



Diversity Of Soil Organisms Macrofauna – Coleoptera

Morphology

The defining feature of beetles is the hardened forewings (elytra) that cover their body. The largest known beetles are more than 160 mm long, but most beetles are less than 5 mm long. Their colours are variable, although most soil-dwelling beetle species are brown or black. Their body shape is also variable: some have long horns or sharp tusks, some can curl up like myriapods, some are flat and some are slim. A number of soil beetles, such as the genus *Carabus*, are wingless.

Taxonomy

Beetles are hexapods belonging to the order Coleoptera. This includes four suborders: Archostemata, Adephaga, Myxophaga and Polyphaga. Of these, Adephaga and Polyphaga have more species than other suborders, including most soil species.

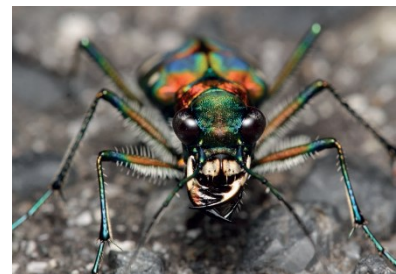


Microhabitat

In terrestrial environments, many beetles can be found in soil, humus and leaf litter, under logs or in decomposing wood, under stones, in dung, carrion and in the fruiting bodies of many types of fungi. Numerous beetles are well adapted to the soil environment. Some carrion beetles and some dung beetles build nests in the soil, in which they take care of their brood. Some species live solely in caves while others are myrmecophiles (ant lovers) or termitophiles (termite lovers) as they strikingly resemble ants or termites and live in their hives.

Diversity, abundance and biomass

There are more than 370 000 described species of Coleoptera – it is the largest and most diverse order of organisms on the planet, making up about 40 % of all described insect species, and about 30 % of all described animal species. The abundance and biomass of beetles on ephemeral and nutrient rich resources, such as carrion and dung, are very high. Beetles significantly contribute to



decomposition processes. Besides being abundant and varied, soil beetles are able to exploit the wide diversity of food sources that are available in their habitat. Many species are predators of small soil animals such as earthworms, collembolans and nematodes. Others feed on fungi or dead wood.

The caring gravediggers

- Burying beetles bury carcasses of small vertebrates, such as birds and rodents, as a food source for their larvae.
- They are unusual among insects in that both the male and female parents take care of the brood.
- Although parental responsibilities are usually carried out by a couple of beetles, a male or a female may also care for the brood alone, when the other partner is lost or the carcass is small.
- Sometimes more than two unrelated individuals can raise a brood together, when the carcass is large or many potential competitors are present.

Farming Secrets says: How Many Species Of Beetles Are In Your Soil?

Ref: A Global Atlas of Soil Biodiversity p 59

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