

1: What does order mantophasmatodea mean? definition and meaning (Free English Language Dictionary)

Mantophasmatidae is a family of carnivorous insects within the order *Notoptera*, which was discovered in Africa in Originally, the group was regarded as an order in its own right, and named *Mantophasmatodea*, but based on recent evidence indicating a sister group relationship with *Grylloblattidae* (formerly classified in the order *Grylloblattodea*), Arillo & Engel have combined the two.

See Article History Alternative Titles: African rock crawler, Mantophasmatodea, heelwalker Gladiator bug, order Mantophasmatodea , also called African rock crawler or heelwalker, any of approximately 15 species of insects found only in certain regions of Africa, the common name of which is derived from their stout appearance and predatory behaviour. These insects have modified raptorial legs that give them the ability to grasp their prey. While some species attack and capture prey equal to their own size, other species are slow-moving and capture smaller prey. Many of these insects are nocturnal, emerging only at night to hunt and feed. Most species are light to reddish brown, although some species may be light green or dark brown, and others may have black or red spots. The gladiator bugs superficially resemble mantids family *Mantidae* and walkingsticks family *Phasmatidae* , although they are easily distinguished by their unique long, thin antennae and their tendency to hold the last segment of their legs up in the air, making them appear as though they are walking on their heels hence the alternate name heelwalker. Adults of known species range in overall body length from a minimum of 5. All extant species occur in the hot, dry environments of Tanzania in East Africa or the Karoo-Namib region of southern Africa. Natural history Named in , Mantophasmatodea was the first new order of insects to be described since This order was initially based on three specimens discovered in by German biologist Oliver Zompro when he was studying stick insects. The oldest specimen was identified in Baltic amber dating to the Eocene Epoch and was estimated to be 45 million years old. The other two specimens had been collected in southern Africa in and The order currently contains 15 species. Although the occurrence of extant species in Africa and fossil species in Baltic amber may seem unusual, this biogeographic connection has been found in other lineages of insects. All described species share the general appearance of a stout body with long, thin antennae. Adults of all species are wingless. The number, density, and length of spines on the legs and body vary considerably among species. Other characteristics used to separate species include the shape of the head, the size and shape of the compound eyes, and the presence or absence of tubercles small, raised bumps on the front of the head between the base of the antennae and the compound eyes. Most species are nocturnal, with few diurnal species. The diurnal species *Mantophasma zephyra* West wind gladiator is nearly always green in colour and has lateral stripes that are yellow in males and white in females. Both males and females of *M.* All extant species of gladiator bugs are predacious. For example, the raptorial fore- and mid-legs of *T.* Classification Distinguishing taxonomic features The name *Mantophasmatodea* is based on the superficial resemblance of specimens to both mantids family *Mantidae* and walkingsticks family *Phasmatidae*. However, recent phylogenetic studies using both morphological features and genetic data from deoxyribonucleic acid DNA sequence analyses have shown that this order is most closely related to species in the order *Grylloblattodea* ice bugs found in North America. Interestingly, *Grylloblattodea* was the last insect order to be described prior to the discovery of *Mantophasmatodea*. Annotated classification Order *Mantophasmatodea* 12 extant species in 9 genera belonging to 3 families; also includes 3 species in 3 genera 2 genera of which are from Baltic amber that have not been placed in a named family. Family *Austrophasmatidae* Found in South Africa; 8 species in 5 genera. Family *Mantophasmatidae* Found in Namibia; 3 species in 3 genera. Family *Tanzaniophasmatidae* Found in Tanzania; 1 species in 1 genus. Family *Incertae Sedis* *Iquirendo*.

What does order mantophasmatodea mean? Definitions for order mantophasmatodea or man-tophas-ma-todea Here are all the possible meanings and translations of the word order mantophasmatodea.

