



Book Review

Lichens of Antarctica and South Georgia. A guide to their identification and ecology. D.O. ØVSTEDAL and R.I. LEWIS SMITH. 2001. xii + 411 pp., 50 drawings, 104 colour photographs. Hard cover, size, 15.5 × 23.4 cm. Cambridge University Press, Cambridge. Price: 75 GBP. ISBN 0 521 6641 9.

Lichens are organisms which dominate in the impoverished vegetation cover of the polar regions owing to their exceptional capacity to adapt to low temperatures and desiccation. These unusual features are especially “useful” in the Southern Hemisphere where the pole is situated on the Antarctic continent and consequently lichens may occur at very high latitudes. The southernmost locality of *Acarospora gwynnii* was detected in the Transantarctic Mts at lat. 82°20’S, i.e. at a distance not much over 300 km from the south pole. Despite their frequency and important role in terrestrial plant communities, the lichens of the southern polar regions are still poorly and fragmentarily known, both taxonomically and phytogeographically. This statement is true not only for the Antarctic itself, but also for small sub-Antarctic islands scattered in the vast Southern Ocean.

During the course of nearly 180 years of lichenological exploration of Antarctica, which had started in 1823 when J. Torrey described *Usnea fasciata* from the then newly discovered South Shetland Islands, several hundred species have been recorded or described from this biome. Unfortunately, except for a few genera, Antarctic lichens have not received a modern monographic treatment. Admittedly, in 1973 the American lichenologist C.W. Dodge published *Lichen flora of the Antarctic continent and adjacent islands* but this work was heavily criticized because the author presented a very narrow species concept, and indeed the majority of his new species have recently been “sunk” as a result of critical taxonomic studies. Therefore all naturalists involved in investigations in the southern polar region should welcome with great interest and joy the present book which is a modern, critical guide to determination of the lichens of the Antarctic and sub-Antarctic South Georgia.

As is the case with most guides to identification, the book consists of two parts, a short introduction and an extensive systematic part. The former is very concise and quite magnificently introduces the reader to the Antarctic environment. In contrast to traditional books of this sort it does not offer any morphological or anatomical characterization of lichens because the authors rightly argue that such information is easily available in numerous lichenological treatises and handbooks and the basic terminology is explained in the glossary at the end of the book. On the other hand, they do describe in detail the study area which is generally poorly known to people not directly involved in research in this biome and for whom the relevant literature is quite scattered and not easily accessible. Most importantly, the authors define the boundaries of the Antarctic, which have been the subject of many controversies, and illustrate them on maps of the Antarctic and all offshore archipelagoes.

The history of lichenological exploration of Antarctica is presented succinctly but very interestingly and, additionally, the development of the present taxonomic survey is outlined. In a separate chapter the authors present the natural environment of the Antarctic and ecology of Antarctic lichens, with particular reference to their role in the principal plant communities. Collectors of curious details should be satisfied when reading the lists of species which reach maximum latitudes, grow above 2000 m and provide examples of gigantism in Antarctic lichens (the largest specimen of *Usnea antarctica* is 67 cm long).

Owing to the poor state of knowledge of local and global ranges for most species, the authors have forsaken formal recognition of geographical elements and present only in tabular form the distribution of species in major regions of the Antarctic. They broadly characterize lichen distribution patterns, dividing them into categories which include cosmopolitan, bipolar, endemic, magellanic and austral species. In this chapter the problem of conservation of Antarctic lichens is also briefly considered.

The systematic part begins with separate keys for the identification of genera with crustose, minutely fruticose and foliose thalli as well as for sterile leprose, granulose and sorediate taxa on rock, and sterile crustose taxa on moss and soil. Due to considerable controversy regarding the classification system of lichens, the authors have arranged genera and species within them alphabetically. Descriptions of taxa are short but comprise all basic diagnostic characters. Bibliographic data are abandoned and only the year of publication is cited; for some species names "antarctic" synonyms are provided. In addition, ecological data, local and global distribution and chemical reaction are given for each species. Selected specimens examined are cited in abbreviated form, including the name of collector and collecting number, and for some species various notes and references to detailed literature are given. Iconography is actually restricted to photographs of thalli, including over one hundred colour plates, whereas line drawings are very few.

In total, 427 species are considered in the manual, 47 of which are not named to species but are designated by consecutive letters of the alphabet. It is a correct decision because in many cases the material studied was incomplete or fragmentary and in this way the authors draw attention to the existence of such taxa, which may lead to the discovery of additional specimens. In the Antarctic itself, i.e. in the land south of lat. 60°S including the more northerly South Sandwich Islands and Bouvetfya, some 380 species have been detected, whereas on South Georgia 194 species are known to occur, 47 of which have not been discovered in Antarctica. There are quite a number of many taxonomic novelties in the book including descriptions of 12 new species and four new nomenclatural combinations. In addition, the names of some species described by Dodge are reduced to synonymy but, unfortunately, not marked by the traditional "syn. nov."

As usual in such cases, practice will prove the value of the present guide, but its publication is certainly a historical event. It is a recapitulation of the hitherto existing knowledge of the lichens on this icy continent, but at the same time is an excellent starting point for future investigations, both taxonomic and floristic, of these organisms. The book is very attractively produced and the text is prepared very meticulously and is relatively free of misprints. Some minor criticism appertains to the presentation of the data regarding global geographical distribution of some species. In most cases the distribution in austral polar regions is designated as "Antarctic", without differentiation into "Antarctic" s. str. and "Subantarctic", zones which are precisely defined in the introduction. Some species which exhibit exactly the same distribution pattern are variously designated as "Subantarctic" on one reference (e.g., *Tephromela eatonii*) and as "Antarctic" elsewhere (e.g., *Degelia subantarctica*). Therefore more accurate (and true) would seem to be the designation "an Antarctic-Subantarctic species", adopted in the case of *Carbonea assentiensis*.

The book fills a serious gap in the Antarctic botanical literature and is a continuation of the recent run of good fortune this continent has enjoyed with regard to taxonomic treatments. After the publication of *The moss flora of King George Island, Antarctica*¹ and *The liverwort flora of Antarctica*² it is the third major taxonomic work on the Antarctic to appear in the last three years. Furthermore, a corresponding treatment of the mosses should soon go to press. Thus, a continent which was the very last to be discovered and for many decades the least explored, has quite unexpectedly had devoted to it the first modern descriptive floras of the principal groups of terrestrial organisms. No credence should be given to the argument that the terrestrial flora of the Antarctic is impoverished, because this is offset by the unimaginable difficulties encountered in exploring the region as well as the taxonomic problems created by organisms living in extreme environmental conditions, where they are usually markedly modified in comparison with individuals of the same species living in “normal” conditions at lower latitudes.

The present book is now the standard for lichen study in Antarctica and is a typical “must” in the library of every researcher working on this continent, because it is the basic tool for determination of organisms which dominate in the terrestrial vegetation. The authors should be congratulated on this excellent and valuable treatment and for Ron Lewis Smith it is a magnificent crowning achievement and recapitulation of over thirty years of very active and successful exploratory work on the seventh continent.

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¹ See review by Jan Żarnowiec, *Polish Polar Research* 21: 55–56 (2000).

² See review by Jan Żarnowiec, *Polish Polar Research* 22: 269–270 (2001).