# Preface

What is the aim of a book about endemism in vascular plants – biogeography and evolution of vascular plants that have small ranges, vegetation ecology, a little bit social sciences, politics, and nature conservation? Does it mainly review and comment on some new scientific results including spotlights of the revolution in genetics, systematics and phylogeography?

It will be impossible not to review important publications, and scientific experts may excuse the review character of many parts in this book. And, yes, the relevance of endemism also concerns nature conservation. Endemism is not only a scientific game of characters and numbers. Endemism matters. On the other hand we present many scientific results which have not been published before.

What is the relationship between endemism and global warming? We want to show that the amount of recent climate change means very little in terms of extinction risks for vascular plants. If a single rock in Central Europe represents a climate of northern Italy on its southern face and of southern Norway on the opposite side, if the variability in a single forest represents many different micro- and mesoclimates, then a changing temperature of 1 °C plus or minus perhaps means almost nothing for a population of plants living close to the rock or in the forest. If both, the rock and the forest, are becoming destroyed by man, then the populations of the rocky habitat or forest will probably not survive. In this book, we estimate the impact of climate and climate change on the composition of endemic taxa in different regions. However, it is clear that we are talking about other dimensions than a single degree centigrade in average.

What is the impact of invading species? Are they competing with the endemics? Competition or introgression are keywords in this context. Both processes can result in extinction of genes and taxa and we don't want to play down the extinction risk for endemic plant taxa. However, we also want to show that the extinction risk for endemic vascular plant taxa is relatively low in most mainland areas because competition and introgression between invading and endemic plants do not play an important role compared to the effects of habitat disturbance or resource use. We are aware that the situation becomes more complicated on islands or habitat isolates

particularly due to invading animals which are able to destroy habitat structures and change environmental conditions or regional food web structures. However, neither competition nor introgression seem to be the main problems in this case.

What is new? We want to focus on the relationships between endemism in vascular plants and habitat. This topic is relatively new to science. And it is relevant because one of the most important factors for the loss of biodiversity in the past was habitat destruction by man including domestic livestock. We assume that this factor in the future will persist to be important.

To secure ecosystem services and goods is a modern feature of recent strategies and payments in biodiversity policies (CBD). Therefore, the question arises what the relationship between the occurrence of endemic taxa and a modern strategy securing ecosystem goods and services could be. An example: *Cephalaria radiata* is a beautiful flowering plant scattered in semi-natural grasslands and endemic to Transylvania in Romania, Europe. What are the goods and services of this plant? And if there are no such, why should we lower the extinction risk of this species? In this moment grasslands and semi-natural pastures and meadows all over the world are declining in quantity and quality.

Last but not least we will point out gaps in our knowledge. For many regions in the world, especially mainland regions, we don't have adequate information about the amount and ecology of endemism. For example, the number of publications focussing on range sizes of plant species in tropical forests is still very limited. Modern molecular analyses on systematics will change our knowledge and earlier ideas in systematics. This process has just begun. We still do not know if most vascular plant species or most endemics on earth live in forests or in open landscapes. We do not know all the threats in every part of the world. Even the very important Red List database of the IUCN covers only a small percentage of the vascular plants living on earth. Many ecological conditions and events in the past which have been influencing the species composition and endemism in a region presently cannot be reconstructed. Thus, we know that we are far away from understanding the interferences of all the basic processes. We will ask these questions in our book. Nevertheless, many of them cannot be answered at the moment.

The structure of the book is artificial because it is impossible to describe the time axis independent of space or to understand spatial patterns without discussing underlying processes. Thus, we did not try to absolutely avoid overlaps but to pronounce patterns on the one hand and processes on the other. Both levels are important for an understanding of the relating complex phenomena and for the understanding of nature conservation purposes.

As a result of the process in which we organized the development of this book the collection of regions is a little bit patchwork-like. We tried to describe and analyse both patterns and processes in endemic-rich regions and also in regions with fewer endemic taxa. We wanted to represent mainland regions, continental and oceanic islands in different parts of the world, because of the different evolutionary and climatic histories. And we tried to present new results. However, in a scientific world

which is evaluated and financed on the basis of scientific indicators created by a private company, it becomes more and more difficult to find experts writing a chapter in a book. Hopefully this trend is not the end of the road.

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