

Abstract

The analysis of population trends of animals is increasingly being used not only as an indicator of population changes, but also as an indicator of biodiversity decline. Living Planet Index is one of such indicators, as it shows a proportional decline or increase of all populations by means of mean annual changes in population abundance. Since the first presentation of the index in 1998, its values have been decreasing, which was interpreted as indication of a critical state of global biodiversity. Nevertheless, there are some issues concerning the index. It is unclear to what extent it is robust, if it is not too much influenced by biased data or if it does not comprise a systematic error. This thesis focuses on four vertebrate taxa and its aim is to examine the level of data heterogeneity and their potential influence on the index. For this purpose, two parameters were defined for each population, *Growth* and *Trend*. Overall, the trends in abundances were quite balanced, some populations being decreasing, some increasing, and stable populations were also present. Despite of our expectations, the heterogeneity in the data was not large enough to have a substantial effect on the index. Analysis of trends in variously defined groups (e. g. “biomes”, taxa or biogeographic realms) revealed only little differences between the groups. Although some relationships were significant, the predictors always explained very low percentage of variation in response variables. Declining LPI seems to be determined by different problems, including errors in index calculation or its sensitivity to extreme values.

Keywords: population, dynamics, trends, abundance, Living Planet Index, data heterogeneity