

REVIEWS

B. GOFFINET, V. HOLLOWELL & R. MAGILL (eds.): **Molecular systematics of bryophytes**. Monographs in Systematic Botany 98, Missouri Botanical Garden Press, St. Louis, Missouri, 2004. xvi, 448 pp. + 4 phylogenetic trees on front and back covers. ISBN 1-930723-38-5 (pbk). Price: USD 64,95 (excl. handling and shipping); available from Missouri Botanical Garden Press, Orders Dept., P.O. Box 299, St. Louis, MO 63166-0299; e-mail: admin@mbgpress.org, web site: www.mbgpress.org.

'Molecular systematics of bryophytes' contains the papers resulting from the first 'International Symposium on the Molecular Systematics of Bryophytes: Progress, Problems and Perspectives' – a milestone in the history of bryophyte systematics that took place at the Missouri Botanical Garden in St. Louis in September 2003. The book reflects the understanding of bryophyte evolution and systematics by late 2003 and shows the importance of using molecular techniques in bryophyte systematics. It consists of a compilation of 21 papers written by either young promising or eminent molecular bryologists. The papers discuss various aspects of the evolution, phylogeny and phylogeography of mosses, liverworts, and hornworts through the use of molecular techniques, which since the 1990s have become widely in use in systematic studies on bryophytes. Molecular based research has resulted in a tremendous increase in knowledge and often in new insights into bryophyte systematics on nearly every taxonomic level.

The book is divided in five parts reflecting different fields of interest. The first part treats the evolution of land plants and bryophytes with a chapter on the utility of structural characters of the plastome for unravelling the deep phylogeny of land plants (Kelch et al.) and one on the molecular evolution of the chloroplast *trnL-trnF* region in land plants based on sequence and secondary structure analyses (Quandt et al.). The second part consists of a single chapter, in which Duff et al. present the first hornwort phylogeny that is based on molecular data with broadly sampling across the hornworts. Their phylogeny is based on *rbcL*-sequence data and leads to a new understanding of evolution of hornworts and the evolution of their morphological diversity (e.g., in chloroplasts and stomata). The third and fourth parts are the most significant ones of the book; both consists of 7 chapters written by various authors covering more than 150 pages. The parts are dedicated to the phylogenies of, respectively, the liverworts and the mosses based on molecular data. Liverwort phylogeny is discussed on various hierarchical levels varying from the phylogeny of the Marchantiophyta as a whole (He-Nygrén et al.), via subgroups like the 'simple thalloid liverworts' (Forrest & Crandall-Stotler) and the 'leafy liverworts' (Davis), to the phylogeny of the families Lophoziaceae (Yatsentyuk et al.) and Lejeuneaceae (Wilson et al.). Moss phylogeny is discussed in a similar way. In the first chapter of the fourth part, Goffinet & Buck discuss the molecular systematics of the Bryophyta as a whole and incorporate new phylogenetic hypotheses in an amended classification of the mosses based on their earlier one dating from the turn of the century (Buck & Goffinet, 2000). Subjects of the following chapters in this part vary from the diversification of peat mosses (Shaw et al.) to the taxonomy and evolution of the genus *Hygroamblystegium* (Vanderpoorten). The last part of the book treats a few aspects of bryophyte phylogeography with the subjects of the contributions varying from the origin and genetic diversity of Antarctic mosses (Skotnicki et al.) to the reconstruction of historical events based on sequence

comparison of chloroplast and mitochondrial DNA in an allopolyploid *Porella* species (Jankowiak & Szweykowska-Kulinska).

'Molecular systematics of bryophytes' does not only document a turning point in the research of bryophyte systematics, it is also an extremely useful book, which should be present in every library for bryology. The book gives much information on diverse aspects of the phylogeny and molecular systematics of bryophytes and provides the reader easy access to the existing knowledge of that date about these subjects.

Because molecular systematics is a fast developing field of science, it is very promising, that 'Molecular systematics of bryophytes' and its preceding symposium got follow-ups. Ten high quality contributions of the second 'International Symposium on the Molecular Systematics of Bryophytes – Bryophylogeny 2004', which took place in the University of Göttingen in September 2004, have recently been published in *Taxon* 54 (2) in May 2005. In July 2005, the International Association of Bryologists organised, amongst other bryophyte symposia, the symposium 'Bryophyte Phylogeny based on Molecular Evidence' at the International Botanical Congress in Vienna. Hopefully, it will become tradition to organise symposia on the molecular systematics of bryophytes at regular intervals and to gather the contributions of these symposia in an easy accessible joint publication.

