

## BOOK REVIEWS

A. W. KÜCHLER: *Vegetation Mapping*. VI + 472 pp., 21 fig, 30 tab., \$ 15.00. The Ronald Press Company, New York.

This is an important book, since it is one of the very few to deal entirely with the mapping of vegetation. The author is a geographer and now Professor of Geography in the University of Kansas. He has a broad experience in the field of mapping and he has thoroughly studied the various approaches in vegetation description and mapping, among which several important European ones.

Thus the reader may expect a broad and balanced survey of concepts, aims and methods in vegetation mapping, and in my opinion he will not be disappointed.

There are 35 chapters, grouped into six parts: I. historical sketch, II. some basic considerations, III. technical aspects, IV. mapping methods, V. application of vegetation maps and VI. conclusion. At the end of the book we find an extensive bibliography, covering 27 pages, an appendix with the formation system of Drude, some description schemes, examples of legends, and an index.

In part II the general features of vegetation and its classification are discussed as well as the relation between aims and methods. Fortunately the author favours the view that standardisation of methods should be aimed at only in very small scale mapping, and that divergence of methods within one and the same mapping project should be welcomed.

In part III attention is paid to scales and grids, the interpretation of aerial photographs, the use of colours and symbols, the organisation of the map's content and the construction of legends.

In part IV various important mapping methods, together with their underlying description and classification techniques are treated, among which the large scale mapping method of the CNRS centre at Montpellier of Emberger, the small scale method of Gaussen, the Braun-Blanquet method in a strict sense by Tüxen, the vegetation-soil survey method used in California by Wieslander and Küchler's own 'comprehensive method'. No Russian methods are treated here, although the Russian vegetation mappers, like Sochava, are mentioned with great enthusiasm. – There is a slight exaggeration in the admiration of Sochava and also of Gaussen, which can be easily understood, but which does not do justice to the many outstanding mappers and mapping centres elsewhere in Europe and in the USA as well.

Part V deals with subjects such as utility, application to other disciplines, especially climatology, pedology, geology, agriculture and forestry. For a European reader the chapter on land management and planning is definitely too short.

This variety of subjects is treated in an effective way, the style is clear and the statements are put very simply, perhaps even too simply. In addition one might remark that there is a superfluity of basic statements, which are only of use for very unexperienced students.

The different chapters are logically set up and connected with each other. Literature is integrated rather well throughout the text, although the choice of sources is not satisfactory, since some schools and approaches have got too much attention at the expense of others. Especially the Dutch reader will be disappointed to find hardly anything of relevance quoted from the many methods, results and applications in this country. Quotations were not always quite correct – a small test showed that about 10% of literature references was partly or wholly incorrect, which is certainly not extremely high, but still a handicap in the optimal use of the book.

The book is very well printed; no errors could be found. There are surprisingly few figures in the book. Hardly any subject could have profited more from a wealth of illustrations! An index of figures and tables is badly needed, since the reader is often referred to illustrations in other parts of the book.

Altogether we may wish that this book will find its place. Some suggestions for future extension of its contents may be added to this wish: a comprehensive treatment of the ordination method and its significance for vegetation mapping, a discussion of the environmental boundary

types of Van Leeuwen, esp. ecocline versus ecotone, treatment of very large scale methods and pattern analysis, use and interpretation of infrared and false colour methods of photography, the research and education at the International Institute for Aerial Survey and Earth Sciences, which is entirely devoted to mapping and planning, and last not least, reproduction of vegetation maps or parts of them representing the various approaches in vegetation mapping.

E. VAN DER MAAREL

C. D. K. COOK: *A monographic study of Ranunculus subgenus Batrachium (DC.) A. Gray.* – Mitt. Bot. München 6 (1966) 47–237.

*Ranunculus* subgen. *Batrachium* is known as a difficult group of aquatics. Under the influence of environmental factors the taxa within this subgenus show an extraordinary plasticity in morphological characters, and they are, therefore, extremely difficult to define. In spite of several earlier monographs of restricted geographical areas and revisions of the subgenus the identification of water crowfeet remained until recently a precarious undertaking giving the botanist a feeling of dissatisfaction, as it was very difficult to match the plants against the existing descriptions.

