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Short and long term effects of bioturbation on soil erosion and soil development in a rocky arid area

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Short and long term effects of faunal activity on soil erosion and soil development had been largely overlooked by geomorphologists; especially in arid rocky area. A study of hillslope runoff and erosion processes in the Negev desert indicated systematic in sediment concentrations and erosion rates between rocky and colluvial surfaces. Erosion rates were always higher on the former than on the latter. Field observations drew attention to an intense burrowing and digging activity conducted by Isopods and Porcupines. The monitoring of this activity, based on a grid system,lasted ten years. Data obtained suggest a strong link between the spatial pattern of bioturbation and that of soil erosion. The study also examined the regulatory role of the spatial distribution of soil moisture on the biological activity and its long term effect on soil forming processes. TWo different environments have been recognized. The upper, rocky, hillslope areas are characterized by a positive feedback. High runoff and erosion rates remove salt from the soil, limiting salt accumulation. T the same time the colluvial slope section absorbs, at most rainstorms, all runoff generated over the upper rocky sections leading, over time, to soil salinization