HANS KRUIJER

Reference:

Buck, W.R. & B. Goffinet. 2000. Morphology and classification of mosses. In: A.J. Shaw & B. Goffinet (eds.). 2000. *Bryophyte Biology*: 71–123. Cambridge University Press, Cambridge.

M. POULIN (ed.): **Proceedings of the Seventeenth International Diatom Symposium, Ottawa, Canada, 25th to 31st August 2002**. International Society for Diatom Research and Biopress Limited, Bristol, United Kingdom, 2004. 492 pp., illus. ISBN 0-948737-70-0. Price: GBP 90.

In this nicely edited book one finds 28 scientific papers and five workshop reports. The scientific papers were, during the symposium, grouped under the designations freshwater ecology, marine ecology, palaeolimnology, palaeoceanography, floristics, systematics, life cycles, and collections. In the Proceedings, however, the papers are placed according to the alphabetical sequence of the family names of the first authors, without any indication in which thematic group the paper belongs. Usually the title of the paper is indicative, and thus the first paper (Relationship between water quality and diversity indices of freshwater epilithic diatom assemblages) must have been in the freshwater ecology group, but where would the paper 'A new submersible diatom epilithon sampler' be classified?

In some cases the running title of a contribution is somewhat confusing, like 'Diatom biogeography in the Indo-Pacific' for a paper with as the full title 'Examining the distributional patterns of the diatom flora of the Malili Lakes, Sulawesi, Indonesia'. To the main conclusion of that interesting paper, viz. "in contrast to MacArthur & Wilson's (1967) theory of island biogeography, geographic proximity is not likely to be determinant on the distribution of diatom taxa in the Malili Lakes system" is added "or in the Indo-Pacific region". The present reviewer questions the generality of this addition, however. This paper would be of even more interest if for each listed species

was indicated where (in the 4 lakes studied and in the historical lists of Hustedt, 1942) these specimens had been found.

In other papers, addition of the word ‘freshwater’ would help marine researchers looking for data on their field of research (viz.: Observations of diatoms from Hawai’i; Cape Cod diatoms, both only on freshwater algae).

A potentially important addition are the reports of the workshops. These differ considerably in length and contents, from less than half a page with an important website address to 12 pages with abstracts of the presentations in that workshop, a very short discussion paragraph and a much needed list of references. In the workshop report on ‘taxonomy – types, nomenclature, new combinations’ there is the recommendation that identifications of diatoms should be linked to published illustrations in cited references or to included micrographs of the species in question. And **nothing** is said here about the need of voucher material, which could be solved by marked (ringed) microslides. In another workshop report it is proposed that “safeguarding diatom collections should be included in the Constitution of the International Society for Diatom Research as one of its aims”. However, that was not one of the 8 points that were agreed upon. Anyway, in one discussion paragraph it was concluded that “More and more it is evident that the weakest link is the environmental data, not the diatom data”. We must congratulate the organizers with such a nice book – and such a tantalizing conclusion.

WILLEM F. PRUD’HOMME VAN REINE

DAVID R. ROUBIK, SHOKO SAKAI & ABANG A. HAMID KARIM (eds.): **Ecological studies 174. Pollination ecology and the rain forest, Sarawak studies**. Springer, Inc., USA, 307 pp., illus. 2005. ISBN 0-387-21309-0. Price: EUR 109.95

This book is a compilation of more than 10 years of research on the ecology of the lowland dipterocarp forest of Lambir Hills National Park, Malaysia. Lowland equatorial wet forest are generally referred to as being uniform in structure and general ecology. However, there are a number of striking differences between neotropical and palaeotropical forests. One of the differences is the phenomenon of general or mass flowering. During this event, the majority of the flora flowers at the same time in a supra annual cycle, with intervals between 2–10 years. The exact trigger of this synchronisation is not completely clear but it has been suggested that it is related to El Niño events. This demands special adaptations of both floristic components and their pollinators. The relationships between the different pollinator groups and the flora are treated in detail. Amongst these are honey -, stingless -, and traplining bees, trips, fig wasps, beetles, and vertebrates. Special attention is paid to the ecology and pollination of Dipterocarpaceae. This is the dominant canopy tree family, virtually lacking from the neotropical flora, and the main reason for logging in SE Asia. One of the final chapters deals with the structural and floristic comparison of two neotropical and two palaeotropical sites, of which Lambir Hills National Park is one.

Many chapters contain valuable data on dipterocarp forest ecology and phenology never published before. Additionally, the book contains an appendix on reproductive traits, floral characteristics, and pollinators of 270 plant species of Lambir Hills National Park, belonging to 73 families. The book is comprehensible written and is recommendable to anyone working in (palaeo)tropical ecology, or pollination biology.

NIELS RAES