

Rodríguez Martínez, Jaime. – 2010. *Ecología*. Ediciones Pirámide, Madrid. 502 pp. + 1 CD. Spanish. ISBN: 978-84-368-2430-8

Writing a competent, scientifically sound textbook on general ecology is always a hard enterprise. And to do it in Spain, and in Spanish, is infinitely more challenging. To start with, the existing canonical measures of comparison for Spanish-written ecology books are nothing less than the formidable works by a founder of the ecological theory and one of the best Spanish scientists, the late professor Ramón Margalef. Amongst his books, the useful *Comunidades Naturales* (Margalef 1962, the few existing dog-eared copies jealously preserved), but above all the gigantic (even literally) *Ecología* (Margalef, 1974) and *Limnología* (Margalef, 1984) have been, and still are, the ecology “Bibles” amongst Spanish speaking students and senior scientists and even those of other countries. Furthermore, they are still universally recognized as mandatory, fundamental ecology monographs.

The words “*Ecology*” and “*Biodiversity*” are probably the two scientific terms most exploited, opportunistically used and incorrectly interpreted by journalists, politicians, and (what is even more dangerous) by biologists. Both words, intimately related and almost worn out by use, have been and are at present the victims of a massive proliferation of books, manuals, pamphlets, etc. Many of these publications, however tempting their titles may sound, frequently turn out to be little more than empty nutshells if not something worse. Contrarily, *Ecología*, the book by Jaime Rodríguez written in collaboration with José María Blanco and Valeriano Rodríguez, is one of those sound, valuable textbooks intended to provide university students easy and rigorous access to the principles of ecology. The author is a professor at the University of Málaga, and aside from being a reputed scientist whose research has mainly focused on aquatic systems, has long experience in teaching. Although termed as the “2<sup>nd</sup> edition” of his former *Ecología* (Rodríguez, 1999), this edition deserves, in my opinion, to be treated as a new book. The changes made, probably in part to conform to the *Bologna declaration on the European space for higher education* (the controversial Bologna University plan or Bologna treatise), are not a mere “make over” of the former book; this is a thoroughly re-structured, mostly rewritten and visually updated version. In this edition there are fewer chapters, some topics have been redistributed and new ones have been added. The text is thus enlarged to 502 pages, about 100 more than in the first edition. At

the same time, the book layout has been improved, with the text in two columns and new font-sizes. The figures, graphs and charts are more “à la page” and include grey tones. However, although the size reduction and half tones of figures and graphs appear more aesthetically attractive, on a few occasions I had to make an extra effort to read the text included in the figures when as it is half masked in a grey shadow. The author is especially commended for having introduced, whenever possible, examples referring to proximal, relatively familiar environments and processes, albeit slightly biased towards aquatic systems given the formation of the author.

The book is divided into 11 chapters, each with its corresponding bibliography. There are more than one hundred “boxes” interspersed in the text (a fashionable tendency in many textbooks) that allow the author to emphasize, complete and/or particularize aspects and concepts, or to supply valuable supplementary data similar to extended footnotes. The author’s taste for music is evident in the *coda* added at the end of some chapters. Aside from the first chapter, which addresses the concept and study objectives of ecology and gives insights into the functional structure of ecosystems, the first part of the book, until Chapter 5, is a thorough revision of the mechanisms at the foundations of life itself. The possible metabolic pathways for transferring material and energy, including comments on the origin of life and the *Gaia* hypothesis, are treated in Chapter 2. Chapter 3, in spite of its title (*El soporte físico*, which suggests “The material support”), is devoted to the origin, relative importance and transformation of the different energy sources that wind up the biological clockwork, from “high quality” electromagnetic radiation to mechanical energy and heat. The materials (elements) that circulate across around- the ecosystem impelled by the open energy cycle and their changes inside and outside the organisms are discussed in Chapter 4. The relation between energy and matter, their flow and transfer, as well as the balance between production and respiration are presented in Chapter 5.

The two following chapters are devoted to the population dynamics and spatial distribution of single species (Chapter 6) as well as the interaction between different species (predation, competition, mutualism, etc., Chapter 7). Colonization and extinction, and the interaction between populations are discussed in Chapter 8. The debated problem about the problematic relation between structure and function is treated in Chapter 9, including the models describing species abundance patterns, species richness (an old ecological concept, now re-named with

the neologism *biodiversity*), diversity, food webs and the relationships between the size-structure of organisms and ecosystem function, a topic especially liked by the author. Ecological succession and the controversial *stability-resilience* concepts in ecology are treated in Chapter 10. Finally, Chapter 11 is devoted to conservation ecology, global change and to discussing the almost utopian concept of *sustainable development*, an oxymoron almost, to which reams and reams of paper have been devoted.

The text is complemented with 5 annexes related to ecological models, in which the author gives state-of-the-art coverage to models as scientific tools. The subject index is useful and quite complete (although, *alas*, the first term I looked for, *Quimiostato*, p. 233, was not included). A final index about the models that students can build, with a CD containing instructions to download the Stella® simulation program and to guide students to build the example models step-by-step, substitutes or complements the simulation programs that can be downloaded

in the first edition. Boxes with “guide-questions for study” (selections of themes like a summary of each chapter simulating questions in a test) and a direct and colloquial writing style appear as intended to relieve students of extra mental efforts.

To summarize, the text by Jaime Rodríguez is a sound review and eclectic synthesis of ecology, provides a broad, state-of-the-art coverage of ecological principles, and will be a valuable textbook for undergraduate students of environmental sciences and biology.

#### REFERENCES

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