

BOOK REVIEWS

Editor: K. T. KISS

HENDERSON, M. V. and REIMER, C. W. (2003): Bibliography on the fine structure of diatom frustules (Bacillariophyceae). II. (and deletions, addenda and corrigenda for bibliography I.) – In: WITKOWSKI, A. (ed.): *Diatom Monographs*. Vol. 3, ARG Gantner Verlag KG, Ruggell, 372 pp.

The first volume of this book was published in 1993 and was a really useful textbook (database) for diatomologist. That time I was thinking about how important would be for us to continue the book and publish it regularly. Fortunately 10 years later the second volume is in our hand including all data published between 1989–1999.

Nowadays the fine structure of diatom frustule (the structure of valves investigating with transmission and scanning electron microscope) is the main bases for diatom taxonomy. Many-many papers are published showing the TEM/SEM structure of frustules and even specialist are not able to follow all literature data, all journals, local or international, where any EM micrographs appears. Therefore a thorough collection of these papers, enumeration of all taxa studied by EM is practically indispensable for specialists.

A literature search for all new available papers on diatom-frustule morphology, which includes TEM and/or SEM micrographs, is presented in the book. Firstly, there is an alphabetical list of diatom taxa with the authors who have published at least one EM photo of that particular diatom with citation of publication in chronological order. This part of the book is followed by bibliography. Then 3 pages of deletion, addenda and corrigenda to the 1993 list (this is the list of the former volume – Gaul, U. *et al.* (1993): Bibliography on the fine structure of diatom frustules (Bacillariophyceae). – *Proc. Acad. Nat. Sci. Philadelphia* **144**: 69–238).

In spite of the fact that the book is a “simple” list of taxa and literature it is very useful for all diatomologists and algologists. I can recommend it for “field researchers”, too, because there are a huge amount of information important for exact determination of diatom taxa.

K. KISS

KRAMMER, K. (2003): *Cymbopleura*, *Delicata*, *Navicymbula*, *Gomphocymbellopsis*, *Afrocymbella*. – In: LANGE-BERTALOT, H. (ed.): *Diatoms of Europe*. Vol. 4: *Diatoms of the European inland waters and comparable habitats elsewhere*. ARG Gantner Verlag KG, Ruggell, 530 pp.

This is the fourth volume in a series concerning the revision of the genus *Cymbella*, by Kurt Krammer, containing descriptions of the new genera *Delicata*, *Gomphocymbellopsis* and *Afrocymbella*, the newly named genus *Navicymbula* (originally *Navicella*, described by the same author), detailed description of the genus *Cymbopleura*, with lots of new combinations and new descriptions about the species and subspecies level. There are furthermore some additional remarks and descriptions concerning taxa/genera written about in one of the three previous *Cymbella* volumes.

The book has the usual very high quality. 164 photo plates represent many LM and EM micrographs about the different "*Cymbella*" taxa. However, since vast amounts of identification marks are electron microscopic ones, it would have been useful to put a little bit more EM micrographs on the plates. Beside the plates, it would have been worth mentioning in brief the most important distinguishing microstructures of the diatom frustules. Unfortunately the author did not seem to have the same idea. After description of the genera or species groups there are minimalised LM photographs, furthermore comparative tables about the characteristics and numerical data of all species/subspecies. It is very helpful in the identification process. It was clever to put the Latin descriptions at the end of the textual part of the book, this way they are not a disturbing factor of the reading. Some drawings make the understanding of the terminology easier. Differential diagnoses are given for each taxa, even for the subspecies, which is extremely helpful. All in all, this volume is an extraordinarily well structured work, thus it is very easy to use.

Since the diatom taxonomy is in the process of revolt and renewing, and all the former genera are split and changed, the genus *Cymbella* can not be an exception, either. Still very little is known about the "real" diatom evolution, so in terms of taxonomy, we only try to grope about in the dark. Nevertheless, after reading through the fourth volume of the *Cymbella* redescrptions, one might doubt the practical usefulness of all of these theories. It is undeniable that the author did a huge work with these four bands, but somehow he seems to have lost a little bit his affinity towards practice. Finally, the aim of every taxonomic work should be the "turning into practice of the theories". I doubt that a practical diatomologist who might work with several hundreds or thousands of frustules every day, from which often only some percent are cymbelloid taxa, is able to bring up the time and afford to identify them on the basis of the new classical taxonomy. However, this would be a minor problem, since it is always acceptable and inevitable that there is a certain gap between practice and theory. It is may be less acceptable that there is a gap in the field of life sciences between scientific theories and natural facts. Can it be a good idea, not to pay any attention to the fact that diatoms are living organisms and instead, treat them as tiny sculptures? Still, up to this time, diatomologists can not afford to, and they should not, neglect taxonomic books based on the classical taxonomic approach. Finally, this is the leader idea in taxonomy and in ecology nowadays and we can not know with the present state of science whether it will later result to be the correct strategy.

