



## Diversity Of Soil Organisms Mesofauna – Isopoda

### **Morphology**

Most species of isopods belong to the soil macrofauna, sizes ranging from 5 to 15 mm, with some species reaching only 1 to 2 mm. Terrestrial isopods, commonly known as woodlice or pill bugs, have bodies divided into a cephalon (head), pereion (thorax) and pleon (abdomen). The cephalon bears the compound eyes, 2 pairs of antennae and 4 pairs of mouthparts for food processing. The pereion has 7 pairs of walking legs. The abdomen comprises 5 pairs of modified appendages - pleopods which have become modified and adapted for respiration.. In males, the first two pleopods are modified to participate in sperm transfer. The sperm is transferred to the female through the modified second pleopod which, after receiving the sperm from the penis, is then inserted into a female (genital pore). After successful copulation, the female moults and produces a structure on the ventral side of her thorax that resembles a pouch and is called marsupium. Inside the marsupium the eggs stay protected while they develop into young independent isopods.

### **Taxonomy**

Isopoda is an order of crustaceans. The semi-terrestrial and ‘truly’ terrestrial isopods single common ancestral form group with 3,637 described species.

### **Microhabitat**

Numerous morphological, anatomical and physiological adaptations to the soil environment make isopods the most successful land inhabitants. Terrestrial isopods occupy essentially all terrestrial habitats, ranging from shore of a lake, sea, or ocean to the high alpine regions, from the tropics to the cold-temperate zones, from wetlands to deserts. They are nocturnal animals and spend the day mostly hidden underneath stones, coarse woody or loose bark, or in crevices, where they can easily be captured. In deserts, species of the genus *Hemilepistus* form monogamous relationships and live inside self dug burrows essential for their survival. Terrestrial isopods significantly contribute to decomposition processes through feeding on and digesting leaf litter, dispersing microbial spores and mediating microbial activity and nutrient cycles. Digestion is supported by microbes that are ingested together with food. In their gut, isopods can also develop symbiotic relationships with bacteria, but at least some part of the cellulose digestion seems to be facilitated by endogenous enzymes (cellulases). Gut bacterial symbionts live protected inside the digestive glands, which enables them to survive on nutrient-poor diets that are difficult to digest.

### **Diversity, abundance and biomass**

Regional species richness increases from the cold-temperate to the warm-temperate and the tropical zones. Local abundances are quite variable and are particularly high in temperate forests and grasslands, reaching about 100 to 600 individuals per square metre. Bacterial symbionts, such as *Wolbachia*, can induce sex changes and force males to develop into functional females. • Parasitic acanthocephalan worms can manipulate the pigmentation and behaviour of the infected individuals. The typical segmented body gives some species of terrestrial isopods the flexibility to be able to curl into a ball to protect themselves from danger. Despite this, the woodlice are preyed upon by a number of animals. Toads, spiders, millipedes and the occasional wasp are the main predators of the woodlouse.



*Porcellio scaber*, a common species

### ***Farming Secrets says: Isopods Are Essential For Decomposition In The Soil***

*Ref:* A Global Atlas of Soil Biodiversity p 57

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