up the anteriormost part.

Chelicerata - A major subphylum of arthropods, including the class Merostomata (horseshoe crabs and eurypterids), the class Arachnida (including spiders, scorpions, mites and ticks, harvestmen, tailless whipscorpions, whipscorpions, micro whipscorpions, pseudoscorpions, shorttailed whipscorpions, hooded tickspiders and windscorpions), and the class Pycnogonida (sea spiders).

cheliped - A leg terminating in an enlarged pincer-like structure in crustaceans.

chemoreceptor - A sensillum capable of detecting chemicals (by olfaction and/or gustation).

chitin - A nitrogenous polysaccharide formed primarily of units of N-acetyl glucosamine, occurring in the cuticle of arthropods.

chorion - The outer shell of an arthropod egg.

chrysalis (plural chrysalids or chrysalides) - The pupa of most butterflies.

circadian rhythm - An endogenous oscillation with a natural period close but not necessarily equal to that of the solar day.

circannual rhythm - A biological rhythm of about a year in length or period.

cladistics - A method of reconstructing phylogenies based on the identification of monophyletic groups. The method of systematic biology that attempts to produce a classification based on genealogical relationships, as inferred directly from cladograms, rather than on overall similarity or degree of morphological divergence.

cladogram - A diagram depicting the presumed historical sequence of genealogical branching within a monophyletic group, based on a nested pattern of synapomorphies.

class - A subdivision of a phylum or subphylum, containing a group of related orders.

clypeus - The area between the anterior row of eyes, and the anterior edge of the carapace in spiders.

commensalism - A type of symbiosis where one species benefits, the other is neither harmed nor benefits.

competition - The attempt of two or more organisms to utilize the same limited resource.

connective - Any of the nerve fibers between ganglia in the nerve cord, which are usually grouped together into identifiable nerves.

conspecifics - Animals belonging to the same species.

convergent - Becoming closer distally

corium - The elongate, usually thickened, basal portion of the front wing in Heteroptera.

cornea - The cuticular part of an eye.

cornicle - One of a pair of dorsal tubular structures on the posterior part of the abdomen in many aphids.

corpora allata - Paired invertebrate endocrine glands, located in the thoracic region, which secrete juvenile hormone that prevents maturation.

coxa (plural coxae) - The basal segment of the leg in arthropods.

coxapophysis - Any of the hollow anterior basal apophyses of the coxae of the first (coxapophyses I) and second (coxapophyses II) pairs of legs in scorpions.

coxopodite - The basal segment of an arthropod appendage.

coxosternal region - The anteroventral surface of a scorpion, including the coxae of the legs, the pedipalps, and the sternum.

crenulate - Wavy or with small scallops.

crepuscular - Daily cycles with peak activity around dusk and/or dawn.

cribellum - A sieve-like structure lying just anterior to the spinnerets in some spiders.

crochets - Hooked spines at the tip of the prolegs of lepidoptenous larvae.

crop - The dilated posterior portion of the foregut, just behind the esophagus in insects.

ctenidium (plural ctenidia) - A row of stout bristles like the teeth of a comb.

cuneus - A more or less triangular apical piece of the corium, set off from the rest of the corium by a suture in Heteroptera.

cursorial - Fitted for running; running in habit.

cuticle (or cuticula) - The noncellular outer layer of the body wall of an arthropod.

cyst - A sac, vesicle, or bladderlike structure.

dactyl - The median claw of the apotele of each leg in scorpions.

deciduous - Having a part or parts that may fall off or be shed.

decticous - A type of pupa with movable, functional mandibles in insects.

decumbent - Bent downward.

deflexed - Bent downward.

dentate - Toothed, or with toothlike projections.

denticulate - With minute tooth-like projections.

depressed - Flattened dorsoventrally

determinate growth - Growth characterized by an increase in body size to a specific upper limit, after which growth ceases.

deutocerebrum - The middle region of the three major brain portions in arthropods, typically receiving inputs from the antennae; hence, its presence in arachnids is debatable.

diad (or dyad) - A pair, usually of eyes, in spiders, as in three pair of diads in recluse spiders.

diapause - A period of dormancy, common in insect species, which generally occurs during the more rigorous portions of the annual climatic cycle.

dilated - Expanded or widened.

dimorphic - Having more than one form, size, or appearance; usually referring to the difference between males and females of a species.

dioecious (diecious) - Having the male and female organs in different individuals, any one individual being either male or female.

direct flight mechanism - Generation of wing movements by means of muscles pulling on the bases of the wings.

disjunct distribution - Noncontiguous allopatric distribution, usually of widely separated populations or taxa.

dispersal - A more or less permanent movement of an individual from an area, such as movement of an immature away from its place of birth.

dispersal event - Any movement of one or more individuals of a species to a place outside the normal range of that species, frequently resulting in an expansion of the range or the establishment of a new population at some distant location across a barrier. The new population may evolve in isolation into a new taxon.

distad - Away from the body toward the end farthest from the body.

distal - Near or toward the free end of an appendage; that part of a segment on appendage farthest from the body.

diurnal - An animal with an activity period during the light portion of the daily cycle.

divaricate - Extending outward and then curving inward toward each other distally.

divergent - Becoming more separated distally.

diverticulum - In katoikogenic scorpions, a blind outpocketing of the ovariterus in which the oocytes are contained and the embryos develop.

dormancy - A state of quiescence or inactivity.

dorsad - Toward the back or top.

dorsal - Top on uppermost; pertaining to the back on upper side.

dorsal blood vessel - Median upper tube that forms the primary portion of the circulatory system of arthropods.

dorsomesal - At the top and along the midline.

dorsoventral - From top to bottom, or from the upper to the lower side.

dorsum - The back or top (dorsal) side

ecdysis (plural ecdyses) - Molting; the periodic process of shedding the exoskeleton.

ecdysone (or ecdysteroid) - Hormone produced by the prothoracic glands that initiates molting in insects.

eclosion - Hatching from the egg, also the process whereby the adult form of an insect emerges from the pupa in holometabolous insects.

ectoparasite - A parasite that lives on the outside of its host.

