

Communities of ciliated protists in landfill contaminated soils

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The following study concerns the biological impact of waste landfills. One landfill abandoned for more than 100 years and another still in use were considered. Both of these landfills are located on Asinara Island in Sardinia. By means of quantitative analysis of organisms in the sediments, observations were made. Soil units were sampled at different distances from the centre of the landfill. Three soil samples were taken from each site 50 meters apart from the centre of the landfill. Sampling was done orthogonally to the hydrography of the site to avoid collecting soil enriched by pluvial runoff of pollutants. Soil was stored in tubes that allowed air to enter with the purpose of maintaining viable bioburden. In the laboratory, 4/2 grams of soil was hydrated with 20 ml of SMB and allowed to mature for two weeks. Biological data were compared with soil chemical analyses: hardness (GH), free chlorines (FCL), iron (Fe), copper (Cu), lead, (Pb), NO₃ nitrates, NO₂ nitrites, MPS multi-step systems, chlorine (TCL), fluoride (F), cyanuric acid (CYA), ammonia chloride (NH₄Cl), bromine (Br), TAL, KH and pH. The study examined ciliates that can survive without water by producing cysts. These cysts protect genetic material and other cellular components during droughts. Additionally, ciliates are capable of actively moving to more favourable environments. They respond to changes in chemical concentrations, such as hydrogen and carbon dioxide, by adjusting the direction of their movement until they find conditions that suit them better. Based on these two characteristics, we hypothesize that ciliates could serve as indicators for soil quality.