

Species diversity and microsite divergence of insects at “Evolution Canyon”, Lower Nahal Oren, Mt. Carmel, Israel (Coleoptera: Buprestidae)

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Abstract: Local differences in species richness and abundance of buprestid beetles were studied at the microsite "Evolution Canyon", Lower Nahal Oren, Mt. Carmel, Israel, a model conceived for studying biodiversity evolution in a microcosm of life in nature. 39 species were collected at the microsite, and species richness was higher on the more arid and microclimatically stressful and variable south-facing slope than on the milder, more humid and relatively homogeneous north-facing slope. The interslope differences in abundance were significant in five species. New larval host plants were added for nine species, as well as new data about the regional distribution of buprestid beetles. The results support earlier conclusions in various groups of organisms across phylogeny.

Kurzfassung: Im so genannten „Evolution Canyon“ am Unteren Nahal Oren am Berg Karmel, Israel, wurden bei Prachtkäfern (Buprestidae) lokale Unterschiede in der Artenvielfalt und in der Häufigkeit untersucht, als Modell für die Evolution der Biodiversität auf Ebene eines Mikrokosmos. An dieser Mikro-Lokalität wurden 39 Arten festgestellt, und die Artenanzahl war auf der arideren und stärkeren mikroklimatischen Schwankungen ausgesetzten Südseite höher als auf der mildereren, feuchteren und relativ homogenen Nordseite. Die Unterschiede in den Häufigkeiten der Arten waren zwischen den beiden Gebieten signifikant. Für neun Arten werden neue Futterpflanzen der Larven mitgeteilt, ebenso wie neue Angaben über die regionale Verbreitung einzelner Arten. Die Ergebnisse bestätigen frühere Schlussfolgerungen zur Phylogenie verschiedener Organismengruppen.

Key words: Beetles, Buprestidae, distribution, Evolution Canyon, Israel, Middle East.

Introduction

This study deals with the testing of local species richness divergence patterns resulting from differential microclimate selection (see NEVO 1995, 1997 for review). The objectives of the long-term evolutionary project at the microsite Lower Nahal Oren, Mount Carmel, Israel, known as “Evolution Canyon”, are to analyse determinants of biodiversity distribution, evaluate the relative role of stochastic and deterministic factors in evolution, and outline biodiversity evolution in nature in different groups of organisms across phylogeny, including bacteria, fungi, plants and animals (NEVO 1995, 1997). An important side-product of the project is the upgrading of the knowledge of biodiversity in Israel and the Near East. The taxa which have been studied hitherto at “Evolution Canyon” are cyanobacteria, soil bacteria, algae, fungi, lichens, mosses, vascular plants, invertebrates and vertebrates (NEVO 1995,