

SUPPLEMENT

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Soil protozoa, WILHELM FOISSNER, Universität Salzburg, Institut für Zoologie, Hellbrunnerstrasse 34, A-5020 Salzburg.

A lecture was read on the ecology and diversity of soil protozoa at occasion of the XIII annual meeting of the German Society of Protozoologists. This review is also available as a published paper (with many beautiful line drawings and micrographs, some even in colour) in the "Kataloge des OÖ. Landesmuseums N.F. 71, 169-218 (1994)". About 1500 protozoan species are known to occur in soil. I suppose, however, that the real diversity is much greater, viz. between 5000 and 10 000 species. This estimate is based on my experience with ciliates. Almost each sample of soil collected in Europe, Africa, and Australia during the last decade contained at least one new species - and there are no reliable data available on the protozoa in soils from Asia and South America! The most important group of soil protozoa, in terms of the contribution to the energy fluxes, are very likely the testate amoebae. They occur not only in rather high individual numbers in many soils but are also active, whereas most other soil protozoa (naked amoebae, flagellates, ciliates) are probably inactive (cystic) most of the time. It is emphasized that fungi influence soil protozoa not only by being an essential food source for many species but also as parasites; possibly, most of the protozoan resting cysts are destroyed by parasitic fungi. The knowledge available show that protozoa can be used as bioindicators in natural and human influenced soil ecosystems. However, a broad range of application depends on the development of reliable and quick methods to estimate their species and individual numbers, as well as on practicable keys for their identification.

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The systematic position of *Enchelyomorpha vermicularis* (Smith, 1899) Kahl, 1930 (Protozoa, Ciliophora), WILHELM FOISSNER and ILSF FOISSNER, Universität Salzburg, Institut für Zoologie and Institut für Pflanzenphysiologie, Hellbrunnerstrasse 34, A-5020 Salzburg (Austria).

Enchelyomorpha vermicularis is a peculiar ciliate which has not only cilia but also many short tentacles on the cell surface. KAHL (1926) originally considered this organism as swarmer of an unknown suctoriana. Later, however, he classified it together with *Actinobolina* and *Dactylochlamys*, which look similar superficially, in a new family, *Actinobolinidae* KAHL, 1930, within the gymnostome holotrichs. This view was adopted by CORELISS (1979). A light microscopic reinvestigation by AUGUSTIN & FOISSNER (1992) showed many new details but also could not clarify the systematic position. We thus examined the life cycle of *E. vermicularis* and studied its fine structure with the transmission electron microscope. The results definitely show that *E. vermicularis* is the swarmer of a globular suctorian with tentacles irregularly distributed on the anterior half. The tentacles of the swarmer, which is produced by endogenous budding, contain haptocysts and two microtubule cylinders typical of "good" suctorians. Furthermore, the fine structure of the somatic infraciliature of *E. vermicularis* matches exactly that known from other suctorian swarmers. *Enchelyomorpha vermicularis* lacks mitochondria but possesses hydrogenosomes, indicating that it is a true anaerobic ciliate. This is supported by the faunistic data which show that it has been found mainly in anaerobic or microaerobic environments. Supported by FWF PO 8924-BIO.

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The Ciliate Atlas: Volume III Available Now! HELMUT BERGER and WILHELM FOISSNER, Universität Salzburg, Institut für Zoologie, Hellbrunnerstrasse 34, A-5020 Salzburg, Austria. Our ciliate atlas comprises 4 volumes with about 500 pages each and describes in detail the morphology and ecology of about 320 species listed by SLADECEK et al. (1981) as indicators of water quality. Many ciliates are valuable indicators of organic pollution because they are confined to 1 or 2 saprobic zones. Furthermore, their morphology is well known enabling a reliable identification from life. Each species is described monographically, including a list of important synonyms, a discussion of nomenclature and taxonomy, a differential diagnosis, and a comparison with similar taxa. The ecology section treats the occurrence and geographical distribution, the autecology, and the saprobiological classification. This section is followed by line drawings, light micrographs of living and silver prepared specimens, and scanning electron micrographs. Vol. I treats the Cyrtophorida, the Oligotrichida, the Hypotrichida, and the Colpodea; Vol. II the Peritrichida, the Heterotrichida, and the Odontostomatida; Vol. III the Hymenostomata, the Prostomatida, and the Nassulida; and Vol. IV (in press) the Karyorelictida, the Haptorida, the Pleurostomatida, and the Suctorida. A speciality of Volume III is the detailed compilation of toxicological and ecological data from the widely distributed genera *Paramecium* and *Tetrahymena*. This should provide the user with background data to assess the effects of many hazardous substances common in aquatic ecosystems. Supported by the Österreichischen FWF (Projekt P8924-Bio) and the Bayerisches LAW.