The work of Cook has basically changed this. After ten years of intensive work he has succeeded in producing a world monograph, in which the 17 species are convincingly delimited. This fine result has been obtained because in addition to the traditional study of herbarium material (which appeared to be insufficient for the evaluation of the great morphological variations) 14 species were cultivated under various controlled conditions; this also enabled the execution of hybridization experiments.

The actual taxonomic treatment is preceded by some general remarks on the ecology of the water crowfeet and by a critical discussion and evaluation of taxonomic characters to be used in this group. The key to the species is well-elaborated. The descriptions of the species contain a record of the synonymy, reference to some icones, notes on the typification, a diagnostic description, and a rather extensive treatment of the distribution, the ecology and the variation. The descriptions of the species which in the past presented most of the difficulties (*Ranunculus peltatus*, *R. aquatilis*, *R. trichophyllus* ssp. *trichophyllus*, and ssp. *lutulentus*, *R. fluitans* and the 3 varieties of *R. penicillatus*) have been supplemented by illustrations of the habit. Distribution maps have been prepared for all species, the single subspecies, and the varieties of *Ranunculus penicillatus*. The taxonomic treatment is followed by a survey on the chromosome numbers and chromosome morphology and a description of hybridization experiments. In the last chapter the possible evolution of *Ranunculus* subgen. *Batrachium* is discussed in the light of fossil records, geographical distribution, ecology (morphogenetic adaptations, autoregulatory mechanism) and genetics (hybridization followed by selection, competition).

The work as a whole makes the impression of being very thorough; therefore, it is a pity that traces of carelessness can be noticed here and there. Although an index of the names is given this regrettably does not contain every name used in the text (e.g. *B. intermedium* Nyman on p. 96, *B. heterophyllum* Lange on p. 114 and *B. heterophyllum* S. F. Gray on p. 115). The synonymy has not been treated exhaustively. It was not very difficult to trace several names not recorded in the monograph. For example, after finding the combination *Ranunculus peltatus* ssp. *pseudofluitans* (Syme) Cook, which is not recorded in the monograph, in Clapham, Tutin & Warburg, Fl. Brit. Isl. ed. 2 (1962) 81, I consulted Index Kewensis and found to my surprise under the genus *Batrachium* 26 specific names that were not mentioned in the monograph. Some of these names have no taxonomical status as they have only been published as synonyms, but the other names should not have been omitted. The list of omitted combinations and names<sup>1</sup> is as follows:

<sup>1</sup> I did not check the names published under *Ranunculus*. All names which I checked with the original literature available to me have been marked with an asterisk:

Names which I have found validly published are marked with =. Invalidly published names, either nomina nuda or names merely mentioned in synonymy, as well as a single one which is no *Batrachium*, have been marked with a †.

