

We are living in the time of global changes influencing climate, economy, human population, as well as habitat loss and fragmentation. These changes are direct threat to the biodiversity and functioning of numerous ecosystems, and their influence will increase with time. Mitigation of consequences of the global changes needs rational planning including detailed knowledge regarding spatial diversity of biodiversity level, detection of crucial environmental and socio-economic drivers of biodiversity and, final, assessment of possible influence of changes on biodiversity.

Vascular plants contribute, by far, the largest proportion of terrestrial biomass on Earth, and are crucial to the numerous ecosystem services. They serve also as bioindicators of the state of environment and biodiversity level. The goal of this project is preparation of a map of vascular plant species richness in Poland, including species groups: native, neophytes, and high conservation value. For this purpose used will be Distribution Atlas of Vascular Plants in Poland, prepared in grid 10 x 10 km. Obtained results will be used to establishing mathematical models based on machine learning, which using climate, soil, topography, and socio-economic data defined will be crucial drivers of species richness of particular group of species. The models allow better understand correlations between environment, anthropogenic pressure, and biodiversity. They help also asses effect of global changes on vascular plant species richness in Poland. Correlating number of species in particular groups (native species, neophytes, and species with high conservation values) with list of species in a given 10x10 square, we can find indicator species (bioindicators) which presence can be used as indicators of high species richness, level of biological invasion as well as value for nature conservation. The results will bring new knowledge on drivers of different groups of vascular plant species richness in Poland and can be extrapolated over a wide area of Central Europe. Moreover, the results will have practical meaning showing hot-spots of biodiversity, areas with high conservation values and threaten by biological invasion for purposes of agencies devoted to environmental management in Poland. Additionally, as a result of this project a set of high-quality maps showing geodiversity, landscape structure, and socio-economic indices in commonly used in Poland 10x10 km ATPOL grid, will be created and published. It facilitates and reduces costs of new study where knowledge on environment of Poland is necessary.