Mountain Timberlines

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Mountain Timberlines

Ecology, Patchiness, and Dynamics

Springer

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PREFACE

For more than 40 years I have been engaged in timberline research. Thus, one could suppose that writing this book should not have been too difficult. It was harder, however, than expected, and in the end I felt that more questions had arisen than could be answered within its pages. Perhaps it would have been easier to write the book 30 years ago and then leave the subject to mature. Lastly it was the late Prof. Heinz Ellenberg who had convinced me to portray a much needed and complete picture of what we know of the timberline with special respect to its great physiognomic, structural and ecological variety. The first version of this book was published in the German language (Holtmeier, 2000). Nevertheless, I was very delighted when Prof. Martin Beniston encouraged me to prepare an English edition for the series ‘Advances in Global Change Research’, which guaranteed a wider circulation.

Timberline is a worldwide and very heterogeneous phenomenon, which can only be presented by way of examples. My own field experience is necessarily limited to certain timberline areas, such as the Alps, northern Scandinavia, northern Finland and many high mountain ranges in the western United States and Canada. However, my own observations and the results of my and my previous collaborators research were essential for developing the concept of the book and became integrated into the picture of timberline that is presented in the following chapters. Since the most thorough-going study of the literature cannot compensate for lack of one’s own field experience and observation, the main discussion is focused on the timberline regions in the northern hemisphere where I have carried out extensive field research. Nevertheless, tropical timberlines and temperate timberlines in the southern hemisphere are also considered based on information from literature and on communication with colleagues.

This book is a conclusive synthesis of my own and my collaborators studies, and the evaluation of a wealth of literature. The intellectual conception of this volume has not principally changed compared to its first English edition. However, since the first English edition of this book was published much new material has accumulated. I have incorporated relevant new results of timberline research and other useful information into this edition. The text has been partly reorganized. Moreover, I added a few photos and graphs. Several graphs have been modified. Different from the first edition, examples of the influence of animals on timberline are given now in separate chapters. The ample reference list has grown again to now

about 1.500 titles. However, in view of the worldwide existence of mountain timberline and of the many possible scientific approaches to timberline (botany, ecology, climatology, soil science, forestry, historical science, etc.) this list cannot be expected to be complete, and surely the reader will miss inclusion of one or another familiar publication. On the other hand, the references include many papers and books that were written in German. Anglophone researchers seldom or never refer to these papers. But these publications are reflecting a long tradition in timberline research by German speaking scientists and provide much useful information that I have tried to make available to those researchers not acquainted with the extensive 19th and 20th century publications written in German. I have also included older publications to show that many ideas on causes of altitudinal and northern timberlines are not as new as one might believe in view of the reference lists given in many recent papers citing only the most recent publications on the particular topic just being considered.

As in the previous edition, instructive illustration has been kept up. It is part of the conception of this book. Most of the photos were taken in my special research areas. In addition, friends and colleagues provided a few pictures from timberline regions that I did not visit by myself. All my photos were taken exclusively for documentation of timberline, which means that they do not show landscapes where also timberline was portrayed more or less accidentally. Still as ever there is no other comparable timberline-specific photo collection. The illustration is to give a detailed picture of the great physiognomic variety of timberline, which also mirrors its heterogeneity and ecological variety. This should be underlined as in a time of increasing modelling the visual element has been generally neglected. I hope this book will contribute to better understand the interplay of the many factors causing mountain timberlines and their great variety and dynamics.

Havixbeck, December 2008

Friedrich-Karl Holtmeier

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