

Review

Lichenological Diversity

Reviewed by

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The 100th volume of *Bibliotheca Lichenologica* (“Diversity of Lichenology — Anniversary Volume”) provides important contributions to the field and gives us further insights into the biology of lichens while connecting us to our historical roots. While the volumes of this series have taken many different forms, this edition appears as a standard journal volume, with 18 scientific and historical articles from a total of 37 authors representing a diverse array of lichenologists. It should be noted that the emphasis is on lichens of Eurasia and/or the Southern Hemisphere; however, many of the articles will appeal to a general, worldwide audience.

In terms of taxonomy, this volume will be of particular interest to those following the changes in the family Teloschistaceae. Kondratyuk et al. describe 35 new species in the family. Many of these are known only from the type locality, or a small handful of specimens, making further evaluation of some of the taxa difficult, although the authors are to be commended for providing excellent color photographs of the thalli. The work by Fedorenko et al. focusing on the phylogeny of ‘xanthoroid’ lichens represents a significant contribution in terms of both

the data generated and the provisional generic concepts articulated. However, both of the aforementioned works seem to highlight the fact that the largest task still remains: an integrated systematic revision of the family Teloschistaceae that includes crustose, foliose, and fruticose forms. In different ways, these works both improve our understanding of this family for which the taxonomy continues to evolve.

This volume also includes important insights into the taxonomy of the oft-neglected lichenicolous fungi. Hafellner presents an excellent ‘traditional’ treatment of the lichenicolous genera *Phacothecium* and *Phacographa*. The work is notably thorough, articulating precisely what is known about the genera, while highlighting areas where additional data and analyses are needed. The author also provides a useful key to opegraphoid lichenicolous fungi with widely exposed hymenia, along with a summary table of the phenotypic characters separating the five opegraphoid arthonialean genera with lichenicolous members discussed in the text (i.e., *Opegrapha*, *Lecanographa*, *Phacothecium*, *Phacographa*, and *Plectocarpon*).

Among the works that will appeal to a broader audience is Kärnefelt's contribution entitled "Fifty influential lichenologists." This portion of the volume provides a veritable "Who's Who" of lichenology. The careers of some of the world's major players in our field, both modern and historical, are briefly summarized, starting with "the father of lichenology," Erik Acharius. Another work with broad appeal is by Lücking et al., entitled "How many tropical lichens are there... really?" This piece discusses the various factors involved in calculating a 'ballpark' estimate of the overall diversity of lichens in the neotropics, the tropics in general, and the globe as a whole (the estimate for the latter comes in at 28,000 species!). Although any estimate is subjective in nature, various points that have not been explicitly integrated into previous estimates are considered (e.g., taxonomic 'orphans,' species pairs, photosymbiodemes, chemotypes, and cryptic species). Another portion of the volume that will appeal to amateurs and professionals alike is the section by Randlane et al., which provides what is undoubtedly the best synthetic work on the species of *Usnea* for the continent of Europe. Range maps and photographs of small-scale features make this section both informative and interesting.

Reading this volume also makes it apparent that the changing landscape of lichenological research

has led to certain problems that require special attention. Many of the problematic issues plaguing our field seem to be associated with the process of adjusting to the molecular age. A number of the studies published herein leave the reader wanting to know more, especially in terms of molecular data and how they were analyzed (or how they could be analyzed differently). Beyond the simple deposition of sequences in a public repository, alignments must be reviewed and made available if alignment-based phylogenetic analyses are to be reproducible. Authors will find that making their assembled molecular datasets freely available to readers (on their own personal websites if necessary) increases the impact and relevance of their work by permitting others to easily build on their studies. Ultimately, this practice will allow our field to advance more quickly and will ultimately raise the bar in terms of research quality.

In summary, this volume of *Bibliotheca Lichenologica*, as its title suggest, provides an excellent picture of the diversity of lichenology and represents quite well the overall state of the field as we enter this next decade. Many of the works contained in this anniversary edition provide important contributions, and any lichenologist's collection would be enriched by the addition of this volume.