
**Photo Credit: University of Wisconsin-Milwaukee.*

Walkingsticks/Stick Insects (Order Phasmatodea)

Sticks and Leaves of Tremendous Diversity

Stick insects are also commonly or scientifically known as the Phasmids, walkingsticks, stick bugs, leaf bugs/insects, or sometimes ghost insects. Stick insects can have a tremendously diverse array of primary and secondary defenses against threats and predators. Most are very cryptic (or possess excellent camouflage) in coloration and/or appearance, and many species appear very similar to twigs, sticks, living, dried, or dead leaves, mosses, or other plant matter and vegetation. Many species are wingless, or have reduced wings, and cannot, or do not fly. Some species with better developed wings can glide or have flying capabilities. Some species are elongated and stick, or twig-like and use rocking or swaying motions to enhance their camouflage abilities, while other species may have spines, perform startle displays with bright and vibrant coloration, and/or behaviors. Some species can spray or secrete toxic or irritating chemical secretions or foul odors to deter potential predators. Some species can also change their pigmentation to match their surroundings.

Many species of stick insects are also parthenogenic, or consist entirely of females, and do not require fertilization or fertilized eggs in order to successfully reproduce. In warmer climates, some species can reproduce year round, while species in more temperate climates may only reproduce seasonally. Most stick insects have a hemimetabolous life cycle, consisting of typically 3 stages: eggs, nymphs, and adults.

Taxonomy

Life: All living, physical, and animate entities
Domain: Eukaryota
Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
Superorder: Exopterygota
Order: Phasmatodea
**Taxonomy subject to change and revision.*

Lifespan and Longevity

Life spans and longevity of stick insects can also vary considerably. Some species are relatively short or seasonally lived, and may only live, reproduce, and complete their life cycles within 6

months to one year. Other species can be relatively longer lived, and may live for up to 5 to even 10 years or more.

Distribution and Habitat

Stick insects belong to a very large, diverse, and cosmopolitan order of insects found in temperate to tropical, or sub-tropical regions throughout the world except Antarctica and Patagonia, depending on the genera and species. There are well over 3,000 species found worldwide. Over 300 species are kept or available in captivity worldwide. For more detailed distribution and natural habitats of the most commonly kept and available species of stick insects, see the "Commonly Kept Species" section below.

Experience Level Required

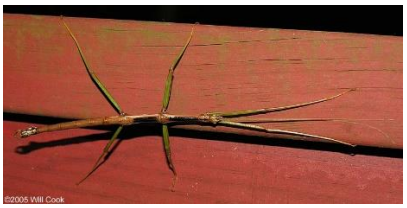
Novice/Beginner to Advanced (depending on species).

Size

Stick insects can vary greatly in size depending on age, sex, and species. They can range from less than ½ an inch to well over 12 inches or more. Females of some species and genera can attain lengths of up to 23 inches, making them among the world's longest and largest insect species.

Commonly Kept Species

Indian Stick Insect (Carausius morosus): A large, robust tropical stick insect species indigenous to the Palmi Hills of Tamil Nadu of southern India. Ranges in color from green to brown, or greenish brown, with red patches along the front legs, and yellowish patches on the mid-limbs. This species is perhaps the most widely kept species in research, laboratories, schools, and as pets in areas where they are legal. Reaches 4 to 6 inches.

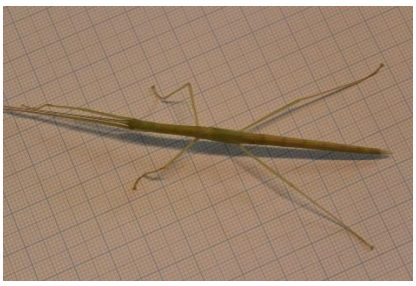


Northern Walkingstick (Diapheromera femorata): A common and indigenous walkingstick species found over much of the United States and portions of southern Canada (such as Quebec and southern Ontario). This species is short lived (about 1 year), and can be more difficult to provide its preferred plant/leaf material year round. Reaches 3 to 4 inches.

Giant Spiny/Giant Prickly Stick Insect (Exatosoma tiaratum): A large, spiny, heavy bodied stick insect species indigenous to the tropical to sub-tropical regions of Queensland, New South Wales, and New Guinea in Australia. Reaches 5 to 8 inches, and has a yellowish, reddish, to brown or greenish brown color, and resembles a curled, dead, or desiccated leaf. When threatened, this species also curls its abdomen in a pose similar to a scorpion, and can emit a foul smelling secretion. Fairly common in laboratories, research, and the pet industry.