eggsac - The structure made by female spiders to house from a few, to well over a thousand eggs depending on species and nutritional status.

elateriform larva - A larva resembling a wireworm (mealworm), that is, slender, heavily sclerotized, with short thoracic legs, and with few body hairs.

elbowed antenna - An antenna with the first segment elongated and the remaining segments coming off the first segment at an angle.

elevate - To raise an appendage, a leg or wing.

elytron (plural elytra) - A thickened, leathery or horny front wing in Coleoptera, Dermoptera, and some Homoptera

emarginate - Notched or indented.

embolus - The section of the male spider's secondary sexual organs through which the sperm passes into the female gonopore.

embryonal capsule - The first of the three extraembryonic membranes appearing during embryonic development in katoikogenic scorpions, deriving from follicle cells.

embryonal envelope - The third of the three extraembryonic membranes appearing during embryonic development in katoikogenic scorpions, deriving from follicle cells.

emergence - In spiders, the evacuation from the eggsac by 2nd instars, the act of the adult insect leaving the pupal case or the last nymphal skin.

endite - The basal segment of the spider pedipalp, which is enlarged and functions as a crushing point in cooperation with the chelicerae.

endocrine glands - A series of ductless glands in both invertebrates and vertebrates that release hormones into the body through the blood or lymph.

endocuticle (or endocuticula) - The innermost and unsclerotized layer of the arthropod cuticle, some divide the endocuticle further into mesocuticle and endocuticle, resorbed before a molt.

endogenous - Processes within the animal with particular reference to the internal, genetically based, biological components.

endoparasite - A parasite that lives inside its host.

endopodite - The mesal branch of a biramous appendage in crustaceans.

endoskeleton - A skeleton or supporting structure on the inside of the body.

endosternite - In scorpions, an internal skeleton lying horizontally above the sub-esophageal ganglion and joining the diaphragm posteriorly. An abdominal endosternite is also present, ventral to the ventral connectives of the subesophageal ganglion.

entire - Without teeth or notches, with a smooth outline.

entomophagous - Feeding on insects.

entrainment - The process by which a biological clock is set or reset by synchronizing with the period of some external, environmental stimulus.

epicuticle (or epicuticula) - The very thin, nonchitinous, external layer of the cuticle

epidermis (or hypodermis) - The cellular layer of the body wall, which secretes the cuticle

epigastric furrow - A transverse ventral suture near the anterior end of the abdomen, along which may lie two openings of the booklungs and the reproductive organs in spiders.

epigynum - The external female genitalia of spiders.

epimeron (plural epimera) - The area of a thoracic pleuron posterior to the pleural suture

epipharynx - A mouthpart structure on the inner surface of the labrum or clypeus; in chewing insects, a median lobe on the posterior (ventral) surface of the labrum.

epiproct - A process or appendage situated above the anus and appearing to arise from the tenth abdominal segment; actually the dorsal part of the eleventh abdominal segment.

episternum (plural episterna) - The area of a thoracic pleuron anterior to the pleural suture.

equilibrium species - Species living in a relatively stable environment, whose populations do not fluctuate greatly, often with small numbers of young and parental care; K-selected species.

eruciform larva - A caterpillar; a larva with a more or less cylindrical body a well-developed head, and thoracic legs and abdominal prolegs.

esophagus - The narrow portion of the alimentary tract immediately posterior to the pharynx.

eusocial - A social system involving reproductive division of labor (castes) and cooperative rearing of young by members of previous generations. A term biased toward insects as opposed to other arthropods.

evagination - An outpocketing, or saclike structure on the outside.

eversible - Capable of being everted or turned outward.

excavated - Hollowed out.

excretion - The elimination of metabolic wastes from the body.

exocuticle (or exocuticula) - The layer of sclerotized cuticle just outside the endocuticle, between the endocuticle and the epicuticle.

exopodite - The outer branch of a biramous appendage in crustaceans.

exoskeleton - A skeleton or supporting structure on the outside of the body.

exserted - Protruding or projecting from the body.

external - The outside; that part away from the center (midline) of the body

exuvium (plural exuvia) - The cast skin of an arthropod.

facet - The external surface of an individual compound-eye unit or ommatidium.

family - A subdivision of an order, suborder, or superfamily containing a group of related genera, tribes, or subfamilies. Family names of animals end in -idae.

fat body - An amorphous organ involved in intermediate metabolism, storage, and storage excretion.

feces - Excrement, the material passed from the alimentary tract through the anus.

femur - The third leg segment, usually the longest one, from the base of the cephalothorax in spiders and other arachnids.

filament - A slender threadlike structure.

file - A file-like ridge on the ventral side of the tegmen, near the base; a part of the stridulating mechanism in crickets and longhorned grasshoppers.

filiform - Hair-like or thread-like, filiform antenna.

first true molt - The molt following eclosion.

fixed action pattern (FAP) - An innate behavior pattern that is stereotyped, spontaneous, and independent of immediate control, genetically encoded, and independent of individual learning (replaces instinct).

flabellate - With fanlike processes or projections; flabellate antenna.

flagelliform spermatophore - In scorpions, one of two basic types of spermatophore: in this type, the distal end is produced into a long, slender flagellum. The term also applies to the hemispermaphore, but the flagellum is usually coiled inside the paraxial organ.

flagellum (plural flagella) - A whip-like structure; that part of the antenna beyond the second segment.

flexor muscle - A muscle that decreases the angle between two segments of an appendage.

foliaceous - Leaf-like.

follicle - A minute cavity sac, or tube.

foregut - The anterior portion of the alimentary tract, from the mouth to the midgut.

fossorial - Adapted for digging or for life in a burrow, or for both.

fundamental niche - The multidimensional space that an animal would occupy under optimal conditions in the absence of competitors; also called preferred niche.

furca - A fork or forked structure; a forked apodeme arising from a thoracic sternum.

furcula - The forked springing apparatus in the Collembola.

ganglion (plural ganglia) - A knot-like enlargement of a nerve, containing a coordinating mass of nerve cells.

gaster - The rounded part of the abdomen posterior to the node-like segment or segments in some Hymenoptera.

