

Book Reviews

Fifteenth International Seaweed Symposium; Developments in Hydrobiology 116

S.C. Lindstrom and D.J. Chapman.
Kluwer Academic Publishers, Dordrecht, 1996,
576 pp. Hardback, Dfl. 530.0. ISBN 0-7923-3977-0.

This book constitutes the proceedings of the Fifteenth International Seaweed Symposium, held in Valdivia, Chile, in January 1995. About 420 delegates from 39 countries participated in the symposium. The 76 refereed papers, all of them reprinted from *Hydrobiologia* (vols 326/327, 1996) cover a kaleidoscopic array of subjects. Useful additions are the list of participants, the subject index, the chemical components index, the taxonomic index, and the author index. Since its initiation in the late 1940s, the series of seaweed symposia has been strongly orientated towards applied research (with, however, a strong admixture of 'pure' research), and this aspect is still prominent in the 16th ISS: 39 of the 76 papers are application-orientated.

The 76 papers have been arranged in 11 groups. Group 1 contains the five Plenary Lectures, of which two applied lectures are most informative. B. Santelices' paper ('Seaweed research and utilization in Chile: moving into a new phase') reports on the recent commercial cultivation (beside gathering), and the recent introduction of industrial processing of seaweeds in Chile. H.J. Bixler, in his paper 'Recent developments in manufacturing and marketing carrageenan', presents a useful account of this area.

In group 2 (Special topic: 'Integrated aquaculture') five papers report on various efforts to use waste products of marine fish farms for the simultaneous cultivation of seaweeds. In general, experimental and theoretical set-ups do work but, as so often, commercial scaling-up is the big problem. This section is very much worth reading.

Group 3 is also devoted to a special topic: 'Diseases in seaweed'. This is a novel, so far utterly neglected topic in seaweed research. The six papers in this section clearly demonstrate that marine algal phytopathology is still very much in its incipient stage, and far behind the present achievements in phytopathology (which should be more a source of inspiration for seaweed phytopathological research). Most interesting in this section is the paper by Klebl *et al.* ('Molecular and biochemical studies of virus infections in two filamentous brown algae'): the virus could be detected in symptom-free algae by the detection of virus-specific sequences.

Section 4, on 'Floristics and systematics', seems to be a little out of place in the context of this volume, although it contains some interesting papers, e.g. two

by Frederick *et al.* on molecular phylogeny of red algae, and Bolton's paper on the possible role of 'El Nino' in reducing species richness on the coasts of Chile and SW Africa.

In group 5, 'Population studies', 16 papers report on population biology of larger seaweeds from various parts of the world. Seven of these have an applied aspect because they relate to commercially important species. Two papers have, in my opinion, a more than average interest, because they present novel approaches: Brenchley *et al.*'s paper 'A comparison of reproductive allocation and reproductive effort between semelparous and iteroparous fucoids', and Santos & Duarte's paper 'Fecundity, spore recruitment and size in *Gelidium sesquipedale*'. Group 6 ('Community studies') contains one paper on microbenthic growth in a mesocosm, and is out of place (is a diatom a seaweed?). Group 7 ('Pollution') contains six papers of local interest on the relationships between pollution and algae, varying from the use of one species to monitor complex adverse circumstances to the description of the recovery of species richness after having put an end to pollution. Group 8 ('Cultivation') assembles six papers reporting on the successful experimental cultivation, in tanks or ponds, of commercial seaweeds from various parts of the world.

One would have expected that section 9—'Economics'—would have contained more than the two papers presented, in view of the stress on applied aspects. These two papers are, however, interesting and informative (R. Norambuena: 'Recent trends in seaweed production in Chile'; J.A. Zertuch-Gonzalez: 'Feasibility for establishing a carrageenan industry in Mexico'). Group 10, 'Physiology, biochemistry, and cell biology', unites 12 papers on very diverse topics; space does not allow mention of them all in this review. Finally, group 11, 'Chemistry and chemical composition', assembles seven reports on details of algal polysaccharides and one on sterols (in *Delesseria*). These papers are in general informative, and fit well into the long-standing tradition of the International Seaweed Symposia to present progress in the elucidation of algal polysaccharides.

Purchase of this well-produced, but extremely expensive volume can perhaps be recommended to some specialized institution libraries, which do not have *Hydrobiologia*. I cannot recommend it to individuals, as it does not give an overview of recent developments in applied seaweed research (this apart from the prohibitive price). Most researchers will be interested in only a small portion of the articles contained in it, and they can better consult these in *Hydrobiologia* through the library systems.

CHRIS VAN DEN HOEK

Juncaceae

Henrik Balslev.

Organization for Flora Neotropica/The New York Botanical Garden, New York, 1968, issued 24 June 1996, 167 pp. US \$29.50 (hardback). ISBN 0-89327-403-8.

This monograph is by the well-known Danish taxonomist Henrik Balslev. He is very active in taxonomic research in the Neotropics, particularly in Ecuador. In taxonomy he is not only involved in research of Juncaceae, but also in Palmae.

Balslev's monograph of Juncaceae is the first serious study of the family since Buchenau's (1906) treatment of the family for Engler's *Pflanzenreich*. Balslev's monograph has been based on a study of living material in the field (over 250 Balslev collections are cited in the list of exsiccatae) and on study of material from 64 different herbaria.

