

Biodiversity trends (such as the relationship between species richness and temperature or productivity) are always defined for a particular taxon at a specific area (the entire range of the taxon or often just a region arbitrarily chosen by researchers). The form of these trends varies between taxa and regions. The weak relationship between richness and temperature or productivity is sometimes interpreted as a counterevidence for the hypothesis explaining diversity patterns by these variables. However, the delimitation of taxa or region may play a crucial role for the form of the trends. The aim of this thesis is to determine whether some taxon properties (its size) or region properties (its area, range of explanatory variables, the temperature-productivity relationship or average temperature) affect the strength and slope of the richness-temperature and richness-productivity relationships. 46 data sets of species richness for a wide range of plants, invertebrates and ectothermic vertebrates within different regions of the world were used for the analysis. While the taxon size is likely to affect the strength and slope of the relationship when comparing individual (nested) subclades within larger clade, the comparison of different taxa in different regions of the world shows only the effect of the region properties. Within small regions there are often weak relationships between species richness and temperature or productivity – the strength of richness-temperature relationship is affected by temperature range, but there is also probably an effect of area per se. Strong predictor of the form of the relationships is the mean temperature (and the associated temperature-productivity correlation). In tropical regions (where the productivity gradient often goes against temperature gradient) diversity increases often with productivity, while the correlation with temperature is weak or negative. On the contrary, in colder areas (where the temperature-productivity relationship is generally positive) the diversity depends on temperature, while the dependence on productivity tends to be weaker. We can see this effect of the region also when comparing the trends for one taxon in different regions – specific requirements of the taxon are not as important as the region properties. The systematic effect of several variables on the strength and the slope of the relationships between species richness and temperature or productivity implies that all studies of diversity patterns should pay attention to these effects.