- \*† *Batrachium argutum* Opiz, Seznam. (1852) 21, nomen.  
*Batrachium biternatum* Bercht. & Presl, Rosl. i Ranunc. (1823) 49.  
*Batrachium circinatoides* (Arv.) Arv. in Soc. Ech. Dauph. 4 (1877) 105.  
*Batrachium divaricatum* (Schränk) Wimm., Fl. Schles. (1841) 10.
- \*= *Batrachium diversifolium* (Gilib.) Nyman, Consp. Fl. Eur. (1878) 15.
- \*† *Batrachium elegans* Chabert in Bull. Soc. Bot. Fr. 36 (1889) 15, nomen in synon. sub *Ranunculus aquatilis* var *elegans* Chabert.
- \*† *Batrachium elongatum* F. Schultz, Billotia 1 (1869) 113, nomen in synon. sub *Ranunculus elongatus* F. Schultz.  
*Batrachium flaccidum* (Persoon) Rupr., Fl. Cauc. (1869) 15.
- \*† *Batrachium friesii* (Beurl.) Nyman, Consp. Fl. Eur. (1878) 16, nomen in synon. sub *B. heterophyllum* S. F. Gray.
- \*= *Batrachium hirtissimum* Krause in Prael, Krit. Fl. Prov. Schlesw.-Holst. 2 (1890) 4.
- \*= *Batrachium hololeucum* Garcke, Fl. Deutschl. ed. 4 (1858) 7.
- † *Batrachium homoeophyllum* Magnier, Scrin. Fl. Select. (1896) 367, nomen.
- \*= *Batrachium kabulense* Tamura in Kitamura, Fl. Afghan. (Results Kyoto Univ. Sc. Exped. Karak. & Hinduk., 1955, II) (1960) 121, f. 49.
- \*= *Batrachium leispermum* (Hartm. f.) Hartm. f.,<sup>1</sup> Skand. Fl. ed. 11 (1879) 165.
- \*= *Batrachium luteolum* Revel, Bull. Soc. Bot. Fr. 12 (1865) Bibliogr. 258.  
*Batrachium lutulentum* (Perr. & Song. in Billot) Nyman, Syll. Suppl. (1865) 29.
- \*= *Batrachium luzii* (A. Félix) Janchen in Cat. Fl. Austr. 1, Pteridoph. & Anthophyt. Heft 2 (1957) 197.
- \*† *Batrachium omoiophyllum* Nyman, Consp. Fl. Eur. (1878) 16, nomen in synon. sub *B. hederaceum* ssp. *coenosum* (Guss.) Nyman.
- \*= *Batrachium pantothrix* (Brotero) S. F. Gray, Nat. Arr. 2 (1821) 722.
- \*† *Batrachium pectinatum* (Dubois) Nyman, Consp. Fl. Eur. (1878) 15, nomen in synon. sub *B. trichophyllum* ssp. *pantothrix* (Brotero) S. F. Gray.
- \*† *Batrachium pseudofluitans* (Syme) Nymàn, Consp. Fl. Eur. (1878) 16, nomen in synon. sub *B. peltatum* ssp. *floribundum* (Bab.) Dumort.
- \*† *Batrachium sajanense* (Regel & Radde) Krecz. in Komarov, Fl. U.R.S.S. 7 (1937) 340, nomen, without any reference to the publication by Regel and Radde.
- \*= *Batrachium salsuginosum* Dumort., Bull. Soc. Roy. Bot. Belg. 2 (1863) 217.
- \*† *Batrachium sceleratum* (L.) Th. Fries ex A. Pihl in Bot. Notis. Lund (1893) 58 = *Ranunculus sceleratus* L., incorrectly transferred to *Batrachium*.
- \*= *Batrachium subrigidum* (Drew) Ritchie, Canad. J. Bot. 34 (1956) 300.
- \*= *Batrachium usnoides* Greene, Leaflets Bot. Obs. 2 (1910) 106, erroneously cited by Cook as *Ranunculus usnoides* Greene.

In one case the author has overlooked the first publication of a combination; Dumortier made the combination *Batrachium aquatile* (L.) Dumort. in Fl. Belg. (1827) 127 and not in Bull. Soc. Roy. Bot. Belg. 2 (1863) 215.

On p. 62 Cook remarks that the distribution maps, "except where stated, are based on herbarium specimens that I have seen. Unfortunately, in many areas of the world this method reflects the distribution of collectors rather than that of the plant species". His maps contain gaps, however, which cannot be ascribed to lack of herbarium material. If he had verified the records in Heukels & Van Ooststroom, Flora van Nederland ed. 15 (1962) 235-238 and Lawalrée, Flore générale de Belgique 2, 1 (1955) 87-103, he could have added interesting new information to the maps of *Ranunculus omoiophyllus*, *R. tripartitus*, *R. ololeucos*, *R. baudotii*, and *R. fluitans*.

In spite of the few imperfections mentioned above Cook's work has to be regarded as the standard work on water crowfeet and as an example of a good, well-balanced monograph. We have to congratulate him on the fine results of his prolonged investigations.

C. DEN HARTOG

<sup>1</sup> Dr. K. Thomasson, Uppsala, kindly checked this reference for me.