

## Why do wetlands host more earthworms than other sites?

J.A.V. Wasanthika and S. R. Weerawardhena

Department of Zoology, University of Kelaniya, Kelaniya, Sri Lanka

Diversity and distribution of the soil fauna depends on the physico-chemical parameters of the soil. Among soil organisms, earthworms are one of the main soil dwelling organisms and constitute the largest portion of soil invertebrates. Sampling of earthworms was carried out during the dry season in the selected area (September to November, 2008). Three soil samples were collected from each of five sites, such as home garden, coconut estate, wetland, pineapple land as well as fallow land within a 25m<sup>2</sup> area in Dankotuwa. The collected earthworms were immediately preserved in the 5% of buffered formaldehyde for identification and abundance determination. Additional three soil samples were collected in parallel and sealed in containers for determination of the physico-chemical parameters of soil. The distribution pattern and abundance of earthworms were correlated with physico-chemical parameters, such as percentage of soil air, moisture and organic contents, pH and temperature. Four species of earthworms (*Pheratima posthuma*, *Notoscolex* spp, *Megascolex* spp and *Eudrilus* spp) were identified in the studied habitats. *P. posthuma* was found only in the wetland samples whereas *Notoscolex* spp were present in all the habitats. *Notoscolex* spp were found to be highly abundant in home garden, wetland, pineapple and abandon areas where the type of soil is light loam. All four species, *Notoscolex*, *Eudrilus*, *Megascolex*, and *P. posthuma* can survive in the light loam soil. In the light sandy soil, population densities of earthworms are very poor and only two species of earthworms were found. Therefore, most preferred soil type by earthworms is the light loam soil where earthworm population is higher than that of other sites with sandy soil. The population density of earthworms was found to be higher in the wetland whereas the lowest population density was observed in the coconut estate. From the Shannon diversity index, heterogeneity is highest ( $H=5.791159$ ) in the fallow area and the lowest ( $H=1.38629$ ) in the coconut estate. In the fallow area, where soil type was light loam with an organic content of 4.04 %, pH 6.98 and moisture holding capacity of 5.62%, appears to be more favorable for earthworms. However, in the coconut estate area, where the soil is dry with a low percentage of organic matter, the earthworm population has a lower heterogeneity. Although the home garden has light loamy soil, a lower abundance of earthworm species was found. This is most likely due to the effect of anthropogenic activities that disturb their habitats. Using the Primer software package, habitats which have similar physico-chemical parameters were clustered in the same group. According to the cluster analysis, all sites were separated into four groups and all of the home garden sites had similar soil parameters. The soil property of the coconut estate was some what different from the other sample areas. Soil parameters of other sites, wetland, pineapple land and fallow area are more or less similar to each other. This study revealed that the earthworm abundance is significantly correlated to the organic and moisture content of the soil. Since wetland has the highest percentage of organic and moisture content relative to other sites, it hosts more earthworm diversity than other studied sites.