Adults have four wings, although some species are secondarily wingless. The front wings often called tegmina are usually thickened or leathery. At rest, they cover and protect the hind wings. In flight, front and hind wings operate independently of one another as in the Paleoptera. Hind wings are often enlarged near the base, providing a greater surface area for lift during flight. Most of the orthopteroids are rather weak or clumsy fliers. There is extensive controversy over phylogenetic relationships within the orthopteroid complex. Although the fossil record contains many primitive neopterans, few systematists agree on how these extinct organisms are related to living orders and families. The ordinal status of modern-day orthopteroids is also the subject of much debate: Under the classification scheme we have chosen to use in this book Cladogram 4 , each major ecological group is given ordinal status. This may please the "splitters" but it probably gives a false impression that the evolutionary history of these organisms is more diverse than it really is. In fact, there is strong justification for combining some of these orders, and we will try to emphasize these groupings in the following paragraphs. From a physical standpoint, they were probably very similar to members of the present-day order Plecoptera. These insects, commonly known as stoneflies, are generally regarded as the earliest group of Neoptera. They probably represent an evolutionary "dead end" that diverged well over million years ago. Immature stoneflies are aquatic nymphs naiads. They usually live beneath stones in fast-moving, well-aerated water. Oxygen diffuses through the exoskeleton or into tracheal gills located on the thorax, behind the head, or around the anus. Most species feed on algae and other submerged vegetation, but two families Perlidae and Chloroperlidae are predators of mayfly nymphs Ephemeroptera and other small aquatic insects. Adult stoneflies are generally found on the banks of streams and rivers from which they have emerged. They are not active fliers and usually remain near the ground where they feed on algae or lichens. In many species, the adults are short-lived and do not have functional mouthparts. Stoneflies are most abundant in cool, temperate climates. Embioptera Embioptera The order Embioptera webspinners or embiids is another group within the orthopteroid complex that probably appeared early in the Carboniferous period. Many insect taxonomists believe webspinners may represent another evolutionary "dead end" that diverged about the same time as Plecoptera. Determining phylogenetic relationships for this group is unusually difficult because the Embioptera have a number of adaptations not found in any other insects. The tarsi of the front legs, for example, are enlarged and contain glands that produce silk. No other group of insects, fossil or modern, have silk-producing glands in the legs. The silk is used to construct elaborate nests and tunnels under leaves or bark. Webspinners live gregariously within these silken nests, feeding on grass, dead leaves, moss, lichens, or bark. Nymphs and adults are similar in appearance. Embiids rarely leave their silken tunnels; a colony grows by expanding its tunnel system to new food resources. Well-developed muscles in the hind legs allow these insects to run backward through their tunnels as easily as they run forward. Only adult males have wings. Front and hind wings are similar in shape and unusually flexible; they fold over the head when the insect runs backward through its tunnels. Blood hemolymph is pumped into anterior veins to stiffen the wings during flight. In Embioptera, the mouthparts are directed forward prognathous rather than downward as in other primitive orthopteroids. This may simply be an adaptation for life in a tunnel, or as some taxonomists have suggested, it may mean that Embioptera are really more closely related to earwigs order Dermaptera. Most Embioptera are tropical or subtropical. Blattodea Blattodea The ancestral prototype for the main line of orthopteroid evolution was probably an insect very similar in appearance to a cockroach. Paleobiologists refer to this ancestral lineage as the Protoblattodean line. It probably dates from the early Carboniferous period, around million years ago. In fact, fossil cockroaches found in late Carboniferous rock are remarkably similar to species living today. In our scheme of classification, all modern cockroaches are grouped in one order, the Blattodea or Blattaria. The cockroaches, often known as "waterbugs" are scavengers or omnivores. They are most abundant in tropical or subtropical climates, but they also inhabit temperate and boreal regions. They are