In spite of our critical remarks, comments the book is very useful for all diatomologists and algologists. I can recommend it for "field researchers", too, because there are a huge amount of excellent micrographs, detailed morphological characterisation of taxa for exact determination of diatoms.

K. SZABÓ

LANGE-BERTALOT, H., CAVACINI, P., TAGLIAVENTI, N. and ALFINITO, S. (2003): Diatoms of Sardinia. Rare and 76 new species in rock pools and other ephemeral waters. – In: LANGE-BERTALOT, H. (ed.): *Iconographia Diatomologica*. Vol. 12: Annotated diatom micrographs. ARG Gantner Verlag KG, Ruggell, 438 pp.

It might be surprising but it is still true: except for a few of sparse studies, the diatom flora of the Mediterranean island Sardinia has not been investigated until recently. After you get to know this fact, it might be less surprising that exactly 81 new taxa (76 new species, 2 new genera, 1 new subgenus, 1 new subspecies and 1 new variety) are described in this 438 pages strong, exhaustive work. All of them have detailed illustrations, SEM and LM

photographs, on exactly 137 plates of high quality. In spite of the huge number of newly described taxa, it is still a questionable point whether they are to be treated as endemic for Sardinia or the Mediterranean region. Readers are overwhelmed with a vast number of *Pinnularia*, *Stauroneis*, *Hantzschia* and *Craticula* species (and their photographs).

From the conspicuously high number of *Craticula* and *Hantzschia* species, a diatomologist can conclude that severe changes occur in the osmotic conditions of the sampled biotopes on a regular basis. In fact from diatomological point of view, the most peculiar area on Sardinia is "Giara di Gesturi", a basaltic tableland with so-called Paulis, water-pools, which are highly rain-dependent, thus are partly temporary waters, partly waters with enormous water-level changes. Furthermore, many other ephemeral waters (as it is indicated by the subtitle, as well) were investigated.

The strange frustules on the cover are not teratological forms, as it might seem at first look but the – so far – only species of one of the two newly established genera here: *Lacunicula sardiniensis*. The other new genus is called *Navigiolum*.

Following the traditions of the *Iconographia Diatomologica* volumes, the taxonomic concept of this volume is a rather traditional one, though a modern expression: "morphodeme" is used. There would be space for more detailed information about the physico-chemical circumstances of the studied areas and about the possible ecological needs of the species.

The great number of species distinguished from each other by minor details of the frustule will not make easier the work of a potential "practical" diatomologist in the future. However, since the research of genetics and physiology of diatoms is so much behind the geobotanical exploration and classical taxonomy, we still can not be sure about the most appropriate strategy in establishing new taxa. Therefore, from a strict scientific point of view, the traditional approach of the *Iconographia Diatomologica* series could possibly turn out later as most adequate in this field.

We might not agree on every particularity with the taxonomic approach of this volume, but it is undeniable that a thorough work like this is priceless tool for a researcher in his first acquaintance with a new area's diatom flora. Furthermore, this may be the last minute for the exploration of biotopes exposed only to slight human impacts. We can warmly recommend the book for all diatomologists.

K. SZABÓ

METZELTIN, D. and LANGE-BERTALOT, H. (2002): Diatoms from the "Island Continent" Madagascar. – In: LANGE-BERTALOT, H. (ed.): *Iconographia Diatomologica*. Vol. 11: Annotated diatom micrographs. ARG Gantner Verlag KG, Ruggell, 286 pp.

If as a researcher you have ever tried to investigate diatom samples from exotic or extreme environments, you would understand the value of having a good guidebook during the first stages of your work. This is particularly true with regard to the diatoms of such an isolated and unique island as Madagascar. From a zoogeographical and phytogeographical point of view, this island is a very unique place. Although in the case of diatoms, we do not usually speak in terms of geographical distributions, we do so in the case of vascular plants. In biotops such as Madagascar we can almost certainly count on the appearance of endemic species. Diatoms in these areas might also be interesting for their physiological and genetic characteristics/aspects, however, if we are to do research in these fields, we should first determine the species that concern us.

The book can serve to provide algologists with high quality supplementary reading related to research topics many of, which are distinct from classical diatom taxonomy and geobotany. In 286 pages, including 95 plates of 821 photos, the authors give us a very wide insight into the world of the diatoms of Madagascar. 47 new species are described; four of which are not indigenous to the island. The descriptions of species in English and Latin are very detailed and precise. The value and usefulness of the volume is further enhanced by the fact that it is written in English rather than in German. We find lots of *Pinnularia* and *Sellaphora* species, all illustrated with plenty of micrographs. Nearly all of the new species will seem peculiar to the eyes of a researcher used to the species of the Süßwasserflora volumes. Of valuable help to the researcher is a practical quick-finder for the 56 taxa that are described or newly combined in the book.

