



Earthworm distribution

Earthworms represent one of the main taxonomic groups of soil biota. Earthworms are present in almost all terrestrial ecosystems at varying biomass, density or species richness levels. During the past five centuries, human activities have deeply impacted this global distribution for example, many lumbricid species were introduced in New Zealand where communities were dominated by members of the families Acanthodrilidae and Megascolecidae; and a species (*Pontoscolex corethurus*) originating in South America is now found in all tropical lands. After introduction, these exotic species compete with native species, which deeply modify earthworm community structure and soil functioning. Earthworms originate from aquatic organisms, so they still need a minimum amount of liquid water to live. Consequently, they are absent from the coldest and driest regions on Earth. About 7 000 earthworm species have been described for an estimated number of 30 000 existing species on Earth with many species remaining to be discovered and described.

At a more local scale, earthworms have to adapt to the environment and as they are also relatively fragile organisms disturbances generally result in a loss of species. An example of this is in the Western Ghats in South India, in a small area (10 km²), 10 species were collected from altitude natural grassland, 7 - 8 species from forests, and only 4 species from degraded pastures resulting from deforestation. 10 - 12 species is general in undisturbed ecosystems.

Competition seems not to be an important factor in structuring earthworm communities, because different niches are available. At the ecosystem scale, earthworm density varies from zero to some hundreds of worms per square metre, and biomass ranges from zero to a few tonnes per hectare.

Termite distribution

Termites are generally tropical animals, but their spatial distribution reaches into colder and drier environments occurring in five major biomes: tropical rain forests, tropical savannah woodlands, semi-deserts, temperate woodland and temperate rain forests. Termite distribution is not uniform; in temperate regions their presence is nearly negligible, while in tropical areas they can be the dominant insects in the soil.

Nevertheless, patterns of termite distribution are very asymmetrical within the tropical regions. For example, species of the genus *Macrotermes* can be easily found in savannahs and forests of Africa and Asia, but not in South America and Australia. Local species richness is influenced by environmental factors. Rainfall, vegetation type, temperature and altitude have all been shown to influence termite diversity.

In general, the highest species richness is found in tropical. Temperate woodlands and rain forests have the lowest richness, with an average of three genera or fewer. The semi-deserts have more genera than the temperate ecosystems. The distribution of termites has also been studied in relation to their feeding preferences. Soil- and humus-feeding termites have their highest generic richness in the African, Neotropical (South and Central America) and Asian tropical rain forests. By contrast, wood-feeding termites are more evenly distributed across all biomes.

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