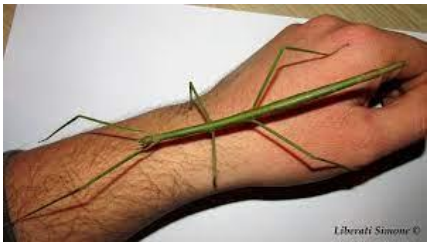
Thorny Devil/Giant Spiny Stick Insect (Eurycantha calcarata): A large, robust, spiny stick insect species that is endemic to the warm, humid, tropical regions of New Guinea, New Caledonia, and the Solomon Islands. This species ranges in color from greenish to greenish brown or reddish brown, and is armored with thick plates and spines. Males have enlarged hind limb femurs with curved spines. Reaches 4 to 6 inches.

Malayan Jungle Nymph (Heteropteryx dilatata): A large, heavy bodied, spiny stick insect species endemic to Malaysia in southern to southeastern Asia. This species is highly dimorphic, with males only reaching 3 ½ to 4 inches, while females can become quite large, at up to 9 to 11 inches. Ranges in color from bright lime green (in females) to greenish or greenish brown in males. This species also uses its spines on its front limbs in defense, which can be quite formidable to would be threats.



Pink Winged Stick Insect (Sipyloidea sipylus): A medium sized to large, slender bodied stick insect indigenous to Madagascar. This species can be confused with the Indian stick insect, but tends to be a lighter or paler brown to green in color. It is also faster moving and more delicate than the Indian species as well. Reaches 3 to 4 inches.

Leaf Insect (Phyllium phillippinicum) and Giant Leaf Insect (Phyllium giganteum): A large, robust stick insect species with a broad, flattened body strongly resembling a living leaf. Front limbs also have appendages resembling leaves. This species is indigenous to the tropical forests and woodlands of the Philippines. It ranges in color from bright green to greenish brown, and also has leaf like veins on the abdomen. Males can fly, while females are flightless. The giant leaf insect is one of the largest stick/leaf insects to be kept in captivity. Ranges from 2 to 4 inches.



Vietnamese Stick Insect (Ramulus artemis): A large, slender stick insect species typical of stick insects in appearance consisting of only parthenogenic females. Lacks spines or other appendages. This species is indigenous to the tropical to sub-tropical regions of Vietnam in southern to southeastern Asia. Ranges in color from green, to greenish brown. Reaches 5 ½ to 8 ½ inches.

Annam Stick Insect (Medauroidea extradentata): A large, slender bodied stick insect species indigenous to Vietnam in southern to southeastern Asia. Has a long, thin body without appendages and is smooth in appearance except for a pair of horns on the heads and limbs of females. A docile species that will also sometimes feign death. This species is usually brown in color, and resembles a twig or piece of wood. Both sexes reach up to 3 to 3 ½ inches.

Housing and Enclosure

Enclosure System: Primarily Arboreal. Most stick insect species are fairly simple to house and accommodate provided the enclosure is sturdy and secure, adequately ventilated, and retains suitable and maintains appropriate temperatures and humidity levels. Tall, clear, and secure plastic containers with a screen top, or adequately sized screen or glass terrariums or enclosures 10 to 40 gallons tall are recommended for housing stick insects. Several of the acrylic displays and enclosures that are now manufactured for housing arachnids, insects, and other invertebrates

can also be used. Most stick insects are also arboreal, and any enclosure used should be at least 3 times the length of the insect in height, and at least twice their length in width and depth. Depending on the species, many species can be housed communally in accordingly larger enclosures, while some species are better maintained individually. Height or vertical space is more important than floor space in most stick insect enclosures and setups to ensure successful molting, which is often done while inverted. The enclosure can also be provided with additional furnishings such as live or artificial plants, branches, leaves, twigs, vines, and other foliage. A substrate that can retain adequate moisture and humidity, and is chemical and pesticide free can also be used, including potting soil, tissue or paper towel, cypress mulch, sphagnum moss, vermiculite/peat moss, or similar substrates. The ceiling of the enclosure should also consist of a wire or mesh that enable the stick insect(s) to hang and molt inverted as well. Water and hydration wise, some species will benefit from a large, shallow water dish or pan, while most others derive their hydration from regular misting 2 to 3 times weekly.