While finding little to criticise in the book, a couple of points can be raised: there are two new proposed genera with the names *Sellaphoropsis* and *Pseudoluticola*, their species belong either to *Navicula* sensu stricto or to any other genera split off from the former *Navicula* sensu lato genus. However, their fine structure is not known well enough to establish a proper new genus. The authors describe the two species of the two "ghost genera" as if they were *Naviculadicta* species, without explaining why they have chosen *Naviculadicta* rather than any other genus. In the reviewer's opinion, such descriptions might raise confusion in the field of the already very complicate diatom taxonomy; thus it could be misleading for less experienced phycologists. Finally we are clear about the main profile of the Iconographia Diatomologica volumes, a profile which is rather conservative. However, we believe that the authors could seek new directions of phycological research.

Also mentioned is a new, soon to be published book about Madagascar's diatoms. We recommend this volume to every phycologist with the warmest regards, and look forward to the appearance of this new volume with great excitement.

K. SZABÓ

VAN DE VIJVER, B., FRENOT, Y. and BEYENS, L. (2002): Freshwater diatoms from Ile de la Possession (Crozet Archipelago, Subantarctica). – Bibliotheca Diatomologica. Band 46. Gebrüder Borntraeger Verlagbuchhandlung, Berlin, Stuttgart, 412 pp.

The island Ile de la Possession is part of the Crozet Archipelago, situated in the Subantarctic Region. The environmental conditions of the island are very special in many ways. The climate is oceanic, calm and wet and geographically the island is rather isolated. Until recent times, it was also protected from significant human impacts, as well. This volume of Bibliotheca Diatomologica introduces the diatom flora of the island from a floristical, geobotanical point of view, while giving notes on many years of taxonomic and ecological work on Ile de la Possession. During the investigations, 2,500 samples were taken from soil, moss and freshwaters, the diatom taxa were identified and physico-chemical parameters of the surrounding environment were also determined. 220 diatom taxa have been identified, among them 35 new species (spec. nov.), 20 new combinations (comb. nov.) and 2 new varieties (var. nov.). There are 132 plates with LM and EM photographs of high quality in his band.

It is a well-known fact that species extinction and coupled with it, decrease in genetic diversity are going on the Earth on a huge scale. That is why this kind of surveying, pioneer research of unexplored natural habitats is of particular importance, especially on isolated, special areas, where plenty of endemic, peculiar and rare species possibly occur. So, first of all, we have to gain as much information as possible at undisturbed habitats, before human

influence expands to these areas as well. Since the extinction rate of species of natural environments is so high we can never know whether it is not our last chance to get acquainted with new and interesting species. Second of all, biological conservation, species and habitat protection are essential, progressive branches among the biological sciences. To succeed in these scopes, we have to get to know the species and environments, which should be protected as profoundly as possible. The mapping of unimpacted areas offers the opportunity to reveal large-scale phenomena and changes like global weather change, for example. The edaphic diatom flora is also investigated which is a rather infrequent topic in diatomology though not unimportant since our knowledge on edaphic algae is fairly incomplete.

It is a scientific commonplace that the development in genetic research and connected to it the new methods in phylogenetic and taxonomic research have brought many dogmas of classical taxonomy in question. Moreover, the rush developing of electron microscopic equipment and the expanding usage of these moved many phycologists to work with taxonomic categories based on tiny electron microscopic features exclusively. Thus, these two tendencies have turned the whole diatom taxonomy topsy-turvy to such an extent that nobody can be sure about the verity of any phylogenetic-taxonomic systems. However, there are some tendencies and baselines, which should be kept to the fore want the expert to work according to the latest trends. Well, in the age of molecular biology, one can not just neglect the fact that diatoms do also have genes, and that genotypic and phenotypic features are not always in accordance. Of course, it is for the moment quite far away to create a new and acceptable taxonomy about diatoms. Still, it is hardly plausible to describe new species on the exclusive categories like "relatively small central area" and "more elliptical-lanceolate outline". It is hard enough for every diatomologist to choose a taxonomic system among the lot available. But one should have surely explained why he uses a certain one. The plates are arranged following the traditional, hypothetically phylogenetic order, according to the authors.

It would have been worth to make some classification of the taxa on the basis of ecological preferences in function of the measured physico-chemical parameters.

All in all, this volume could be advised to every algologist, particularly to those working in ecology and taxonomy. Besides, it could be very useful for experts of nature conservation, species and environment protection and of course, it is a good starting-point for someone who wants to deal with the algae of these little-studied island and its surroundings.

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