

Book review

SYSTEMA PORIFERA: GUIDE TO THE CLASSIFICATION OF SPONGES

Edited by J. N. A. Hooper and R. W. M. Van Soest

2002. Kluwer Academic/Plenum Publishers, Dordrecht, The Netherlands. Two volumes. 1810 pp. Hardback US\$688; ISBN 0-306-47260-0.

Why write a book on sponge taxonomy? This is one of the opening questions that the editors of *Systema Porifera: Guide to the Classification of Sponges*, John Hooper and Rob Van Soest, pose in their introduction to this magnificent two-volume, 1700+-page guide. It is arguable that some groups of animals are easier to identify than others, and sponges are definitely 'others'. To complicate matters, as anyone who has casually tried to identify a sponge specimen would know, calling sponge taxonomy arcane is no overstatement. Hence, such a comprehensive attempt to draw together the extensive sponge literature and to provide identification tools can only be welcomed. Another reason that such a guide is timely is that sponges have in recent decades become primary targets for marine natural products and pharmaceutical research. Hence, there has been a rapid increase in the knowledge of sponge biodiversity and the time was indeed ripe for a sound synthesis of current knowledge. *Systema Porifera* contains the efforts of 45 contributors from 17 countries, co-ordinated by Hooper of the Queensland Museum and Van Soest of the Zoological Museum, University of Amsterdam. The editors also made substantial contributions to the volumes as authors or co-authors of numerous chapters. This impressive set of contributors represents all of the major living practitioners of poriferan taxonomy, perhaps a factor in asking a non-sponge worker to review this work.

The aims of the volumes are to provide comprehensive supraspecific revisions across Porifera, address nomenclatural issues and to provide guides in terms of keys and illustrations of important morphological features. *Systema Porifera* does this by providing a guide to poriferan higher taxa, namely the ranks of genus, family, order and class. It provides keys to identify sponges at each of these ranks. Volume 1 opens with a brief introductory chapter on Porifera, with the remainder of the volume covering the most 'speciose' major taxon in Porifera, Demospongiae. Volume 2 covers Calcarea, Hexactinellida and the exclusively fossil 'spongiomorph' group Archaeocyatha. In total, 24 orders, 127 families and 682 genera of extant sponges regarded as valid (from a nominal 1600 genera) are covered in the volumes, with synonymies comprehensively listed. In

contrast to treatment of the three extant classes, treatment of the vast sponge fossil fauna is understandably much less complete, although six classes, 30 orders, 245 families and nearly 1000 fossil genera are mentioned. Fossil sponges, we are told, will be treated in an upcoming revision of the *Treatise on Invertebrate Palaeontology* (Paleontological Institute, University of Kansas and The Geological Society of America).

Extensive bibliographies have mainly been compiled by P. Willenz and are grouped at the beginning of each major section (e.g. Porifera general, Demospongiae, Calcarea, Hexactinellida) making finding the appropriate literature an easy task. In general, each section on a given taxon name follows the format of a list of synonyms (if any) and then Definition, Diagnosis, Remarks and Scope, with the first being a brief diagnosis rather than a true definition. The Diagnosis section provides a more extensive description of the taxon and any variability, which is then further expanded on in the Remarks section. The Scope section sets out the delineation of the taxon and often covers the taxonomic history of the group. With the exception of those on genera level, a key is then provided at the end of each chapter. In the genus level sections, additional components include a re-description of the type species, with material examined and synonymies also listed. This means that of the 7000 accepted species of sponges only 682 are discussed in detail in the text. To alleviate this problem, a guide to the most recent literature on other species (if present) in each genus is given. The illustrations are on the whole excellent and range from 19th century drawings from original species descriptions to light and scanning electron micrographs published for the first time.

Of interest to biologists in general will be the introductory chapter to Porifera as a whole. However, it is quite short and this does seem to represent a lost opportunity to provide a state-of-the-art summary of various aspects of sponge biology, ecology and systematics, which would have been of considerable use to a wide audience. Some of the other chapters on the major taxonomic groups, such as Calcarea and Demospongiae, are detailed and interesting, though the 'higher' ranked taxonomic groups, such as class and order, are clearly treated with suspicion and it is interesting to see that not one phylogenetic tree is present in *Systema Porifera*. Where there is major dispute, such as in the subclasses of Demospongiae, the orders are simply treated in alphabetical order. This all seems to indicate that poriferan systematics will undergo drastic revision with time, something these volumes will no doubt facilitate. The editors are well aware of this and this makes the focus on lower taxonomic ranks such as family and genus understandable. As a more general reader, however, I did wish for a longer introductory section and syntheses that would have provided a state-of-art synopsis of all things poriferan.

The volumes as a whole are somewhat daunting to a non-specialist; the terminology is by necessity complicated, but there is no general glossary anywhere to even help ease the novice into the study of sponges. One 'dictionary' is provided for Hexactinellida and one does wonder why other glossaries were not made. The illustrations are certainly copious and of consistently high quality, but one can see those unfamiliar with the terminology flicking backwards and forwards from keys to illustrations. This leads to a more general comment about the utility of keys in books. By their very nature one has to proceed through a series of steps (usually dichotomous) where it is very easy to go astray and become lost. Developments in electronic identification guides are such that a few features on the organism of interest can be entered into the identification guide and this

quickly eliminates other possibilities. With such tools, accurate identifications can often be made with only a few decisions. An electronic companion to these volumes would be an ideal next step. At a price of nearly US\$700, the cost, unfortunately, is prohibitive for those casually interested in sponges and so the volumes will, presumably, only be purchased by libraries and specialists. The identification of organisms is a fundamental requirement in biology. Providing the tools for such identifications usually falls to taxonomists and here sponge taxonomists have done their profession proud.

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