

BOOK REVIEWS

YU. I. CHERNOV: *The living tundra*. Transl. D. LÖVE. Cambridge University Press, Cambridge 1985. xiii + 213 p., 60 figs. Cloth. £ 27.50. ISBN 0-521-25393-4.

This English translation of Chernov's book allows us to roam over the endless Russian Eurosiberian landscape north of tree growth and to get an idea about interactions of plants, animals and environmental factors. This book by the famous Russian zoological ecologist Chernov concisely compiles the results of his own work and field experience and that of other Russian ecologists. Thus we can not look in the Russian kitchen, but the meal prepared is tasty.

The book contains 9 chapters. Chapter 2 is on what is meant by the term tundra and includes a nice map with the basic zonal landscapes of the Eurasian Arctic. Chapter 3 is on temperature and humidity emphasising the primary importance of the frost-free period for tundra life. Chapter 4 on diversity of tundra landscapes is very informative dealing with a.o. interesting (sub)arctic microrelief phenomena such as the mound-like "baid-zharakh". Chapter 5 is on snow and its role in tundra life, chapter 6 on adaptation of organisms to tundra environment and chapter 7 on distribution of animals and plants.

Chapter 8 (the most comprehensive with about 65pp) is the most interesting in my opinion, dealing with relationships between organisms, including subchapters on animals and microscopic plants, animals and lichens, animals and mosses, birds, mammals and vascular plants, phytophagous insects, insect pollinators and flowers, birds and invertebrates, birds of prey. The final chapter (9) on man and tundra deals with the impact of man in past and present, with a warning that when utilizing resources in the Arctic which affects its nature, we have to keep in mind that the Arctic has a tremendous impact on climate and weather all over the world.

All references (only 58) are Russian. An index with subjects and species concludes the book, which is well illustrated with clear maps, figures, tables and drawings. The photographs are of moderate quality.

The emphasis in the book is on the environmental biology of animals. Ecologists interested in a quantitative approach of system ecology including production, decomposition, energy-flows, modelling etc. are referred to other books.

The book of Chernov informs us about the present day knowledge of animal and plant life in relation to their environment in one of the most extensive, fascinating, but harsh and, unfortunately, inaccessible regions of the world. As such it is a valuable reference work for all interested in the ecology of the North, albeit it describes a top of an iceberg only.

F. J. A. DANIELS

J. MENNEMA, A. J. QUENÉ-BOTERENBROOD and C. L. PLATE (Eds.): *Atlas van de Nederlandse Flora*. Vol. 2. *Zeldzame en vrij zeldzame planten*. Bohn, Scheltema & Holkema, Utrecht, 1985. 349 pp., maps. Cloth Df. 95.–. ISBN 90-313-0665-7.

Even better than in the first volume (1980) of the "Atlas of the Netherlands flora" the difference between an atlas merely consisting of maps and the present one, in which each map is accompanied by a concise text (with English summary), becomes apparent with the publication of the second volume (dealing with rare and rather rare species). In all cases the maps, based on a double inventory, show differences before and since 1950. Even in the more simple cases of decline or increase a comment on the possible causes of it adds much to the value of the map itself. But in the present volume

it becomes very clear that more often than not differences before and since 1950 are of a more complicated nature than that of a simple change in number of localities. Apart from that, the method of inventory often conceals changes or reveals artificial differences between the inventories before and since 1950.

In the second volume Mennema c.s. succeeded more often to produce critical comments on the maps. The atlas reveals dramatic losses for the flora of this country, hardly compensated by a few cases of increase in number of localities. Yet the overall impression of strong decline in number of habitats for wild plants does not fully correspond to the actual situation which is often even worse. The example of *Carex dioica* may be illustrative. The number of localities since 1950 is only 1/3 of that before 1950; yet more than half of the localities since 1950 are new, and must be the result of inventory work in the last decades. For that reason alone the difference before and since 1950 would indicate a decline of at least 80%. As in fact most of the localities since 1950 have vanished since then, it is clear that *C. dioica* is much more endangered than the map shows.