commonly found in close association with human dwellings where they are considered pests. Cockroaches have an oval, somewhat flattened body that is well-adapted for running and squeezing into narrow openings. Rather than flying to escape danger, roaches usually scurry into cracks or crevices. Much of the head and thorax is covered and protected dorsally by a large plate of exoskeleton the pronotum. This similarity suggests a close phylogenetic relationship between these groups and explains why some taxonomists prefer to lump them into a single order Dictyoptera. Mantodea Mantodea From an ecological standpoint, cockroaches and mantids could not be more different: Mantids, order Mantodea, have elongate bodies that are specialized for a predatory lifestyle: Mantids are most abundant and most diverse in the tropics; there are only 5 species commonly collected in the United States and 3 of these have been imported from abroad. Isoptera Isoptera The termites, order Isoptera, are another group of insects that appear to be closely related to cockroaches. This conclusion is based on behavioral and ecological similarities between termites and wood roaches members of the family Cryptocercidae. These cockroaches live in fallen timber on the forest floor, feeding on wood fibers which are then digested by symbiotic microorganisms within their digestive systems. They live in small family groups where each female provides care for her young offspring. Termites and wood roaches are thought to be close relatives because they both occupy similar habitats, share the same type of food resources, have the same intestinal symbionts, and provide care for their offspring. Termites are the only hemimetabolous insects that exhibit true social behavior. They build large communal nests that house an entire colony. Each nest contains adult reproductives one queen and one king plus hundreds or thousands of immatures that serve as workers and soldiers. Like cockroaches and mantids, the termites are most abundant in tropical and subtropical climates. In Blattodea, Mantodea, and Isoptera, wing movement particularly the downstroke is largely dependent on muscles attached to the base of the wing direct flight muscles. But in another branch of the Protoblattodean lineage, direct flight muscles are smaller and more of the power for flight is provided by indirect flight muscles located in the thorax but not attached directly to the wings. At least two extinct orders Protorthoptera and Protelytroptera appear to be part of this second branch which also includes all the rest of the modern-day orthopteroid orders: Orthoptera Orthoptera Orthoptera grasshoppers, crickets, and katydids probably arose during the middle of the Carboniferous period. Most living members of this order are terrestrial herbivores with modified hind legs that are adapted for jumping. Slender, thickened front wings tegmina fold back over the abdomen to protect membranous, fan-shaped hind wings. Many species have the ability to make and detect sounds. Orthoptera is one of the largest and most important groups of plant-feeding insects. Although their phylogeny is not clear, all other members of the orthopteroid complex are probably sister groups to the Orthoptera. These include the earwigs order Dermaptera , leaf and stick insects order Phasmatodea , rock crawlers order Grylloblattodea , gladiators order Mantophasmatodea , and zorapterans order Zoraptera. Nearly all of these insects are herbivores or scavengers. In earwigs and stick insects, the chewing mouthparts are directed forward prognathous as in Embioptera; in rock crawlers, gladiators, and zorapterans, the mouthparts are directed downward hypognathous as in all other orthopteroids. Phasmatodea Phasmatodea The leaf and stick insects order Phasmatodea or Phasmida are sometimes grouped as a family or suborder of Orthoptera. All species are herbivores. As the name "walkingstick" implies, most phasmids are slender, cylindrical, and cryptically colored to resemble the twigs and branches on which they live. Most walkingsticks are slow-moving insects, a behavior pattern that is consistent with their cryptic lifestyle. In a few tropical species, the adults have well-developed wings, but most phasmids are brachypterous reduced wings or secondarily wingless. Stick insects are most abundant in the tropics where some species may grow to 30 cm 12 inches in length. Females do not have a well-developed ovipositor so they cannot insert their eggs into host plant tissue like most other Orthoptera. Instead, the eggs are dropped singly to the ground, sometimes from great heights. Dermaptera Dermaptera Earwigs order Dermaptera are mostly scavengers or herbivores that hide in dark recesses during the day and become active at night. They feed on a wide variety of plant or animal matter. A few species may be predatory. Females lay their eggs in the soil and may guard them until they hatch. In a few species, maternal care even extends through the first two instars. Nymphs are similar in appearance to adults, but lack wings. The front wings are short, thick, and serve as protective covers for the hind wings. Hind wings are large, fan-shaped and pleated. They fold both length-wise and cross-wise to fit