gastric caecum - Caecum located at the anterior portion of the midgut.

generation - From any given stage in the life cycle to the same stage in the offspring.

geniculate - Elbowed, or abruptly bent; geniculate antenna.

genitalia - The sexual organs and associated structures; the external sexual organs.

genus (plural genera) - A group of closely related species; the first name in a binomial or trinomial scientific name. Names of genera are latinized, capitalized, and when printed, are italicized.

germarium - Apical portion of the ovariole or sperm follicle.

gill - Evagination of the body wall or hindgut, functioning in gaseous exchanges in an aquatic animal.

glabrous - Smooth, without hair.

globose, globular - Spherical or nearly so.

gnathochilarium - A plate-like mouthpart structure in the Diplopoda, representing the fused maxillae and labium.

gonopod - A modified leg that forms a part of the external genitalia.

gonopore - The external opening of the reproductive organs.

gravid - A female arthropod storing fertilized eggs.

gregarious - Living in groups.

grub - A scarabaeiform larva; a thick-bodied larva with a well-developed head and thoracic legs, without abdominal prolegs, and usually sluggish.

guild - A group of species that share a common resource (type of prey).

gustation - Taste, detection of chemicals in liquid.

gynandromorph - An abnormal individual containing secondary sexual characteristics of both sexes.

halter (plural halteres) - A small knobbed structure on each side of the metathorax, formed from a modified hind wing in Diptera.

handling time - The time it takes to process a food item for consumption.

haustellate - Formed for sucking, the mandibles not fitted for chewing (or absent).

head - The anterior body region, which bears the eyes, antennae, and mouthparts.

heart - The posterior pulsatile portion of the dorsal blood vessel.

hemelytron (plural hemelytra) - The front wing of Heteroptera.

hemimetabolous - Having simple metamorphosis, like that in the Odonata, Ephemeroptera, and Plecoptera (with the naiads aquatic).

hemispermatothore - Either of the two halves of the spermatophore, which develop inside the paraxial organ in the male scorpion's mesosoma. During courtship, the two halves are extruded from the genital aperture, cemented together, and deposited on the substrate to form the spermatophore.

hemocoel - A body cavity filled with blood.

hemocyte - A blood cell.

hemolymph - The blood of arthropods.

herbivorous - Feeding on plants.

hermaphroditic - Possessing both male and female sex organs.

hindgut - The posterior portion of the alimentary tract, between the midgut and the anus.

holometabolous - With complete metamorphosis.

honeydew - Sugary liquid discharged from the anus of certain Homoptera.

horny - Thickened or hardened.

host - The organism in or on which a parasite lives; the plant on which an insect feeds.

humerus (plural humeri) - The shoulder; the posterolateral angles of the pronotum in Heteroptera.

hyaline - Like glass, transparent and colorless.

hypermetamorphosis - A type of complete metamorphosis in which the different larval instars represent two or more different types of larvae, as in Meloidae.

hyperparasite - A parasite whose host is another parasite.

hypognathous - With the head and the mouthparts located ventrally.

hypopharynx - A median mouthpart structure anterior to the labium, the ducts from the salivary glands are usually associated with the hypopharynx, and in some sucking insects the hypopharynx is the mouthpart structure containing the salivary channel.

ileum - The anterior part of the hindgut.

imago (plural imagoes or imagines) - The adult or reproductive stage of an insect.

immature - The stadia between the egg and adult (or ultimate instar) in arthropods (misused; juvenile, subadult).

inbreeding depression - Reduction in offspring fitness resulting from mating among kin; caused in part by the accumulation of deleterious recessives.

incline - Bent toward the midline of the body.

indeterminate growth - Growth characterized by increase in body size throughout the entire life of an organism.

innate - Behavior that has either a fixed genetic basis or a high degree of genetic preprogramming.

innate releasing mechanism (IRM) - A neural process, triggered by the sign stimulus, which preprograms an animal for receiving the sign stimulus and mediates specific behavioral responses.

inquinine - An animal that lives in the nest or abode of another species.

instar - The organism between successive molts, also, the organism itself during such a period.

integument - The outer covering of the body.

intelligence - The capacity to modify behavior as a result of experience.

interference competition - Direct antagonism between organisms that results in decreased access to resources for the loser.

internuncial neuron (or interneuron) - A neuron that connects with two (or more) other neurons.

interstitial - Situated between two segments.

intima - The cuticular lining of the foregut, hindgut, and tracheae.

intraguild predation - Predation among species that use common resources and are potential competitors.

invagination - An infolding or inpocketing.

isolating mechanism - Any physical or behavioral characteristic that prevents successful exchange of genes between members of different species or populations.

iteroparity, iteroparous - Repeated reproduction during the lifetime of a female.

joint - An articulation of two successive segments or parts.

katoikogenic development - The type of embryonic development in which the fertilized ova develop in numerous diverticula branching from the ovariole.

keeled - With an elevated ridge or carina.

kinesthetic orientation - The ability of an organism to orient itself in space by relying on information from various movement-detecting receptors.

knockout gene - A genetically engineered mutant gene that has been targeted for disruption so that it no longer functions normally.

labial - Of or pertaining to the labium.

labial gland - Exocrine organ opening on or at the base of the labium, usually functioning as salivary or silk gland.

labial palp - One of a pair of small feelerlike structures arising from the labium in insects.

labium - One of the mouthpart structures, the lower lip in insects, the sclerite between the endites in spiders.

labrum - The upper lip, lying just below the clypeus in insects.

lamella (plural lamellae) - A leaf-like plate.

lamellate - With plate-like structures or segments; lamellate antennae.

lamelliform spermatophore - One of two basic types of spermatophore: in this type, the distal end is produced into a broad lamina, or blade. The term also applies to the hemispermatothore.

lamina - In the cuticle, a layer of cuticle with chitin microfibrils oriented in the same direction.

lanceolate - Spear-shaped, tapering at each end.

larva (plural larvae) - The immature stage, between egg and pupa, of an insect having complete metamorphosis; an immature stage differing radically from the adult.

larviform - Shaped like a larva.

laterad - Toward the side, away from the midline of the body.

lateral - Of or pertaining to the side.

lateral oviduct - A tube in the female internal genitalia connecting the ovaries and the common oviduct.

laterigrade - Sideways movement as in crab spiders and some other spiders and Amblypygi.

lateroventral - To the side (away from the midline of the body) and below.

ligula - The terminal lobe (or lobe) of the labium, the glossae and paraglossae.

linear - Line-like, long and very narrow.

lithophilic - Adapted for living in rocky environments, especially in cracks and crevices in boulders or vertical cliff faces.

longitudinal - Lengthwise of the body or of an appendage.

luminescent - Producing light.

lyriform organ - A lyre-shaped grouping of slit sensilla seen on the cuticle of some arachnids.

maggot - A vermiform larva; a legless larva without a well-developed head capsule in Diptera.

