Abstract

This diplmoma thesis aims to answer three different questions. First aim of this thesis was to analyze measures of alfa and gama diversity based on Hill numbers and find out, if these measures fullfill the weak principle of taxonomic invariance. In other words, my aim was to proove, independetly of used order of diversity, alfa and gama diversity will be always lower for higher taxonomic groups (eg. genus), than for lower taxonoic groups (eg. species). For this purpose, I used direct mathematical proof, and I showed, that equations for alfa and gama diversity are both taxonomic invariant. Moreover, I analyzed one specific measure of beta diversity as well. I showed, that beta diversity of order zero may increase or decrease in taxonomic switch.

Second aim of this thesis was to examine influence of abundances on visualising of preferences of species for different enviromental factors. For thi purpose I desinged new methodology based on well-known RANK plots. This methodology should filter the influence of irregular data collectioning. In other words, this methodology should consider the case, that values of enviromental factors in data are not uniform, which may result into apparent preferences of species. Moreover, this methodology is desinged to take into considerations abundances of species as well. This abundances may be weighed, similar to case of weighed diversity measures. I tested this methodology on mallacological data from west Europe and north Africa transect. I consulted my results with mallacologist doc. Lucie Juřičková. My results show, that my methodology is still too young and yet inappropriate as a biological tool.

Last aim of this thesis is examine the influence of diversity order on macroecological patterns, specifically on lattitudial gradient of diversity and productivity diversity relationship. My results suggest, that order of diversity may affect the signifikance of macroecological patterns.

Key words : Diversity, Hill numbers, RANK plots, latitude, productivity