GOLD NUGGET

Soil Biodiversity And Ecoregions – Desert And Dry Shrubland

A desert is any region on Earth that can have a moisture deficit lasting the course of a year. Deserts are present on each continent, from the Gibson Desert in Australia to the Thar Desert in Asia, the Sonoran Desert in Mexico and the USA and the Sechura Desert in Peru. They are often regions of extreme temperatures where living conditions are hostile. Deserts vary greatly in the amount of annual rainfall they receive; generally, usually less than 250 millimetres annually. Temperature variability is also extremely diverse in these regions. Many deserts, such as the Sahara in Africa, are hot all year-round but others, such as Asia's Gobi, become quite cold in winter.

Despite the limited vegetation cover plant diversity can be high. All plants have evolved to minimise water loss; cacti are a representative example of this ability. Desert soils are usually poor because plant growth and productivity is low and the litter layer is almost absent. Furthermore, evaporation tends to accumulate salts at the soil surface.

Soil biodiversity in deserts is lower than in more moist regions, such as temperate forests, but surprisingly, can be higher than in some agricultural ecosystems. The soil surface can be dominated by a soil biocrust. The soil fauna is dominated by mites and nematodes. As nematodes require water films to be active, much of their time in desert soils is spent in an inactive state. Other abundant microarthropods include collembolans and a wide variety of insect larvae.

Concerning the microbial communities, protists are even more abundant than fauna in deserts. Of these, naked amoebae tend to be the most abundant, followed by testate amoebae, ciliates and flagellates. Protists also require water films for activity and, thus, can remain inactive. Unlike more moist regions, where soil biota are more homogeneously distributed because organic matter is more evenly spread, the distribution of soil biota in deserts is more heterogeneous, found clumped together in soils under the canopy of perennial plants, where organic matter is highest.

However, if interspace soils are covered by a biocrust, soil biota is often more evenly distributed across the landscape. Desert soil communities are critical in driving ecosystem processes, such as nutrient cycling and decomposition. Important decomposers in deserts include microorganisms and macroorganisms. Despite the relatively low numbers of soil biota in deserts, they play a critical role in the structure and function of desert ecosystems. The number and biomass of these organisms determine, to a large degree, the rates and overall availability of nutrients for the primary producers of the food web, and also provide food resources for higher trophic animals.

In most arid regions, termites are numerous in species and number. These insects eat and provide food for many other animals. They are especially important in accelerating decomposition and nutrient-cycling rates. Their activities create macropores and they actively drag litter down into the soil, while bringing soils and rocks to the surface. Many species clear vegetation around their nests, thus affecting plant distribution; their mounds, which are up to five metres wide and one metre high, affect local water patterns. Together, harvester ants eat more than 100 species of seeds, but different species often show narrow seed preferences which they usually collect from the soil surface. They are important seed dispersers because they drop many of the seeds they collect. Ant nests also provide refuge for other animal species, including beetles, collembollans and mites.

Soil Lovers say: ***Nature Continuously Is A Balancer In Nature***

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