

Effects of land-use changes on lizard communities and populations in the Loess plains of the northern Negev, Israel

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Loess plains of the Northern Negev have been under anthropogenic influence for thousands of years, mainly through grazing and seasonal agriculture. This dry shrub and grass landscape is considered one of the most unique and vulnerable ecosystems in Israel, with less than 5% protected by law. During the last three decades, wide-scale runoff rainwater harvesting management schemes were implemented on this habitat by plowing and planting of exotic trees, causing substantial changes in habitat structure. Since 2012, HaMaarag, Israel's Nature Assessment Program, monitors reptiles in three habitat types in loess plains of the northern Negev: natural shrub and grass steppe (NSS), runoff rainwater harvesting plantation (RRHP) and extensive traditional Bedouin agricultural wheat fields (ETBA). Results from the first two monitoring rounds (2012-2016) show that beta diversity homogeneity was significantly different between NSS and ETBA, whereas NSS and RRHP, and RRHP and ETBA were not significantly different. Rarefaction analysis revealed that higher species count relative to sample size was found at NSS plots, followed by RRHP, with ETBA showing the lowest values. Desert specialist lizard species were positively and significantly correlated with NSS while generalist lizard species were positively and significantly correlated with ETBA. The current results emphasize the significance of lizards as bioindicators for habitat quality and type. We stress the importance of protecting and conserving loess shrub and grass steppe habitats from further development. We also suggest monitoring continuation and giving special emphasis on the effects of livestock grazing, a significant practice in this area, for better understanding of reptile dynamics in the system.