Just like in the first volume the second one starts with a general chapter from E. J. Weeda, this time consisting of a critical analysis of the changes in the Netherlands flora (with English summary).

R. VAN DER MEIJDEN

O. POLUNIN and M. WALTERS: *A guide to the vegetation of Britain and Europe*. Oxford University Press, Oxford, 1985. IX + 238 pp., 52 figs., maps, 170 plates. Cloth £ 17.50. ISBN 0-19-217713-3.

The book claims to give an overall account of the main natural and semi-natural vegetation types of Europe (excl. Russia). It is intended for the layman who travels through Europe to visit the national parks and the most important nature reserves (listed and very briefly annotated for each country). As is to be expected, the survey of the hundred vegetation types is very superficial, hardly more than numerous lists of flowering plants (and rarely some mosses). It contains 43 maps, mostly indicating the area of important tree species. In 60 plates characteristic plant species of the vegetation types are depicted by line drawings made after herbarium material. Unfortunately the quality of many drawings is below the high standard characteristic of Polunin's field guides. Of a high quality are the 110 colour photographs which show fine pictures of the vegetation types. As a whole the book is not as good as former works of Polunin.

R. VAN DER MEIJDEN

K. A. KERSHAW and J. H. H. LOONEY: *Quantitative and Dynamic Plant Ecology*. 3rd edition. Edward Arnolds, London 1985. 282 pp., ISBN 0-7131-2908-5.

Earlier editions of this book are so well-known and so wide-spread that this review will only discuss the differences between this third and the former edition. The most important additions include two new chapters on multivariate methods of data processing. Chapter 11 deals with "The Limitations of Component Analysis as an Ordination Technique", whereas chapter 12 treats "Reciprocal Averaging, Detrended Correspondance Analysis and TWINSpan".

In these two chapters the problem of non-linearity is illustrated using two real data sets. This is done in a very clear and surveyable way, though underlying assumptions and the mathematical basis of the technique are largely neglected. Chapter 12 demonstrates the use of the techniques and computer programs DECORANA and TWINSpan, without giving much information of the backgrounds of the methods. This chapter is a valuable source of information concerning the correct interpretation of the results of these analyses. Some important critical remarks are made by the authors.

The contribution on "Computer Simulation Techniques", which was included in the second edi-

tion, has been omitted. On the one hand is this regrettable by making the book somewhat less suitable as a handbook for the beginning student, on the other hand it is correct to omit this topic that is rendered out of data so fast by so many and so diverse developments.

The book tries to give a brief review of approaches of problems in the field of vegetation science and species patterns in the field: a selection of investigations, each being illustrated in a compact and systematic way. The only item that has been treated relatively comprehensively is the positive and negative association within and between species populations (the "Kershaw-analysis").

In the preface the authors state that "The extensive work on plant demography and plant population changes has produced disappointingly few concepts and largely has stubbornly remained at a descriptive level". Whether or not one can agree with this point of view, it is a pity that recent studies concerning e.g. the population genetic basis of these changes have not been included.

Being a surveyable introduction in botanical ecology on both levels "population" and "plant community" this book can be expected to serve its purpose as a handbook for the beginning student and as a guide for courses.

L. F. M. FRESCO

E. LACK and H. W. LACK: *Botanik und Gartenbau in Prachtwerken. Katalog der Sonderausstellung Verborgene Schätze der Gartenbaubücherei auf der Bundesgartenschau Berlin, 16-25.8.1985.* Verlag Paul Parey, Berlin und Hamburg, 1985. 129 pp., 44 figs., 9 colour plates. Paper. DM 19.80. ISBN 3-489-63024-6.