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beneath the front wings when not in use. Some species are secondarily wingless. In most earwigs, the cerci at the end of the abdomen are enlarged and thickened to form pincers forceps. These pincers are used in grooming, defense, courtship, and even to help fold the hind wings. The Dermaptera contains three suborders. Most species belong to the Forficulina. The other two groups, Arixeniina and Hemimerina, live in close association with mammals. The former five species live on Asian bats and the latter eleven species live on African rodents.

3: Mantophasmatodea - Wikidata

The order Mantophasmatodea was erected in It is the first new insect order since Grylloblattodea was described in Mantophasmatodea is the smallest order of insects.

Number of families 3 Evolution and systematics The order Mantophasmatodea heel-walkers, gladiators was discovered in and formally described in based on two specimens that had been stored for decades in the natural history museums of Berlin and Lund Sweden. With its 12 extant species, assigned to nine genera and three families, the Mantophasmatodea is the smallest insect order. The closely related genera Namaquaphasma one species , Karoophasma two species , Lobophasma one species , Hemilobophasma one species , and Austrophasma three species comprised in the family Austrophasmatidae, differ in details of the male and female genitalia. The genera Mantophasma one species and Sclerophasma one species , which together constitute the family Mantophasmatidae, as well as Tanzaniophasma one species all display striking percularities in the copulatory organs. Praedatophasma one species , whose systematic placement is unresolved, is unique in its spiny thorax "gladiator". The only known fossil genus is Raptophasma two species from Baltic amber, which is about 45 million years old. These creatures resemble extant Mantophasmatodea, but the thornless legs constitute a conspicuous difference. Using other insect orders as a measure, the origins of Mantophasmatodea probably go back to much earlier times. Anatomical details of the abdominal spiracles and the ovipositor of the female, for example, show that despite lacking wings, the Mantophasmatodea belong to the Pterygota, the group comprising all winged insects as well as many that have lost their wings secondarily such as Mantophasmatodea. It is unclear which other insect order is the closest relative of the Mantophasmatodea; the ice-crawlers Grylloblattodea and the stick insects Phasmida are the most likely candidates. Physical characteristics The consistently wingless Mantophasmatodea have a very uniform body shape, which superficially resembles that of certain grasshoppers or stick insects. The body length without the antennae ranges from 0. Coloration varies between and also within species. Nymphs resemble the adults in appearance. The antennae are long and have many segments. The compound eyes are well developed, albeit of varied size, but ocelli are lacking. The chewing mouthparts are generalized and directed downward. The femora are distinctly thickened in the forelegs and somewhat thickened in the midlegs, but they are very slender in the hind legs. The tibiae of the forelegs and midlegs bear on their inner surfaces opposing the femora two rows of short thorns, which render the legs suitable for grasping other insects. The tarsi comprise five tarsomeres, but the three basal ones are fused with grooves indicating the borders. A large adhesive lobe arolium originates from between the claws. The abdomen consists of 10 well-developed segments and a reduced eleventh segment. In the females, segments eight and nine bear three pairs of processes valves that together form a short ovipositor. The second and third valves are largely fused, and the latter are very hard and conspicuously claw-shaped. The genital opening lies behind the eighth sternite, which forms a subgenital plate. In the male, the ninth sternite is elongated to form a subgenital plate, which covers the retracted, largely membranous male genitalia ventrally. For copulation the genitalia become everted, thus displaying two or three small sclerites and two small sclerotized hooks. The one-segmented cerci are short in the female but fairly long and curved in the male, which uses them as accessory copulatory structures. The tenth abdominal tergum, which bears the muscles moving the cerci, is much wider in the male than in the female. While the middle part of the abdomen is widest in females because it harbors the ovaries , in males the hindmost part usually is widest due to the expanded tenth tergum. Derived features distinguishing Mantophasmatodea from other insects are the location of the anterior tentorial pits anterior invagination points of the endoskeleton of the head far above the mandibular articulation, a peculiarly shaped differentiation of the antennae e. Distribution Extant Mantophasmatodea are known only from Africa: Namibia two species , westernmost South Africa eight species , and Tanzania one species. Raptophasma from Baltic amber shows, however, that in the early Tertiary the group also occurred in Europe. The species recorded from South Africa seem to occupy fairly restricted, mutually largely exclusive geographic areas. This high degree of endemism renders the Mantophasmatodea a very interesting group for studies of the biogeographical history of southern Africa.