Juncaceae is a distinct family not to be confused with any other neotropical plant family. It is easily recognizable by its grass-like habit and by its glumaceous, trimerous flowers. In current classifications (a.o. Dahlgren *et al.* 1985) it has been placed in the order of Juncales close to Thurniaceae, a small neotropical family represented by one genus (*Thurnia*) with three species.

Balslev's monograph includes a well-prepared chapter on morphology and anatomy, with detailed studies of a.o. habit, stems, leaves, flower and fruits and seeds. The author investigated the seed structure of all species with SEM (pp. 18–29); in this chapter he described and illustrated almost half of all species. From this study it is clear that seed structure is of great importance for specific delimitation. Other subjects treated in the monograph are karyology, palynology, chemotaxonomy, floral biology, ecology, distribution and uses.

Juncaceae in the Neotropics are represented by six genera, namely *Distichia*, *Juncus*, *Luzula*, *Oxychloe*, *Patosia* and *Rostkovia*, totalling 55 species. The genera *Oxychloe*, *Patosia* and *Rostkovia* are represented by one species in the Neotropics, *Distichia* includes three species, *Luzula* eight species, whereas the genus *Juncus* is by far the largest species with a total of 41 species.

Neotropical Juncaceae are almost all restricted to higher elevations from 1000–4500 m, except for the northern and southern limit of the distribution area where a few species are found at low elevations. In the lowlands of the Amazon Region and in the Guianas, however, the family is completely absent.

The genera *Juncus* and *Luzula* are mainly north temperate. Within these two genera the following three phytogeographic elements occur: (1) north temperate (c. 1/3 of the species); (2) south temperate (c. 1/3 of the species); and (3) neotropical (c. 1/3 of the species).

The systematic treatment includes an indented key to the genera. The genera *Distichia*, *Oxychloe*, *Patosia* and *Rostkovia* differ from the genera *Juncus* and *Luzula* by having solitary flowers and by mucronate anthers. Three of the genera of the first group (*Distichia*, *Oxychloe* and *Patosia*) are cushion-forming. In *Distichia muscoides* these cushions may reach several metres across; in Peru these cushions are cut out and kept near houses, where they are used as fuel for cooking and heating by highland Indians. The above-mentioned three genera, and also *Rostkovia*, all occur at very high elevations (between 3500 and 4500 m) and they form conspicuous elements of the páramo and puna vegetation, where they are sometimes dominant in wet places. *Luzula* is generally found at lower elevations, whereas *Juncus* often occurs in habitats under human influence; some of the species of *Juncus*, such as *J. bufonius* and *J. tenuis*, are weedy.

In systematic treatment the six genera are treated, keys are indented. For each species the synonymy has been fully assessed, except for some of the cosmopolitan species of *Juncus*, many based on types from Europe or the United States.

All 55 species treated are well described, and for most species excellent drawings, often including details of flowers and fruit, are given. Each description is followed by 'Distribution' with remarks on distribution and ecology. For each species a distribution map (using the excellent *Flora Neotropica* base map) has been made. All herbarium material studied by the author is indicated under 'Specimens examined' or 'Representative specimens'. The last case indicates that a large amount of specimens are seen, and that only the most important ones are cited.

The author ends his revision with a large literature list (including more than 250 titles). The numerical list of taxa includes all 55 species treated. It can be seen that from all 55 species of neotropical Juncaceae no less than nine have been recently described by the author himself. A complete list of exsiccatae is given (very useful to the various herbarium curators), and indices to vernacular and scientific names are also given.

This monograph is excellent, scientifically of high standard and user-friendly, with its good keys and illustrations.

P.J.M. MAAS

Chemisch-ecologische flora van Nederland en België

H. van Genderen, L.M. Schoonhoven and A. Fuchs. Stichting Uitgeverij van de Koninklijke Nederlandse Natuurhistorische Vereniging, Utrecht, 1996, 299 pp. f69.50, voor KNNV-leden f59.50. ISBN 90-5011-087-8.

This very interesting book deals with the topic of the so-called secondary compounds in higher plants.

In this perspective chemical structure, toxicity and possible use in pharmaceutical practice are discussed. Even more interesting is the fact that data are presented within an ecological context: the significance of the specific compound in interactions between plants and other organisms, as protection against grazing by animals, protection against pathogens, recognition of the flowers by insects, which function in pollination, etc.

Understandably, not all plant species of the flora of Belgium and The Netherlands are discussed. The authors have selected a series of well-documented reports on the chemical ecology of secondary compounds available for the flora of the two countries, together with references for further literature studies. With this book they have added a new dimension for

an understanding of the functioning and ecology of many of our wild species.

On one hand it is a pity that such an original book is written in Dutch, since it would be of interest to many botanists not acquainted with the Dutch language. On the other hand, laymen botanists may have easier access to the information presented in this book.

In my opinion, the value of this book could be further increased if a few available and reliable data on macrofungi could be included. The toxic and hallucinogenic compounds found in several mushrooms as well as aspects of heavy metal complexes with organic compounds by fungi could present an interesting topic, when presented within an ecological context.

P.J.C. KUIPER