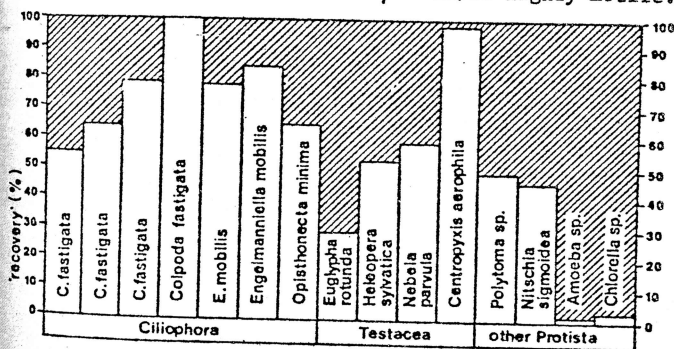


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Estimation of Numbers of Protista in Soil: A Test of the "Direct" Method, WILHELM FOISSNER, Institut für Zoologie der Universität Salzburg, Akademiestraße 26, A-5020 Salzburg (Austria)

Culture methods, especially the "ring" procedure of SINGH are widely used for the estimation of numbers of active soil protista. But some workers prefer direct microscopic examination of soil suspensions because this method has the advantage that untreated soil can be investigated. To test this method, various protista were added in known numbers to a sterilized soil. The suspensions were made of 0.05g soil and 3 ml tap water, dispersed on 10 slides and counted at a magnification of 100:1. 55-100% of the ciliates, 30-100% of the testacea, about 50% of the flagellates and diatoms, and about 2% of *Chlorella* sp. and *Amoeba* sp. (60 µm) could be found again (see diagramm). There is a positive correlation ($P < 0.10$) between the volume of the species and the "recovery" rate. Considering the fact that culture methods have various disadvantages too (e.g. time consuming, inactivation of an unknown number of cysts by the HCl treatment which causes an over-estimation of the active protozoa), one may conclude that the "direct" method is suitable for a rough estimation of active soil ciliates, testacea and flagellates, especially for species that are larger than 50 µm and/or highly motile.



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Experimental Studies about the Effects of Soil Compaction on the Structure of the Testacean and Ciliate Community, HELMUT BERGER, WILHELM FOISSNER and HANS ADAM, Zoologisches Institut der Universität Salzburg, Akademiestrasse 26, 5020 Salzburg, Austria.

The effects of soil compaction on the structure of the testacean and ciliate community were studied by means of a special compaction chamber. The upper 5cm of soil of an alpine pasture were compacted at 10% (c), 30% (d) and 50% (e). The control (a) was the undisturbed alpine pasture. Sample (b) was used to determine the effect of the chamber. The chambers were exposed for 3 month at the same sites. The testacea react by a loss of the infrequent species and a continuous decrease of their abundance. *Centropyxis aerophila* var. *sphagnicola* is most abundant in (a) to (d), whereas *Trinema lineare* is most frequent in (e). Both species number and abundance are significantly negative correlated with bulk density. The part of empty tests increases from (a) to (e). *T. complanatum* is significantly smaller in (e) than in (c). We conclude, that smaller species are less influenced by soil compaction than larger ones. Active ciliates are most abundant in (d). The qualitative investigations (culture method!) showed a significant

effect of the chamber to the species number. But there are no differences from (b) to (e). Concerning the abundance the nematoda react similar as the testacea. The pH is significantly positive correlated with the bulk density. The loss of *Nebela parvula* and *Plagionyx declivis* in (b) to (e) is maybe mainly due to the increased pH, because both species prefer a very acid environment. However, the reduced pore space and moisture content seem to be responsible for most changes of the communities. The results of our experiments are comparable with field studies at ski trails. Thus terrestrial protozoa are useful bioindicators. The ciliates appear to react more sensitively but less selectively than the testacea to a disturbance of their environment. (Supported by the Österreichischen Akademie der Wissenschaften, Projekt 2794).

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The Infraciliature of *Perispira* and *Cranotheridium* (Ciliophora, Spathidiidae), ERNA WIRNSBERGER, WILHELM FOISSNER and HANS ADAM, Institut für Zoologie der Universität Salzburg, Akademiestraße 26, 5020 Salzburg, Austria

Up to now the infraciliature of the genus *Perispira* and *Cranotheridium* was unknown. We studied the morphology and the infraciliature of *Perispira* sp. (very probably a new species) and *Cranotheridium foliosus* (FOISSNER, 1982) by means of protargol impregnation. The kinetome of *Perispira* consists of about 19 somatic kineties, some of them are shortened. The basal bodies of the perioral kinety are arranged in pairs. The exterior kinetosome of a pair is ciliated. Nematodesmata occur only in the anterior dome-shaped part of the perioral kinety. The dorsal brush consists of three short rows of paired cilia. The right one is always strongly shortened. Our investigations show that the organization of the infraciliature and the subpellicular fibrillar system are similar to that known from the genus *Spathidium*. Other similarities, like the oral bulge and the structure of the dorsal brush support the view of KAHL (1930) that *Perispira* is a true member of the family Spathidiidae. The infraciliature of *Cranotheridium foliosus* consists of about 25 densely ciliated somatic kineties, some are shortened at the posterior end. The perioral kinety is formed of paired basal bodies from which very delicate nematodesmata originate. The dorsal brush is composed of about 8 rows of paired cilia: 4-6 very short rows at the left lateral side, 3 longer rows at the dorsal side. This special organization of the dorsal brush separates *Cranotheridium* from the closely related genus *Spathidium*. However, the infraciliature and the general organization prove that *Cranotheridium* can be classified without difficulties into the Spathidiidae. (Supported by the Austrian MaB-6 program)