Habitat Mantophasmatodea inhabit three of the major biomes found in western South Africa and Namibia: The former location is characterized by poor summer rainfall and the two latter by winter rainfall poor in succulent karoo , but all are moderately or extremely dry throughout the rest of the year and almost bare of trees. Broad differences between temperatures during the day and at night with frost in winter are normal. During and shortly after the humid season, the species-rich flora and fauna bloom. Localities harboring Mantophasmatodea show a wide range of vegetation density. Some species frequently are found in tufts of grass Poaceae or Cape reed Restionaceae, which superficially resemble grasses ; they occur either at the bottom between the culms or on top of the culms, where they are well camouflaged by their mottled and striped coloration. The habitat of the Tanzanian *Tanzanio-phasma subsolana* is unknown. Behavior Mantophasmatodea essentially live singly, but a male and a female often can be found together in the same tuft of grass, and within suitable habitats an area of several hundred square yards meters may harbor a sound population while no heel-walkers are found in the surrounding areas. There appears to be both nocturnal and diurnal activity. Movements typically are quite slow, but they can be rapid when prey is caught or a male mounts a female for copulation. When walking, Mantophasmatodea generally have their basal tarsomeres on the ground, while the fifth tarsomeres and the terminal claws and arolia are held in an elevated position hence the name heel-walkers. The males use the projection of their subgenital plates to knock on the ground, which may serve for communication. Feeding ecology and diet Mantophasmatodea eat other insects of various kinds, up to their own size. They grasp and hold them by means of their powerful, spiny forelegs, additionally using the midlegs for large prey. Each mandible has a sharp edge for cutting the victim to pieces; all parts, except the legs and wings are devoured. Reproductive biology Courtship is unknown. The female then produces several sausage-shaped egg pods, which contain about 10–20 long, oval eggs covered by a hard envelope made from sand and gland secretions. The ovipositor serves for shaping the egg pod and for proper placement of the eggs into it. The nymphs hatch at the beginning of the rainfall period, molt several times, reach maturity near the end of the humid season, and die during the early dry period. Consequently, life cycles are diametrically different depending on whether precipitation falls predominantly in summer or in winter. Mantophasmatodea are not uncommon in Namibia and western South Africa. Nothing is known, however, about how common the various species are. The apparently small distribution areas of some species might make them sensitive to extinction. Nonetheless, the finding of a rich population immediately alongside a road indicates that not all species suffer from this aspect of human civilization. Only a single specimen has been recorded from Tanzania, and it is unknown how common Mantophasmatodea are in this part of Africa. A New Order of Insect. Arillo, Antonio, Vicente M. A New Insect Order? Science August 2, Klass, Klaus-Dieter, Mike D. Colville, and Simon van Noort. Other Iziko Museums of Cape Town. Mantophasmatodea mantos " [March 12,]. Zompro, Oliver, and Joachim Adis. A New Order of Insects" [March 12,].

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4: order Mantophasmatodea: Mantophasmatodea Species File

order mantophasmatodea - an order of insect identified in in a 45 million year old piece of amber from the Baltic region. Mantophasmatodea.