Malpighian tubules - Excretory tubes that arise near the anterior end of the hindgut and extend into the body cavity.

mandible - Jaw, one of the anterior pair of paired mouthpart structures.

mandibulate - With jaws fitted for chewing.

marginated - With a sharp or keel-like lateral edge.

maxilla (plural maxillae) - One of the paired mouthpart structures immediately posterior to the mandibles.

maxillary palp - A small feeler-like structure arising from the maxilla.

maxilliped - One of the appendages in crustaceans immediately posterior to the second maxillae.

mechanoreceptor - A receptor cell that is sensitive to mechanical disturbances such as touch, vibration, or deformation.

median - In the middle; along the midline of the body.

median ocular area - The space limited by the four median eyes in spiders.

membranous - Like a membrane; thin and more or less transparent (wings); thin and pliable (cuticle).

meropleuron (plural meropleura) - A sclerite consisting of the meron (basal part) of the coxa and the lower part of the epimeron.

mesad - Toward the midline of the body.

mesal - At or near the midline of the body.

mesenteron - The midgut, or middle portion of the alimentary tract.

meson - The midline of the body, or an imaginary plane dividing the body into right and left halves.

mesonotum - The dorsal sclerite of the mesothorax.

mesosoma - The seven-segmented midbody region in scorpions, posterior to the cephalothorax, covered dorsally by tergites and ventrally by sternites. On its ventral surface it bears the genital opercula, pectines, and booklung spiracles; internally, it bears the bulk of the visceral organs.

mesosternum - The sternum, or ventral sclerite, of the mesothorax.

mesothorax - The middle or second segment of the thorax.

metamere - A primary body segment.

metamorphosis - A change in form during development.

metanotum - The dorsal sclerite of the metathorax.

metasoma - In scorpions, the five-segmented "tail," forming the posteriormost major body region; the intestine passes through it and terminates posteriorly and ventrally to the fifth metasomal segment.

metasternum - The sternum, or ventral sclerite, of the metathorax.

metatarsus (plural metatarsi) - The sixth leg segment from the cephalothorax in spiders and some other arachnids, absent in the spider pedipalps, absent in insects.

metathorax - The third or posterior segment of the thorax.

micropyle - A minute opening, or openings, in the chorion of an arthropod egg through which sperm enter the egg.

midgut - The mesenteron, or middle portion of the alimentary tract.

migration - A seasonal movement from one location to another.

minute - Very small, an arthropod a few millimeters in length or less would be considered minute.

modal action pattern (MAP) - A spatiotemporal behavior pattern that is common to members of a species; different individuals perform the pattern in a recognizably similar fashion.

molt - A process of shedding the exoskeleton; ecdysis; to shed the exoskeleton.

monecious - Possessing both male and female sex organs, hermaphroditic.

moniliform - Beadlike, with rounded segments; moniliform antenna.

monocondylic - A joint with a single point of articulation.

monotypic taxon - A higher taxon containing only one lower taxon, such as a family with only one genus, or a genus with only one species.

morphology - The science of form or structure.

motoneuron - A neuron that carries impulses to activate muscle cells.

motor neuron - A neuron that forms a synapse with a muscle.

mutation - A change in the sequence of nucleotides in a gene.

mutualism - Symbiosis between individuals of different species where both benefit.

myogenic - Produced by muscle; contraction of a muscle generated by that muscle itself, without neuronal stimulus.

myriapod - A many-legged arthropod; a centipede, millipede, pauropod, or symphylan.

naiad - An aquatic, gill-breathing immature insect with incomplete metamorphosis.

nerve cord - A long collection of ganglia and connectives, usually running from the brain of an animal and down the long axis of its body. In arachnids, the nerve cord extends from the cephalothoracic mass ventrally toward the posterior end of the animal.

neurogenic - Produced by a neuron; contractions of muscle stimulated by a neuronal impulse.

neuromere - Any segment of neural tissue found early in development and representing some future portion of the adult nervous system.

neuropile - The central region of a ganglion, consisting of a complicated network of axons and dendrites whose cell bodies lie to the outside of the ganglion.

neutral - A type of symbiosis between two organisms of different species where neither is harmed nor benefits.

nidi - In the midgut, clusters of regenerative epithelial cells.

nocturnal - Animals whose primary activity occurs during the dark portion of the daily cycle.

node - A knoblike or knotlike swelling.

nodiform - In the form of a knob or knot.

notum (plural nota) - The dorsal sclerite of a thoracic segment.

nurse cells - Nutritive cells associated with the developing oocyte (egg).

nymph - An immature stage (following hatching) of an insect that does not have a pupal stage (incomplete metamorphosis).

obtect pupa - A pupa in which the appendages are more or less glued to the body surface, as in the Lepidoptera.

ocellus (plural ocelli) - A simple eye of an insect or other arthropod.

olfaction - The sense of smell; the ability to detect chemicals in a gas.

ommatidia - The functional units of the invertebrate compound eye, each one of which has a lens, focusing cone, photoreceptive cells, and forms an image.

oogenesis - The formation of eggs.

oogonium (plural oogonia) - The primary germ cells of the female.

ootheca (plural oothecae) - The covering or case of an egg mass in Mantodea and Blattaria.

operculum (plural opercula) - A lid or cover.