Temperature, Lighting, and Humidity

Each species of stick insect has varying temperature and humidity requirements that should be more thoroughly researched. Stick insects generally can be maintained at temperatures from 65 to 80 degrees F, and 70 to 85% humidity, again depending on the species. Some, more tropical species may require higher humidity. If needed, a low wattage overhead, incandescent bulb, UTH (under tank heating element), radiant or ceramic heat emitter, or nighttime red light bulb can provide suitable temperature and humidity levels. For any supplemental heating that may be needed, use a low wattage incandescent or UVA/UVB bulb, radiant or ceramic heat emitter, or UTH (under tank heating element). More specific lighting, heating, and humidity product suggestions and recommendations that can best suit one's needs, as well as those of one's animals can be given as well. Spot clean the enclosure for wastes, feces, or uneaten food at least once per week. Be sure to periodically replace the substrate, clean, and disinfect the enclosure and its furnishings at minimum every 2 to 3 months.

Feeding, Diet, and Nutrition

Most are Primarily Herbivorous; Most stick insects are primarily herbivorous, feeding on the leaves, stems, shoots, or other portions of plants and other vegetative matter. Each species has its own dietary preferences and requirements that should be researched further. However, many species will eat leaves or other portions of bramble, roses, hawthorn, raspberry, ivies, blackberry, pyracantha, privet, oak, and other Rubus species. Some species can also be given romaine lettuce as well. It is always important that any food that is given is fresh and free and clean of any chemicals or pesticides prior to use. Additional calcium and vitamin D3 supplementation is typically not required, but can help with many species' overall exoskeleton growth and development. More specific dietary and supplementary product suggestions and recommendations that can best suit one's needs, as well as those of one's animals can be given as well.

Handling

Several species of stick insects, or walkingsticks are hardy insects to maintain in captivity, and can be picked up and handled carefully and gently, provided that are allowed free movement/access across one's hands and arms. Care should be taken when handling them, as stick insects can be fragile, and prone to injury or losing limbs if dropped or roughly handled. Some species are more delicate and prone to injury or damage than others. Some other species also have spines, and/or can spray or secrete toxic, or irritating chemicals if disturbed or handled roughly, and should thus be handled with at least some caution, or not at all.

Also be sure to practice basic cleanliness and hygiene associated with proper husbandry after touching or handling any animals or animal enclosures to prevent the possibility of contracting salmonellosis or any other zoonotic pathogens

Contact

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Disclaimer: Note that the information provided in these, or any care sheets, are not intended to be all-exhaustive, and further research and care should always be sought and provided when it comes to any species one may prospectively be interested in. These care sheets are also not intended to serve as substitutes for professional veterinary medical care and husbandry should any animal require it. Always seek proper and professional veterinary care for any animal should the need arise, and be prepared ahead of time for any and all husbandry costs and expenses that may occur with any animal beyond the initial purchase. Any animal owned is ultimately a matter of personal/individual care and responsibility. We cannot make any claims or guarantees regarding any information in this care sheet therein. This care sheet may be reprinted or redistributed only in its entirety.

A note on the legal status of Phasmids in the United States and Canada: The United States Department of Agriculture Animal and Plant Health Inspection Service (USDA APHIS) is the primary federal agency and institution overseeing the importation, possession, and/or interstate commerce/transport of several other insects and invertebrates available as pets in the pet industry internationally. Some of these species include the Giant African Land Snails (Achatina spp.), native and exotic Phasmids (Stick Insects or Walkingsticks, Phasmatodea), exotic or nonnative species of beetles (such as Dynastes spp. and others), and African Giant Millipedes, Archispirostreptus gigas (subject to importation restrictions only). Generally, the importation, possession, and/or interstate commerce in these invertebrates is prohibited or subject to USDA APHIS permitting and licensing, and secure containment systems, facility inspections, and/or environmental health assessments to prevent escape or accidental introduction into the environment. Reasons for these restrictions vary depending on the species in question, but can include their propensity to become invasive or ecological pest species, their reproductive capabilities (many are hermaphroditic or parthenogenetic), their ability and variety of host plant species the species will feed on, their potential effects on human health, or their ability to carry or spread foreign or potentially harmful microbes, pathogens, or parasites with either unknown or deleterious effects on foreign environments/ecosystems. Further information on the legalities of purchasing, selling, and acquiring these invertebrates can be viewed here prior to obtaining any of them if a United States resident. Also consult with your local, municipal, and state ordinances and regulations for any ownership restrictions.
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