

## ABSTRACT

Natural environment has been significantly altered by human activity in past few decades. There is an evidence that we are now facing the sixth mass extinction and suitable areas for species are getting smaller. Therefore, many species of plants and animals are experiencing strong population decline and some of them even became extinct. We focused our attention on orchids because their distribution expresses one of the highest declines among all plant families.

In this thesis, we investigated species richness and distribution patterns of orchids, the rate and causes of their decrease and extinction, and factors influencing their occurrence in the Czech Republic and Greece. In the majority of the presented papers, we used a dataset based on the database of the Nature Conservation Agency of the Czech Republic that includes more than 115 000 of orchid records in the country. We also analysed the patterns in the six different phytogeographical regions in the Czech Republic that differ in altitude and the composition of local flora. The key findings are as follows:

- The specialized pollination strategy of orchids, as well as type of rooting systems, both in the Czech Republic and in Greece, play a role in the distribution patterns of orchids in the two countries (Papers I, II and VI). Moreover, the trends differed between the six floristic regions (Paper I and II). In the Czech Republic, the most widely distributed orchid group are the rhizomatous orchids, whereas tuberous orchids were the most widely distributed orchids in Greece (Paper I and VI). We assume that these differences in the trends might be based on the orography of the country, distribution of suitable habitats and types of bedrock.
- The highest decline in orchid distribution during the time periods studied was recorded for critically endangered taxa (Paper III). The number of suitable sites for the Czech orchids declined by 8–92%, depending on the species (Paper IV). One of the most threatened orchid species is *Spiranthes spiralis*. The distribution of orchids in the Czech Republic is mainly affected by the distribution of their habitats.
- The most important factor affecting the distribution of Czech orchids in the region of South Bohemia was the land cover, expressed as the consolidated layer of ecosystems (KVES). The other two important environmental predictors were the mean annual precipitation and the slope of the terrain. The most important types of habitats (types of KVES) for orchids in Czechia are oak and oak-hornbeam forests, followed by agricultural meadows (Paper V). By this, we can improve management plans that are crucial for maintaining orchid localities.