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Title: *Natural gradients as determinants of soil microfauna in crusts of central Svalbard*

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The changes of soil hydrobiont populations along vertical transects of coastal mountains and transects of deglaciation from the glacier forehead have been studied in Petuniabukta Bay (Billefjorden, central Svalbard). Populations of Rotifera, Tardigrada and Nematoda have been studied with respect to different stage of soil crust development, populations of other invertebrate groups as well as microbial populations. However the range of altitudes is less than 750 m, extremity of arctic environment cause very different conditions in case of temperature and water availability. Succession after deglaciation on sites run from decades to hundreds years. Stainless Kopecký's cylinder (probe area of 25 cm^2 and using upper 5 cm layer) was used for sampling. Composite samples, mix of 3 probes, in three replicates have been taken. Rotifers, nematods and tardigrades were extracted alive from substrate using high-efficiency L-C extractor to distilled water, counted and determined. Three gradients of succession and two vertical gradients have been established. Nematods as most abundant group reached abundance from 100 to 3000 10^3 ind m^{-2}, rotifers from 0 to 174 10^3 ind m^{-2} tardigrades from 0 to 82 10^3 ind m^{-2}. Quantitative analyses of populations show, that both types of transects are different. Although soil crusts develop from iceberg forehead as well as from the mountain top downstears, the sites differ especially in age for which they are subject of communities succession. In case of rotifers, the are significantly higher number of species, present only in vertical transects in contrast to successional ones, although great portion of species was present in both types of transects. Important differences are also between transects of one type. Løvehovden mountain rotifers as well as nematodes are most abundant in second position from the top, tardigrades prefered lover positions, in Wordiekammen mountain rotifers and tardigrades prefered medial positions and nematodes were most abundant on the top. In total 23 species of bdelloid and monogont rotifers were found if most abundant was Encentrum arvicola, Adineta gracilis, Macrotrachela cf. musculosa and Philodina rapida. Rotifer species diversity increased with decreasing altitude as well increasing distance from glacier forehead in general.