opisthognathous - With the mouthparts directed backward.

opisthorhynchous - With the beak directed backward.

opisthosoma - Collectively, the metasoma and mesosoma together in scorpions, the abdomen in spiders and others.

order - A subdivision of a class or subclass, containing a group of related superfamilies or families.

orientation - The way an organism positions itself in relation to external cues.

oscillator - The internal mechanism that is the clock in a biological rhythm.

ostiole - A small opening.

ostium (plural ostia) - A slit-like opening in the arthropod heart.

ovariuterus - The major part of the female reproductive system in scorpions which includes the longitudinal and transverse ovarian tubes; these form a reticulate network that functions as both ovaries and oviducts.

ovary - The egg-producing organ of the female.

oviduct - The tube leading away from the ovary through which the eggs pass.

oviparous - Laying eggs.

ovipore - The external opening of the female reproductive system through which the eggs pass during oviposition.

oviposit - To lay or deposit eggs.

ovipositor - The egg-laying apparatus; the external genitalia of the female.

ovoviviparous - Maintaining the fertilized ova inside the maternal body without providing maternal nourishment as they develop (the ova depend on yolk reserves); the ova hatch in the female's body, resulting in live birth.

paedogenesis - The production of eggs or young by an immature or larval stage of an animal.

palp - A segmented process born by the maxillae or labium in insects.

papilla - A small nipplelike elevation.

paramere - A structure in the male genitalia of insects, usually a lobe or process at the base of the aedeagus.

paraproct - One of a pair of lobes bordering the anus lateroventrally.

parasite - An animal that lives in or on the body of another living animal, its host, at least during a part of its life cycle, feeding on the tissues of its host.

paraxial organ - An organ that produces a hemispermaphore, composed of an ejaculatory sac, seminal vesicle, and one or more accessory glands that produce the components of the hemispermaphore and provide the sperm for it.

parthenogenesis - Development of the egg without fertilization.

patella - The fourth leg segment from the base of the cephalothorax between the femur and tibia in spiders and other arachnids.

paurometabolous - With simple metamorphosis, the young and adults living in the same habitat, and the adults winged.

pecten (also pectin)- Either of the paired comb-like appendages making up the second mesosomal segment in scorpions, which function in mechanoreception and, probably, in chemoreception; a comb-like or rake-like structure.

pectinate - With branches or processes like the teeth of a comb; pectinate antenna.

pedicel - The second segment of the antenna in insects, the stem of the abdomen, between the thorax and the gaster in ants, the connecting segment between the cephalothorax and abdomen in spiders.

pedipalp - Either of the paired chelate appendages comprising the fourth somite in scorpions, which function in prey capture, defense, and sensory perception, the second pair of appendages in spiders and other arachnids.

penultimate - Next to the last, penultimate instar is the last sexually immature instar in many arthropods.

pericardial sinus - The body cavity surrounding the dorsal blood vessel, limited ventrally by the dorsal diaphragm.

perineural sinus - The body cavity surrounding the ventral nerve cord, limited dorsally by the ventral diaphragm.

peristalsis - Waves of contraction.

perivisceral sinus - The body cavity surrounding the digestive system, reproductive system, between the dorsal and ventral diaphragms.

petiolate - Attached by a narrow stalk or stem.

petiole - A stalk or stem; the narrow stalk or stem by which the abdomen is attached to the thorax in many Hymenoptera; in ants, the nodelike first segment of the abdomen.

phallus - The male copulatory organ, including any processes that may be present at its base.

pharynx - The anterior part of the foregut, between the mouth and the esophagus.

phenology - The cycle of activity of an organism during the seasons of the year.

pheromone - A substance given off by one individual that causes a specific reaction by other individuals of the same species, such as sex attractants, alarm substances, etc.

phonotaxis - Orientation with respect to sound.

photoperiod - The relative amount of time during the day in which it is light, or dark.

photoreceptor - A cell capable of transducing light energy.

phototaxis - Orientation with respect to light.

phylogeny - The evolutionary history of a group of organisms.

phylum (plural phyla) - One of the highest major divisions of the animal kingdom, example Arthropoda.

phytophagous - Feeding on plants.

pictured - With spots or bands, pictured wings.

pilose - Covered with hair.

plastron - A bed of very dense and very fine hairs used to hold an air bubble or film of air close to the body and across which gas exchange takes place.

platform larva - A larva that is extremely flattened.

plesiomorphy - A character considered primitive.

pleural - Pertaining to the pleura, or lateral sclerites of the body; lateral.

pleurite - A lateral or pleural sclerite.

pleuron (plural pleura) - The lateral area of a segment.

plumose - Featherlike; plumose antenna.

poikilothermic, poikilothermous - Exhibiting a body temperature that is not constant, but rather fluctuates in response to environmental temperatures, loosely "cold-blooded."

polyembryony - An egg developing into two or more embryos.

polyphyletic - Describes a group of taxa that arose from multiple ancestors.

postembryo - In spiders, the animal between eclosion and 1st instar.

posterior - Hind or rear.

posterior lateral eyes - In spiders the eyes (usually two) on the outside of the posterior row of eyes.

posterior median eyes - In spiders, the eyes (usually two) inside the posterior row of eyes.

postnotum - (plural postnota) - A notal plate behind the scutellum bearing a phragma, often present in wing-bearing segments.

predaceous - Feeding as a predator.

predator - An animal that attacks and feeds on other animals, its prey, usually animals smaller or less powerful than itself. The prey is usually killed and mostly or entirely eaten.

preoral - Anterior to or in front of the mouth.

prepectinal plate - A small ventral sclerotized plate located just anterior to the pectines in fossil scorpions; it is vestigial in extant Neotropical buthids.

pretarsus (plural pretarsi) - The terminal segment of the leg, typically consisting of a pair of claws and one or more padlike structures.

proboscis - The extended beak-like mouthparts of some insects.

proclinate - Inclined forward or downward.

proctodaeum - The hindgut, or the hindmost of the three major divisions of the alimentary tract, from the Malpighian tubules to the anus.