This is the catalogue of an exhibition of 100 books and journals on botany and gardening selected from the "Bücherei des Deutschen Gartenbaues" (German Central Library for Horticulture) at Berlin, covering the period from 1549 (Fuchs's *De historia stirpium commentarii*) to 1985. It is far more than "just a catalogue", however. An introductory chapter treats the history of botanical gardens, botanical illustration, and illustrated botanical books from the Renaissance to about 1850, a 2nd one the history of the German horticultural societies from 1822 onward, finally leading to the foundation of the "Bücherei" with its rich holdings. However, especially fascinating are the often pages long bibliographical and biographical treatises on the about 15 historical showpieces and on Curtis's *Botanical Magazine*. And 11 nice modern books on historical gardens give a good reason for nearly 30 pages of interesting reading on the history of garden architecture in China and Japan, Spain under the Moors, and Europe from the Italian Renaissance to the English landscape style. A final short chapter is devoted to bonsai and ikebana.

This catalogue is as beautifully executed as a book on fine books should be, and the price is very reasonable.

P. W. LEENHOUTS

J. F. TH. SCHOUTE: *Vegetation horizons and related phenomena. A palaeoecological micromorphological study in the younger coastal Holocene of the northern Netherlands (Schildmeer area).* *Dissertationes Botanicae* 81. J. Cramer, Vaduz, 1984. XXII + 259 pp., many ill., diagrams, tables. Subscr. price DM 96,-, regular price DM 120,-.

Before reclamation in medieval times the coastal area of the northern Netherlands was subjected to a series of transgressions and regressions of the sea. Peat beds characterize the regression phases before 3000 B.P.. Later, however, vegetation horizons (laklagen) are associated with times of non-deposition during regressive phases.

The book represents a Ph.D. thesis. This study attempts to interpret in time and space the landscape of part of the northern Netherlands between 3000 and 1350 B.P.. During that time span, the deposition of clay is interrupted twice, leading to the formation of two vegetation horizons in most of the profiles. It is clear that the scientific cradle of the author is physical geography. Much attention is given to lithological properties of the vegetation horizons, such as texture, structure, gley features, occupational remains and stratigraphical position in the Netherlands and a number of surrounding countries. The stratigraphical terminology is entirely in the mould of the international stratigraphic guide of Hedberg. Moreover, extensively soil analyses (particle size, carbonate content and C/N ratio) were carried out, as well as micromorphological studies of thin sections. Eight micromorphological zones (mimo zones) were recognized. All these lithological studies aid the reconstruction of the environment. Another approach in the environmental reconstruction is biological: the analyses of pollen, macrofossils (analysed by S. J. P. Bohncke and coll.) and diatoms (analysed by H. de Wolf).

The interpretation of pollen assemblages in the marine environment poses its special problems and it is to be appreciated that Bohncke has written a special appendix to Schoute's thesis, dealing with pollen and macrofossil diagrams of a number of sections. The interpretation is rather straight forward in regarding almost all the non-tree pollen types as derived from the local vegetation. This interpretation is not entirely convincing since there is too often no relation between local pollen zones and lithology. This is also true for the macrofossil zones. The best parallel exists between diatom zones and lithology. This indicates that the origin of the fossils and the mode of transport to the area is insufficiently known. The author is aware of this problem and in a figure the various possible origins of pollen is shown.

Another important aspect of this study is chronology. This is done by radiocarbon dating of materials from the vegetation horizons. Over fifty dates were obtained and the outcome is discussed at length in a large section of the book. Finally, in a schematic representation a synthesis of all the data is given in ten episodes for the time span 3150–1350 years B.P.. This is done by representing successive cross-sections through the area, explaining the depositional features and the location of the various plant communities. It appears that the main plant communities belonged initially to the mesotrophic *Betuletum pubescentis* and later also to the *Thelypterideto-Phragmitetum* beyond the reach of inundations. In lower parts of the area the plant communities belonged to the *Phragmitetum*, *Filipendulion*, *Scirpetum maritimi*, *Juncetum gerardi* and the *Angelicon litoralis*. Ruderal vegetation types occurred along the levees of gullies. The area was thus always treeless. After reclamation of the area all deposition was arrested.

All in all this book represents a fine example of modern palaeo-ecology: contributions from different fields of science serving a common cause.

C. R. JANSSEN