



PHASMIDS

Phasmida
Family: multiple



Range: All continents except Antarctica

Habitat: tropical forests and woodlands worldwide. Absent from cool, temperate regions.

Niche: Nocturnal, arboreal, herbivore

Wild diet: leaves and plant materials

Zoo diet:

Life Span: (Wild) 1 to 3 years, depending on species
(Captivity)

Sexual dimorphism: Males are typically much smaller than females.

Location in SF Zoo: Children's Zoo - Insect Zoo

APPEARANCE & PHYSICAL ADAPTATIONS:

Phasmids, or leaf and stick insects are among the best-camouflaged animals, with a body shape and coloring that mimics the vegetation of their habitat, making them extremely difficult to spot. Phasmid mandibles project out forward from their head and are used for chewing and shredding leaves. All phasmids are phytophagous, meaning that they eat only plant matter (specifically leaves, though some species will also nibble on flowers and even the bark). Phasmids should not be confused with mantids as mantids are insect eaters and have forelegs modified for grasping and holding prey.

Phasmids have small compound eyes, which allows them to see even in dim conditions. They use their antennae to smell, feel, hear or sense direction. The males are also able to smell sex-attractant pheromones emitted by the female. Some phasmids can reproduce parthenogenetically because the male is extremely rare or unknown. Phasmids undergo an incomplete metamorphosis.

Phasmids are slow moving, with fairly soft bodies that are vulnerable to attack. Phasmids have adapted various ways of defending themselves against these predators. The most obvious being their resemblance to sticks or leaves and they remain absolutely still. Their walk is slow and deliberate and they often slowly sway as if it is being blown by the wind. Some phasmids have mossy or lichen-like outgrowths on their bodies that help camouflage them further. Other species have the ability to adjust their coloring with temperature, humidity and light intensity changes. When their primary defense of camouflage is not enough, some phasmids can regurgitate their gut content or release an awful smelling brown liquid from glands situated just behind the insect's head. Other species have brightly colored hind wings that are invisible when folded underneath their forewing and as the insect is threatened, they will startle the predator by flashing open these wings, immediately dropping to the ground and again hiding their wings. The predator is often confused as it searches for a brightly colored insect but only sees a pile of drab, brown sticks on the ground. Finally, the larger species have spines on their legs and use them to physically attack the predator. If these various methods of defense fail their last line of defense is the ability to break off a leg and hurry away. Juvenile walkingsticks can drop off legs to escape a predator's grasp. They will grow new legs at the next molt.

Phasmid eggs have a hard shell or capsule with a knob (called a capitulum), which covers and protects each egg and resembles tiny brown seeds. Phasmid eggs are either dropped to the ground or placed in hard-to-find places, generally one at a time. By dispersing her eggs, the female prevents a predator from lurching on a cluster of her eggs.

THAI WALKING STICK

Class	Order	Family	Genus	Species
Insecta	Phasmida	Phasmatidae	<i>Tirachoidea</i>	<i>westwoodi</i>

Range:	Thailand, Cambodia, Laos, Vietnam
Habitat:	Tropical forests and woodlands in high branches
Niche:	Arboreal, nocturnal, herbivorous
Diet:	Wild: leaves of myrtle, guava and blackberry Zoo:



Special Adaptations: Phasmatidae are capable of regenerating limbs and commonly reproduce by parthenogenesis. By detaching a leg, the walking stick can escape predators.

Other:



AUSTRALIAN WALKINGSTICK or MECKAY'S SPECTER WALKINGSTICK

Class	Order	Family	Genus	Species
Insecta	Phasmida	Bacteriidae	<i>Extatasoma</i>	<i>tiaratum</i>

Range:	N. Australia and New Guinea
Habitat:	Tropical forests regions, eucalyptus forests
Niche:	Arboreal, nocturnal, herbivorous
Diet:	Wild: certain species of eucalyptus Zoo:



Special Adaptations: These walkingsticks have elongated, oval-shaped heads covered with spines. They also have long antennae and chewing mouthparts for eating plant matter. Female has non-functional vestigial wings whereas the male has fully formed wings capable of flight. The male's inside wings are often brightly colored and can be used as a warning to predators. When the wings are rapidly opened, the flash of color may startle a predator long enough for the male walkingstick to escape. Females are capable of parthenogenic reproduction. Incomplete metamorphosis. The walking stick has the ability of partial regeneration if a limb is lost or damaged it will grow back after several molts.

Other: Female Australian walkingsticks reach approximately 5 inches (12 cm) in length, while males are much smaller, attaining a length of about 4 inches (10 cm). Adult life span is seven to 10 months. They may eat molted exoskeleton after shedding. They are thought to be a scorpion mimic, although harmless, when threatened it curls its tail up as if it had a stinger. They also resemble the preying mantis but do not have clasping front claws. They are voracious eaters. There is no courtship between male and female Australian walkingsticks. The male is attracted by the females scent. Once located, the male crawls onto the females back and bends his abdomen around to mate with her. Sperm is transferred in a packet or (spermatophore).

LEAF INSECTS

Class	Order	Family	Genus	Species
Insecta	Phasmida	Phylliidae	<i>Phyllium</i>	<i>giganteum</i>

Range:	West Malaysia
Habitat:	tropical forest regions with broad leaf trees, rainforest
Niche:	Arboreal, nocturnal, herbivorous
Diet:	Wild: mango, guava, cherry, raspberry, oak, etc. Zoo:



Special Adaptations: Females are capable of parthenogenic reproduction. Leaf insects use camouflage to take on the appearance of a leaf. To further confuse predators, when the leaf insect walks, it rocks back and forth, to mimic a leaf blowing in the wind. Color and form provide protection by allowing these insects to blend with their environment.

Other: Can reach 20 cm long (7.9 in) in length. The female has large leathery forewings (tegmina) that lie edge to edge on the abdomen and resemble, in their vein pattern, the midrib and veins in a leaf. Females are flightless and so the hindwings have no function. The male has small tegmina and ample, non-leaflike, functional hindwings. They cannot bite or sting and are not agricultural pests.



MALAYSIAN OR MALAYAN JUNGLE NYMPH

Class	Order	Family	Genus	Species
Insecta	Phasmida	Bacillidae	<i>Heteropteryx</i>	<i>dilatata</i>

Range:	West Malaysia, Peninsular Malaysia and Australia
Habitat:	Tropical forests, tree and shrub vegetation, rainforest
Niche:	Arboreal, nocturnal, herbivorous
Diet:	Wild: guava leaves, rose plant like leaves of raspberries, blackberries, strawberries, currants, oaks, beeches, hazelnut, game rose, etc. Zoo:



Special Adaptations: Most phasmids have a thorax that can shoot out a milky, smelly, corrosive liquid against predators. This comes in handy because they are too slow moving to have any other way to defend themselves. When threatened, the male jungle nymph is the only insect, which will play possum; he will fall down and pretend to be dead to evade predation. They will also sometimes pinch to defend themselves.

Other: The males are able to fly and are brown and more slender, whereas the females is large, green, shortwinged. and unable to fly. This species has many thorn like spines all over its body, including the legs and head. The wings are very leaf-like with veins and brown areas representing dead spots of leaves. They have an oval shaped head and fairly short antennae. Typical phasmids have two compound eyes and three dorsal ocelli. One of the heaviest and largest insects of the world, the green females can weigh up to 65g (2.3 oz) and grow to over 7 in. They produce the largest egg of any known insect.