procurved - In spider eyes, if the lateral eyes are further forward than the median eyes, forming an arc.

procuticle - The form in which the cuticle is initially secreted by the epidermis, before sclerotization takes place.

produced - Extended, prolonged, or projecting.

profile - The outline as seen from the side or in lateral view.

prognathous - Having the head horizontal and the mouthparts projecting forward.

proleg - One of the fleshy abdominal legs of certain insect larvae.

prominence - A raised, produced, or projecting portion.

promote - To move anteriorly.

pronotum - The dorsal sclerite of the prothorax.

proprioceptor - A slowly adapting mechanoreceptor that provides essentially continuous information about the position of various body structures in relation to one another and to distortions of the body.

prosoma - A term referring to the anterior part of the body usually applied to the cephalothorax in arachnids; the anterior part of the head or cephalothorax.

prosternum - The sternum, or ventral sclerite, of the prothorax.

prothoracic gland - An invertebrate endocrine gland located in the prothorax region directly behind the head. It secretes ecdysone, a steroid hormone that promotes molting.

prothorax - The anterior of the three thoracic segments.

protocerebrum - The first of the three major brain portions in arthropods, typically containing centers from the eyes, and important integration and association regions.

proventriculus - The valve between the foregut and midgut in insects.

proximal - Toward the end or portion nearest the body.

proximal - Nearer to the body or to the base of an appendage.

pruinose - Covered with a whitish waxy powder.

psammophilic - Adapted for living in sandy environments.

pterothorax - The wing-bearing segments of the thorax (mesothorax and metathorax).

pterygote - Winged.

pubescent - Downy covered with short fine hairs.

pulvilliform - Lobe-like or padlike; shaped like a pulvillus.

pulvillus (plural pulvilli) - A pad or lobe beneath each tarsal claw in Diptera.

punctate - Pitted or beset with punctures.

punctuated equilibria - The hypothesis that evolution occurs in relatively rapid bursts, interspersed with long periods of stasis.

puncture - A tiny pit or depression.

pupa (plural pupae) - The stage between the larva and the adult in insects with complete metamorphosis, a nonfeeding and usually an inactive stage.

puparium (plural puparia) - A case formed by the hardening of the last larval skin, in which the pupa is formed in Diptera.

pupate - To transform to a pupa.

pupiparous - Giving birth to larvae that are full grown and ready to pupate.

pygidium - The last dorsal segment of the abdomen.

pyloric valve - The valve between the midgut and hindgut.

quadrate - Four-sided.

raptorial - Fitted for grasping prey; raptorial front legs, as in mantids.

realized niche - The multidimensional space that an animal actually occupies in the presence of competitors, predators, pathogens, and limited food.

rebordered - With a thickened edge, as with the labium of some spiders.

receptor - Any cell that transduces a specific stimulus, whether from the environment (exteroceptor) or from within the body (interoceptor).

receptor organ - A group of tissues that in combination with receptor cells responds to specific stimuli.

reclinate - Inclined backward or upward.

rectum - The posterior region of the hindgut.

recurved - Curved upward or backward; an arc in spiders, the lateral eyes are more toward the posterior end than the median eyes.

reflex - simple, stereotyped behavior in response to a specific stimulus.

remote - To move posteriorly.

reniform - Kidney-shaped.

reticulate - Like a network.

retina - The receptive apparatus of an eye.

retinula cell - Any of a group of retinal cells wherein the specialized membrane region (rhabdomere) of each cell is connected to similar adjacent cells, forming a rhabdom.

retractile - Capable of being pushed out and drawn back in.

rhabdom - A rodlike light-sensitive structure formed of the inner surfaces of adjacent sensory cells in the ommatidium of a compound eye, in certain visual organs of some arthropods, a complex membrane region where light energy is transduced into electrical impulses, in the scorpion eye, the rhabdom consists of the rhabdomeres of numerous adjacent retinula cells.

rhabdomere - The specialized membrane region of a retinula cell, consisting of complex microvilli (compacted tubes) and presumed to be the site where light is transduced in the eye.

Riker mount - A thin glass-topped exhibition case filled with cotton.

rostrum - Beak or snout.

rudimentary - Reduced in size, poorly developed, embryonic.

rugose - Wrinkled.

saprophagous - Feeding on dead or decaying plant or animal materials, such as carrion, dung, dead logs.

sarcomere - The structural and functional unit of striated muscle, a highly organized subunit of a single muscle cell, containing contractile proteins in an ordered array.

scape - The basal segment of an antenna.

scarabaeiform larva - A grub-like larva, the body is thickened and cylindrical, with a well-developed head and thoracic legs, without prolegs, and usually sluggish.

scavenger - An animal that feeds on dead animals, or decaying materials, or on animal wastes.

scent gland - A gland producing an odorous substance.

scientific name - A latinized name, internationally recognized, of a species or subspecies. The scientific name of a species consists of the generic and specific names, and that of a subspecies consists of the generic, specific, and subspecific names. Scientific names are always printed in italics.

sclerite - Any of the hardened plates into which the exoskeleton is divided. The separation of the sclerites by soft membranes or sutures allows movement while retaining necessary rigidity.

sclerotization - The process of becoming hardened.

sclerotized - Hardened.

scopa (plural scopae) - A small, dense tuft of hair.

scopula (plural scopulae) - Present in some spiders, not all, hair that enables spiders to climb smooth surfaces, like glass, and cling onto vertical and up-side-down surfaces.

scraper - The sharpened anal angle of the front wing (tegmen) of a cricket or longhorned grasshopper, a part of the stridulating mechanism.

scrobe - A groove or furrow; antennal scrobe.

scutellum - A sclerite of the thoracic notum; the mesoscutellum, appearing as a more or less triangular sclerite behind the pronotum in Heteroptera, Homoptera, Coleoptera.

scutum - The middle division of a thoracic notum, just anterior to the scutellum.

sebaceous glands - Glands secreting fatty or oily material.

segment - A subdivision of the body or of an appendage, between joints or articulations.

seminal vesicle - A structure, usually saclike, in which the seminal fluid of the male is stored before being discharged; usually an enlargement of the vas deferens.

