



**Soil Biodiversity And Ecoregions –  
Mediterranean Forest, Woodland  
And Shrubland – Part 2**

Belowground fungal communities are very diverse, characterised by a few common types and a large number of rare types, and are very different from aboveground communities.

Protists, nematodes and other microfauna are also common in Mediterranean soils. However, microfauna is commonly associated with the soil water fraction. Therefore, Mediterranean ecosystems are not the most suitable environments for this category of organisms. Nevertheless, most microfauna have the ability to develop structures that are resistant to drought. In this context, general statements are not possible because of the considerable lack of studies on this faunal category in Mediterranean-type ecosystems. An exception could be made for nematodes in the Mediterranean Basin, where they are considered as valuable bioindicators of soil quality.

Meso- and macrofauna are well studied soil animal groups, and data are available, also at a global scale, on their abundance, diversity. Again seasonality, patch distribution and a deep vertical stratification are common features, although vertical migration is a strategy against drought only shared by this group. Insect and centipede larvae have been described as very important interconnectors between litter and soil compartments. Among them, the darkling beetle (Tenebrionidae) larvae show significant seasonal migrations, which can change the soil food web structure.

In relation to microarthropods, the five Mediterranean regions share a generally greater abundance of mites than collembolans, due to their high dependence on soil moisture. Among mites, Oribatida are mainly detritivores, and Prostigmata are predators in Mediterranean environments and, therefore, their diversity has important impacts on ecosystem functioning.

Among soil macroinvertebrates, there are different ecosystem engineers (participating in decomposition processes and soil aeration, drainage and bioturbation) for different habitats.

Earthworms are the soil burrowers of more humid forests, while beetle larvae dig through bad land soils. Other detritivores of Mediterranean type ecosystems are isopods and millipedes. Ants and dung beetles also actively participate in the cycling of organic matter by distributing it among patches and from the surface to deeper soil levels, thus playing the role of termites in tropical ecosystems. An interesting adaptation to belowground patchiness is that of the insects known as ground pearls (genus *Margarodes*), which can develop as root-feeding pests in almost all Mediterranean regions. Active burrowing by herbivores is represented by Curculionidae and scarabaeid larvae. Ground beetles, which perform an important role as soil predators, are also typical of the Mediterranean region. They are accompanied by beetles, centipedes, arachnids and pseudoscorpions. This last group of arthropods has been subjected to a biogeographical comparison due to their representativeness, wide distribution and available information. Results show that affinities are greater among Mediterranean areas in the same hemisphere than between North and South. In this sense, similarities are greater in America than between the Mediterranean Basin and South Africa.

Different Mediterranean vertebrates, principally mammals but also some sea birds, affect soil fauna by fertilising, digging, burrowing and compacting the soil, but only a few species can be considered truly subterranean. Among them, the Middle East blind mole-rat, a voracious herbivore, and worm lizards, small predators, are exclusively from the Mediterranean Basin.

***Soil Lovers say: Nature's Complexity Has A Purpose For Maintaining Soil Health***

Ref: A Global Atlas of Soil Biodiversity p83

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