GOLD NUGGET

Anthropogenic Ecosystems – Urban Ecosystem

There is no general agreement on a definition of what is urban, and considerable differences in the classification of urban areas exist among countries and continents. In Europe and North America, the urban landscape is often defined as an area with human agglomerations and with a built-up surface of > 50 %, surrounded by other 30 - 50 % built-up areas, and overall, a population density of more than ten individuals per hectare. In other contexts, population size, the density of economic activity or the form of governance structure are used to delineate towns, cities or city regions, but there is significant variation in the criteria for defining what is urban. While everyone struggles to define exactly what is meant by a city, nobody negates the shifting patterns of urbanization or the overall growth of cities.

Urban Soil biodiversity

Urban soils are subjected to many pressures. Sealing and compaction by vehicles and humans reduce the soil's permeability to water and air. Furthermore, urban soils tend to accumulate pollutants, mainly heavy metals, from industrial and transport emissions. A study showed that soils in cities are generally 1 - 2 °C warmer, 50 % drier and 1.5 times more dense and lower in organic carbon than similar soil types in the rural environment. All of these aspects affect abundance, diversity and processes carried out by belowground urban life. The interest in understanding urban ecosystems is recent and is leading to an increasing number of studies that describe the soil organisms of green spaces within large cities. For example, soil macrofauna was investigated in urban parks and domestic gardens in London, UK. Five groups of organisms were identified: earthworms, ants, isopods, millipedes and centipedes. The species densities of the studied soil organisms were comparable to those found in natural ecosystems. Carabid beetles were collected in a metropolitan area in South Korea. Carabid assemblages changed significantly in response to management practices. Isopod assemblages were studied in Budapest, Hungary. The data analyses revealed high species richness compared to the total number of species in the country. This may be due to the ecological process known as homogenisation. Biotic homogenisation entails the replacement of native species with non-natives, a process that plays an important role in shaping urban fauna and flora by increasing the similarity of soil communities among cities worldwide. This phenomenon has been observed not only in isopods but also earthworms and millipedes. Another aspect that is increasingly studied is the impact of urbanization on soil organisms.

Uniqueness of urban soils

The ecological uniqueness of cities and their continuous growth due to the increasing population size, probably means that the soils of urban areas should be considered as a particular habitat. Several factors make urban soils unique: conditions that promote the spread of invasive species, the strong influence of human activities prior to urbanization, and the creation of novel soil types with anthropogenic materials. Furthermore, urban environments may feature a complex mosaic of habitats for soil organisms, from urban parks and private gardens and lawns to roundabouts and sports and leisure areas. Soil biota have been shown to respond to alterations in soil properties associated with urban environments. The effect of these urban pressures on belowground biodiversity is an alteration of ecosystem functions and processes.

Soil Lovers say: ***Urban Soils Are Under Pressure To Grow More***

Ref: **A Global Atlas of Soil Biodiversity p89**