sense cone or **sense peg** - A minute cone or peg, sensory in function.

sensillum (plural sensilla) - An organ capable of detecting external stimuli.

sensory neuron - A neuron capable of generating an action potential in response to an external stimulus; such as physical displacement, temperature, humidity, chemicals.

serosa - The first of the two extraembryonic membranes appearing during embryonic development in apokogenic scorpions, derived from proliferation of the blastoderm.

serrate - Toothed along the edge like a saw; serrate antenna.

sessile - Attached or fastened, incapable of moving from place to place; attached directly without a stem or petiole.

seta (plural setae) - A bristle, any of the various movable hair-like projections of the scorpion integument that arise from an areolar cup.

setaceous - Bristlelike; setaceous antenna.

setate - Provided with bristles.

setulose - Bearing short, blunt bristles.

sigmoid - Shaped like the letter S.

simple - Unmodified, not complicated; not forked, toothed, branched, or divided.

sister group - A taxon that is the closest genealogical relative of some other taxon, the two share an immediate common ancestor not shared with any other taxon.

slit sense organ - A very small sensory structure in the cuticle of an arthropod, consisting of a tiny cuticular thinning (slit) innervated by a sensory cell that is activated by cuticular stress.

somite - Any of the body segments in those animals that are composed of a linear series of similar body segments.

spatulate - Spoon-shaped; broad apically and narrowed basally and flattened.

spermatheca - (plural spermathecae) A saclike structure in the female in which sperm from the male are received and often stored.

spermatogenesis - The production of sperm cells.

spermatogonium - A primary germ cell of the male.

spermatophore - A capsule containing sperm, produced by the males of some insects. A sclerotized, sperm-carrying structure composed of two hemispermatophores, which is extruded from the male scorpion's body and deposited on the substrate. After its deposition, the male positions the female over it for her retrieval of the sperm.

spermatozoon (plural spermatozoa) - A functional, usually motile, sperm cell.

spindle-shaped - Elongate and cylindrical, thickened in the middle and tapering at the ends.

spine - A thornlike outgrowth of the cuticle.

spinneret - A structure with which silk is spun, usually fingerlike in shape.

spinose - Beset with spines.

spiracle - An external opening of the tracheal system; a breathing pore.

spur - A movable spine, when on a leg segment, usually located at the apex of the segment.

stabilimentum - A band of web usually placed in the center of the web in orbweavers.

stadium (plural stadia) - The period between molts of a developing arthropod.

stalked - With a stalk or stem; with a narrow stem-like base; of veins, fused together to form a single vein.

sternite - A subdivision of a sternum; the ventral plate of an abdominal segment; strictly, any of the four ventral mesosomal plates bearing pairs of ventrolateral spiracles leading into booklung chambers in orthostern scorpions.

sternum (plural sterna) - A sclerite on the ventral side of the body in insects, a large sclerite on the .

stiltling - In birth behavior, the raising of the anterior portion of the female scorpion's body prior to and during parturition; also, in response to high ambient temperatures, the raising of a scorpion's body above the substrate, with the posterior portion held highest.

stomodaeum - The foregut.

stria (plural striae) - A groove or depressed line.

striate - With grooves or depressed lines.

stridulate - To make a noise by rubbing two structures or surfaces together.

stridulatory organ - A sound-producing organ used to warn off potential predators. stripe A longitudinal color marking.

stylete - With a style; style-like.

style - A bristle-like process at the apex of an antenna; a short slender, fingerlike process.

stylet - A needlelike structure; one of the piercing structures in sucking mouthparts.

stylus (plural styli) - A short, slender, fingerlike process.

subapical - Located just proximad of the apex.

subbasal - Located just distad of the base.

subclass - A major subdivision of a class, containing a group of related orders.

subcoxa - Leg segment of primitive arthropods basad of the coxa, hypothesized to be incorporated into the thoracic wall to form the thoracic pleurites.

subequal - Approximately or almost, equal in size or length.

subesophageal ganglion - The ventral portion of the cephalothoracic mass, lying below the esophagus; in arachnids, it is often very large and contains major neural centers for the appendages.

subfamily - A major division of a family containing a group of related tribes or genera. Subfamily names end in *-inae*.

subgenital plate - A plate-like sternite that underlies the genitalia.

subimago - The first of two winged instars of a mayfly after it emerges from the water.

suborder - A major subdivision of an order, containing a group of related superfamilies or families.

sulcate - With a groove or furrow.

sulcus (plural sulci) - A groove formed by an infolding of the body wall a groove or furrow.

supercooling - Lowering the temperature of an organism's body fluids below their ideal freezing point without solidification taking place.

superfamily - A group of closely related families. Superfamily names end in *-oidea*.

supinate - To turn the trailing edge of the wing downward.

supraesophageal ganglion - The dorsal portion of the cephalothoracic mass, lying above the esophagus and receiving inputs from the eyes and other sensory regions in the head.

suture - An external line-like groove in the body wall, or a narrow membranous area between sclerites; the boundary between two fused sclerites.

swimmeret - An abdominal appendage that functions as a swimming organ in crustaceans.

symbiont - An organism living in symbiosis with another organism.

symbiosis - A living together, in a more or less intimate association of individuals of the same, or different species.

symmetry - A definite pattern of body organization; bilateral symmetry is a type of body organization in which the various parts are arranged more or less symmetrically on either side of a median vertical plane, that is, where the right and left sides of the body are essentially similar.

sympatric distribution - The distribution of two or more populations or taxa with overlapping ranges and thus occupying essentially the same geographic area.

sympatry - Populations or species with overlapping geographic distributions.

symplesiomorphy - A primitive character state (plesiomorphy) shared between taxa and therefore not useful in determining phylogenetic relationships.

synapomorphy - A derived (advanced) character state (apomorphy) shared by the taxa of a monophyletic group.

synaptoid - A synapse-like contact between adjacent neural or sensory cells.

synchronous muscle - A muscle in which each contraction is initiated by the reception of a neuronal impulse.

synonyms - Two or more names for the same taxon.

systematics - The study of the relationships among organisms.