A New Order of Insect. Rock Crawlers in Baltic Amber Notoptera: American Museum Novitates A revised interpretation of the evolution of attachment structures in Hexapoda with special emphasis on Mantophasmatodea. Evolutionary scenarios for unusual attachment devices of Phasmatodea and Mantophasmatodea Insecta. Systematic Entomology 33 3: Revista de la Sociedad Entomologica Argentina 75 Picker, and Gerda Buder, Phylogeny of the Heelwalkers Insecta: Molecular Phylogenetics and Evolution, vol. Appendix A Eberhard, M. Journal of Insect Behavior 26 3: American Museum Novitates, no. An ancient insect order resurrected. Mantophasmatodea now in the Jurassic. The tentorium and anterior head sulci in Dictyoptera and Mantophasmatodea Insecta. The taxonomy, genitalic morphology, and phylogenetic relationships of southern African Mantophasmatodea Insecta. Entomologische Abhandlungen 61 1: The potential value of the mid-abdominal musculature and nervous system in the reconstruction of interordinal relationships in lower Neoptera. Mantophasmatodea un nouvel ordre tres discret. Systematic Biology 61 4:

5: Mantophasmatodea (Heel-Walkers or Gladiators) | www.enganchecubano.com

The newly discovered insect order Mantophasmatodea, known from two Recent species in tropical Africa and some fossils in Baltic amber, is reviewed, with all the material currently known being listed.

6: Mantophasmatidae - Wikipedia

A new insect order, Mantophasmatodea, is described on the basis of museum specimens of a new genus with two species: Mantophasma zephyra gen. et sp. nov. (one female from Namibia) and M. subsolana sp. nov. (one male from Tanzania).

7: Order Mantophasmatodea Synonyms & Antonyms | www.enganchecubano.com

Synonyms for order mantophasmatodea This thesaurus page is about all possible synonyms, equivalent, same meaning and similar words for the term order mantophasmatodea.

8: Mantophasmatodea - Wikispecies

Response: A cladistic analysis testing the placement and ordinal status of Mantophasmatodea would be highly desirable, but demanding it for the present is unrealistic. Even the most elaborate all-insect character matrix to date (1), which uses orders as terminal taxa, is unsatisfactory for two.

9: ENT | General Entomology | Resource Library (Tutorials)

Information on the Internet Mantophasmatodea - A new Order of www.enganchecubano.com Zompro & Joachim Adis. New Insect Order Found in Southern Africa.

The First Five Years of Marriage (Focus on the Family Books) They Called Me Mayer July Lacelles Abercrombie Tyler Hoffman Symposium on the Foundations of Modern Physics 1994 Pamela Virtue Rewarded Unified Field Theories, 1923-1931 The desire and pursuit of the whole, a romance of modern Venice David daiches volume 2 Total facilities management brian atkin Religious liberties : cross purposes Partner relational conflicts Stephen king carrie novel Precious Rascal and Other Stories (Reunion Series, Book 2, book 2) The Pantheon, Spa Fields The last watch and the funeral Little Grey Rabbit goes to the North Pole Disability adjuster study guide Data analysis for chemists Olympiodorus of Thebes and the sack of Rome Whats your hook? Foreign direct investment, macroeconomic instability, and economic growth in MENA countries Hitlers defeat on the Eastern Front, 1943-1945 Therapeutic intervention process Sally E. Ryan Thermal methods of petroleum production Lesson Plans for Miladys Standard Textbook for Professional Estheticians The darkening land Sociological insight The proposal for a council framework decision on certain procedural rights in criminal proceedings throug Forklift main parts exercise Microsoft Office Access 2003 Inside Track Human resource for health Orange fish bath toy Stigma, social risk, and discrimination Ayatolla Khomeinis concept of Islamic government Abbas Kelidar Lifesaving merit badge book When the saints go marching out. Living your life as practice : relationships, work, parenting, creativity, and other additional modules Trailer park virgin alexa riley .pub Conscience and Other Virtues Generalized Riemann Problems in Computational Fluid Dynamics (Cambridge Monographs on Applied and Computa