Abstract

Latitudinal diversity gradient is one of the oldest known trends in the distribution of life on the Earth. Scientists have been trying to find causes of its formation for more than two hundred years. There are several hypotheses suggested to explain this gradient. Recently, it is one of the main themes of discussion among ecologists and evolutionary biologists. By this Thesis, I will try to contribute to understanding of processes that generate the latitudinal diversity gradient. Particularly, I study if there is a relationship between ambient temperature and diversification rate. Is this relationship different for individual groups of animals? I choose birds as a model group. Specifically, these six families of birds: Accipitridae, Columbidae, Furnariidae, Picidae, Psittacidae and Strigidae. These groups include more than 1500 species. Each of them has the same universal gradient of diversity, with the highest diversity concentrated in the tropics. My objective was to find out, whether the universal gradients of bird´s diversity had been shaped by the same historical processes. Or alternatively, whether different evolutionary trajectories had converged to the same gradients. The main outcome of my work is a discovery that some of the selected families diversified faster in warmer climates (Psittacidae, Strigidae), while others accumulated diversity more rapidly in cooler climate of higher latitudes (Accipitridae). Some families diversified at the same rate in different geographical areas regardless of ambient temperature (Columbidae, Furnariidae, Picidae). These results of my Thesis indicate that the universal gradients of bird´s diversity were created by diverse evolutionary processes, which converged to surprisingly identical global trends in distribution of species richness. As a result, my Thesis highlights the importance of equilibrium processes in establishing diversity of life on the Earth.

Key words: phylogeny, diversification, evolution, radiation, diversity gradients