taenidium (plural taenidia) - A circular or spiral thickening in the inner wall of a trachea.

tagma (plural tagmata) - A group of segments of the body specialized for a given function, the head, thorax, and abdomen of insects; a union of two or more somites into a structurally distinct group specialized to perform some function or functions; in most arachnids, two major tagmata may be recognized, the cephalothorax and the opisthosoma, or abdomen.

tandem - One behind the other, the two connected or attached together; mating in dragonflies.

tarsal claw - A claw at the apex of the tarsus, derived from the pretarsal segment of the leg tarsal formula. The number of tarsal segments on the front, middle, and hind tarsi, respectively.

tarsomere - A subdivision, or "segment," of the tarsus.

tarsus (plural tarsi) - The leg segment immediately beyond the tibia, sometimes consisting of one or more "segments" or subdivisions.

taxon (plural taxa) - A group of organisms classified together.

taxonomy - The science of classification into categories of varying rank, and the describing and naming of these categories.

telson - The posterior part of the last abdominal segment in crustaceans; the posterior spine-like tail of the Xiphosura; the posterior nonmetameric portion of the body; the sting in scorpions, consisting of the vesicle (containing the paired venom glands) and the sharp, curved aculeus. It forms the terminal portion of the scorpion body, occurring posterior to the fifth metasomal segment.

teneral - A term applied to recently molted, pale, soft-bodied individuals.

tensorium - The endoskeleton of the head, usually consisting of two pairs of apodemes.

tergite - A subdivision of the tergum.

tergum (plural terga) - A sclerite on the dorsal side of the body; the dorsal sclerite of an abdominal segment.

terrestrial - Living on land.

testis (plural testes) - The primary sex organ in the male that produces sperm.

thelytoky - A form of parthenogenesis in which only females are produced from unfertilized eggs, males being very rare or absent.

thorax - The body region behind the head, which bears the legs and wings.

tibia (plural tibiae) - The fourth segment of the leg between the femur and the tarsus in insects; the fifth segment of the leg in spiders and other arachnids between the patella and metatarsus.

tibial apophysis - A large spine on the ventral tibia in most male tarantulas, used to engage the female's fangs and elevate her during mating.

tibial spur - A large spine on the tibia, usually located at the distal end of the tibia.

tormogen cell - An epidermal cell associated with a seta, which forms the setal membrane or socket.

trachea (plural tracheae) - A tube of the respiratory system, lined with taenidia, ending externally at a spiracle, and terminating internally in the tracheoles.

tracheole - The fine terminal branch of the respiratory tubes.

translucent - Allowing light to pass through, but not necessarily transparent.

transverse - Across, at right angles to the longitudinal axis.

tribe - A subdivision of a subfamily containing a group of related genera. Names of tribes end in *-ini*.

trichobothrium - Any of the long, slender, hair-like sensilla arising from cup-shaped areolae on the scorpion pedipalp femur, patella, and chela, and functioning in the perception of airborne vibrations; a very fine hair extending out at right angles from the surface of a leg in spiders. The trichobothrium is distinguished from typical setae in that the base of its shaft does not completely fill the areola.

trichogen cell - The epidermal cell from which a seta develops.

tripectinate - Having three rows of comb-like branches.

tritocerebrum - The third of the three major brain portions in arthropods, typically containing nerves to the anterior regions of the gut and structures adjacent thereto.

triungulin larva - The active 1st instar larva of the Strepsiptera and certain beetles that undergo hypermetamorphosis.

trochanter - The second segment of the leg, between the coxa and the femur.

troglobitic - Adapted for living exclusively in caves and exhibiting such features as eyelessness, elongation of body parts, and/or depigmentation.

troglophilic - Adapted for living in caves and in other habitats, and generally not exhibiting features of cave-adaptedness.

trophallaxis - The exchange of alimentary canal liquid among colony members of social insects and guest organisms, either mutually or unilaterally; trophallaxis may be stomodeal (from the mouth) or proctodeal (from the anus).

tropism - The orientation of an animal with respect to a stimulus, either positive (turning toward the stimulus) or negative (turning away from the stimulus).

truncate - Cut off square at the end.

tubercle - A small knot-like or rounded protuberance.

tymbal - A sclerotized plate in the sound-producing organ of a cicada.

tympanium (plural tympana) - A vibrating membrane; an auditory membrane or eardrum.

types - Specimens designated when a species or group is described. They serve as the reference if there is any question about what that species or group includes. The type of a species (the holotype) is a specimen; the type of a genus or subgenus is a species; and the type of a tribe, subfamily family or superfamily is a genus.

unguis - Either of the paired lateral claws of the apotele of each leg.

uric acid - Compound used by many terrestrial insects for excretion of nitrogenous wastes.

urine - Fluid containing excreted wastes.

uropod - One of the terminal pair of abdominal appendages, usually lobe-like in crustaceans.

vas deferens (plural vasa deferentia) - The sperm duct leading away from a testis.

vas efferens (plural vasa efferentia) - A short duct connecting a sperm tube in the testis with the vas deferens.

vein - A thickened line in the wing.

venter - The ventral side.

ventrad - Toward the ventral side or underside of the body; downward.

ventral - Lower or underneath; pertaining to the underside of the body.

ventral nerve cord - Paired nerve lying along the lower surface of the hemocoel, containing segmentally arranged ganglia.

ventriculus - Midgut.

vermiform - Wormlike.

vermiform larva - A legless wormlike larva, without a well-developed head.

vertex - The top of the head, between the eyes and anterior to the occipital suture.

vesicle - A sac, bladder, or cyst, often extensible.

vestigial - Small, poorly developed, degenerate, nonfunctional.

vicariance event - In historical biogeography, any historical event (often of a geological nature) that fragments an ancestral population into two or more disjunct populations. Each resulting population may evolve in isolation into new taxa.

vitelline membrane - The cell wall of the arthropod egg; a thin membrane lying beneath the chorion.

viviparous - Giving birth to live young, which as embryos received at least some nourishment directly from the mother.

vulva - Opening of the vagina, ovipore.

zoophagous - Feeding on animals.

