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BOOK REVIEW

Halina BEDNAREK-OCHYRA, Jiří VÁŇA, Ryszard OCHYRA and Ronald I. LEWIS SMITH. 2000. *The Liverwort Flora of Antarctica*. xvi + 236 pp. Polish Academy of Sciences, Institute of Botany, Cracow. Price: US\$ 38.75. [ISBN 83–85444–74–2].

Antarctica, defined as all land and adjoining ice shelves south of latitude 60° S, is characterized by extremely harsh climatic conditions, so that only a limited number of plants can survive there. Antarctica's covering ca. 14 million km², only ca. 0.3% of this area is ice-free in summer and available for colonization by plants. The epigeal vegetation of this continent is composed of cryptogams, but in favoured areas in the Maritime Antarctic zone two native phanerogams occur in addition. Next to mosses and lichenised fungi liverworts form a significant part of the flora, vegetation cover of these areas, but are very rarely dominant, usually occurring in small numbers in moss cushions, turfs and mats.

The first investigations of the liverworts of this inhospitable continent took place over a hundred years ago, when E. Racovitza – a naturalist from the Belgian Antarctic Expedition (1897–1899) and C. Skottsberg – a member of the Swedish South Polar Expedition (1901–1903) gathered small numbers of specimens. These collections were identified and published by F. Stephani in 1901 and 1905. For the next 60 years no new liverworts were recorded from this area. Major developments in the study of the hepatic flora of Antarctica occurred in the International Geophysical Year 1957–1958. Most of the more important collections were gathered by scientists of the British Antarctic Survey (S. W. Greene, R. E. Longton, R. I. Lewis Smith and others), and were to a significant extent determined by R. Grolle. Additionally, a rich collection of liverworts from 18 localities was gathered in 1969 by R. M. Schuster. Many individual records of the hepatic flora of the continent can also be found in numerous ecological accounts.

In the 1979–1980 austral summer, R. Ochya, a member of the 4th Polish Antarctic Expedition, carried out detailed hepaticological investigations on King George Island. The main results of his research were contained in the first detailed floristic, ecological and geographical account of the hepatic flora of King George Island published by R. Ochya and J. Váňa in 1989. It provided a key to the determination of species, relevant taxonomic discussion and species distribution maps. The same year R. Ochya and J. Váňa summarized all literature records of Antarctic liverworts in a checklist.

The Liverwort Flora of Antarctica has been issued a hundred years after the first account of Antarctic liverworts (F. Stephani 1901) and is the first critical treatment of the hepatics of the continent. Most of the basic research for the book has been conducted within the last 40 years, mainly in the Maritime Antarctic zone, by R. I. Lewis Smith and by R. Ochya during his intensive analysis of the hepatic flora of King George Island. The Flora is based on critical revision of all available specimens reported from Antarctica, housed in several of the world's major herbaria. Individual taxa have been compared with type specimens and with material from other parts of the world.

The Flora is dedicated to the well-known German hepaticologist Riclef Grolle (Jena) in recognition of his valuable contribution to the taxonomy of austral liverworts. The frontispiece il-

illustrates the habit of *Anthelia juratzkana*, perhaps because R. Grolle was the first to recognize that the Antarctic populations of *Anthelia* should be assigned to this species. The foreword is written by the well-known Hungarian bryologist Tamás Pócs (Eger).

The book consists of five main chapters, enriched by illustrations. The first four discuss the physiographical problems of Antarctica, present the history of hepaticological investigation and discuss the ecology and phytogeography of Antarctic liverworts. Most extensive is the fifth chapter which deals with the systematics of the liverworts. The authors, after critical, careful revision of almost all specimens reported from Antarctica, have concluded that the liverwort flora of the continent currently comprises 27 species representing 19 genera and 12 families. Four species, determined from plants gathered by scientists of the British Antarctic Survey, are given as new for the continent. The authors examined all type collections of species described from Antarctica, and in many cases where the identity of a taxon was in doubt, they studied the types of subantarctic and southern South American taxa. The sequence of families follows the phylogenetic system outlined by Schuster (1979, 1984) and Grolle (1983). The genera are arranged alphabetically within the families and species are alphabetically ordered within the genera. Original keys for the determination of genera and species have a logical arrangement of features, are clear and user-friendly. The nomenclature completely reflects the present state of knowledge. Descriptions of families and genera are rather short, emphasizing characters critical for recognition. A full description of each species is given which stresses characters important for identification, followed by taxonomic and nomenclatural notes, distinguishing features of the plants, reproduction in Antarctica, habitat preferences, world range, distribution in Antarctica (on the basis of the investigated specimens), a list of the specimens examined and records from the literature. Generally, two distribution maps are presented for each species – the first shows the detailed distribution in Antarctica (dot map) and the second illustrates its global range. Species' names are typified and heterotypic and homotypic synonyms provided for species reported or described from material collected within Antarctica. All taxa are illustrated by very beautiful line drawings, accurately showing the various morphological and anatomical details of the plants described. These illustrations by H. Bednarek-Ochyra are of a very high standard, making the book even more accessible to the user. The Flora also contains taxonomic and nomenclatural novelties: 8 new synonyms, a new lectotype of *Cephaloziella antarctica* Douin (= *Cephaloziella varians* (Gottsche) Steph.) and one new subgeneric name, *Hygrobiellopsis* R.M. Schust. ex Bedn.-Ochyra et al. from the genus *Hygrolembidium* R.M. Schust. The book ends with a glossary, a comprehensive list of the literature cited (in all 351 items), an index of scientific names and biographical notes about the authors. In addition to its great intrinsic value, the Flora commands attention for its clarity and style, both of a very high order.

It is noteworthy that *The Liverwort Flora of Antarctica* is the first critical descriptive Flora dealing with a group of plants of an entire continent, whose main co-authors are Polish bryologists.

The Flora is such an extraordinary source of information, providing an excellent synthesis of knowledge of the liverwort flora of Antarctica, that it is quite superfluous to recommend it to any hepaticologist. It should encourage research and be a great help in the determination of liverwort collections. Undoubtedly it will serve to increase interest in the hepatic flora of this inhospitable but fascinating continent.

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