

Terrestrial Protozoa as Bioindicators: Investigations at a Graded Ski Trail at the Schloßalm near Bad Hofgastein (Austria), WILHELM FOISSNER, Department of Zoology, University of Salzburg, Akademiestraße 26, A-5020 Salzburg (Austria)

The structure of the terrestrial testacea and ciliate community was investigated in an alpine pasture and a neighbouring graded ski trail which is heavily frequented in winter, at the Schloßalm near Bad Hofgastein. Samples were taken once in spring, summer and autumn respectively, from the following sample plots (SO) which are located above the timber line (app. 1950 m above sea level): SO 1: undisturbed alpine pasture, SO 2: marginal area of the ski trail, SO 3: center of disturbance of the ski trail. Abundance and species composition were studied by direct observation of freshly collected, watered soil suspensions. In addition, the BUITKAMP culture-method was used for ciliates, because only very few active ciliates could be found in most of the freshly collected soil samples. On the average, abundance, biomass, species and genus number, diversity of testacea, and moisture content of the soil decreased markedly from SO 1 to SO 3. As to the ciliates and the pH-value, a tendency to the opposite was observed. This fact may be attributed to the different feeding preferences of the two taxocenoses. For both testacea and ciliates, the species identity between SO 1 and SO 2 was higher than between SO 1 and 3. Sample plot 2 showed a higher affinity towards SO 3 than towards SO 1. Remarkable differences were also found in the dominate species of SO 1 and SO 3. In comparison to SO 1, SO 3 showed a much higher percentage of testacea with shells composed of xenosomes. These changes in the structure of the protozoan community which were observed on the ski trail, are obviously due to the abrasion of the upper soil layer and the changed abiotic factors. Therefore, from the present and former investigations, it can be concluded that terrestrial testacea and ciliates represent good indicators for changes in soil condition caused by human activities.