

COMMENTARY

Life between leaves on the Forest Floor

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OUR tropical rainforests are one of the most diverse ecosystems on the planet. We are lucky that we live in a country where the nearest rainforest is not more than a two hour drive away.

Those of us who have hiked through the forest and looked at nature would have looked at the plants and animals as we walked by but have we ever stopped to think of the diversity under the leaf litter that we are walking on. Leaf litter is a term used to describe the layer of fallen dry leaves and twigs that accumulate on the forest floor and it is home to a variety of animals. A group of organisms that are quite abundant in leaf litter are arthropods. In this article I will briefly go through some orders or groups of arthropods that occupy this microhabitat.

Being on the forest floor and sheltered by the closed canopy, one might be inclined to think that this microhabitat is relatively sheltered and stable. However, the existence of the fauna in this microhabitat is dependent on the wet and dry seasons, as during the

dry season, most of the litter falls. Then during the wet season the litter decomposition begins which also causes an increase in the population of the animals that occupy the litter supposedly gets nutrients from the decomposing litter. This is because the rain dissolves the nutrients released by the decaying organic matter and into a form easier for smaller organisms to utilise. However this microhabitat is affected by the length of the wet and dry seasons, it is therefore in turn affected by climate change.

One group of insects that occupy this microhabitat are isopods. These tiny insects, although they have three body parts; a head, thorax and abdomen, from above they can be easily distinguished by their oval outline and seven overlapping segments and a pair of prominent antennae. They also have a second smaller pair of antennae which is difficult to see. When disturbed they roll themselves into a solid ball so that their head and legs are hidden, and they resemble a pill, hence the common name, pill bug. These animals also use gills to respire therefore they have to occupy areas with a high humidity, for example leaf litter. They are scavengers and feed on dead or decaying plants and animals, although

some species may eat live plants.

Another group of tiny leaf litter dwellers are amphipods, measuring 5 to 20 mm in length. They are actually a group of crustaceans and belong to the order Amphipoda. They have elongate, laterally compressed bodies and a pair of long antennae and a pair of smaller ones as well, and in general quite shrimp-like in appearance. Like isopods, they are also scavengers.

Another group of animals found in this microhabitat are centipedes which belong to the order Chilopoda. These are cryptic in nature and are usually found in logs or in the crevices in the soil. These animals are predators feeding on other animals that live in the leaf litter layer. They are quite robust organisms, and are resistant to desiccation.

Millipedes on the other hand may resemble centipedes but they belong to the order Diplopoda. These organisms are mostly feed on dead plant material. However, they are selective about the leaves they consume. They seem to prefer leaves that have been exposed to the elements for some period so that some of the secondary compounds have time to leach out of the leaves into the soil. These compounds are used to prevent against from being eaten.

However, they reject leaves that have been exposed too long. They also seem to prefer leaves with high calcium content.

The leaf litter layer is also home to animals that belong to the order Araneae include spiders and opiliones, the latter of which are also known as harvestmen. Some species of spiders occupy and hunt in this microhabitat in Trinidad, for example include the orb-weaving spider *Pronous intus*. Individuals of this species build their webs on this layer using leaves and twigs that stick up as points for support for their web. Other non-web building spiders like the jumping spiders, wolf spiders and wandering spiders are active and walk between the leaf litter hunting small animals.

Related organisms that occupy this microhabitat include pseudo scorpions which belong to the order pseudo scorpionida. These organisms are so named as they have large pincher-like appendages like scorpions but lack the long stinging tail. These tiny organisms rarely measuring over 4 mm in length are found in the crevices of litter, bark and soil, and eat flies, ants, beetle larvae and caterpillars. They also have an unusual mode of transport, where they hitch a ride on the backs of beetles, which also

occupy the leaf litter layer.

Beetles which belong to the order Coleoptera and species like the Harlequin beetle (*Acrocinus longimanus*) are found on the leaf litter feeding on dead or decaying wood. Against a plain background, the multicoloured pattern on its back comprised of black, white, orange and red makes it stand out. However, its pattern resembles the colours of the dry and decaying leaves on the forest floor.

Also, some animals may not live in the leaf litter layer but can use it as a temporary shelter from the elements or predators. Other animals found in this layer include arthropods like crickets and grasshoppers of the order Orthoptera and cockroaches of the order Blattodea. Cockroaches, crickets and grasshoppers all feed on plant material while roaches feed on both plant and animal and are detritivores.

Ants also found in this layer typically act as scavengers in this microhabitat.

I hope this article has made you realise that all parts of our environment, no matter how small, or seemingly unimportant, hold great biodiversity that should be appreciated and protected in order to preserve the functioning of our environment as a whole.