
Preface

Charles Darwin was the first scientist to bring earthworms to the attention of scientists and the general public, more than a century ago. Darwin noted the importance of earthworms in breaking down dead plant materials, recycling the nutrients they contain, and turning over soil. His book *The Formation of Vegetable Mould through the Action of Worms* (1881) summarized his conclusions on earthworms, which he reached after 40 years of observation and experimental work. In this book, he expressed the opinion that "earthworms have played a most important part in the history of the world." The importance of his personal contributions to our knowledge of the roles and biology of earthworms cannot be stressed enough and led to a great upsurge in research into the morphology, histology, and taxonomy of earthworms in the late 19th and early 20th centuries.

However, it was only in the last 25 years that interest in and research into the ecology and biology of earthworms has peaked. Much of this work was summarized by Edwards and his coauthors in their book *The Biology and Ecology of Earthworms* (first edition 1972, second edition 1977, third edition 1996) and by Lee in his book *Earthworms: Their Ecology and Relationships with Soil and Land Use* (1985). Interest in earthworm ecology and the importance of earthworms to soil formation and fertility has been increasing at an extremely rapid rate and so has research into the subject. This is evidenced by the increases in the number of references cited by the authors of *The Biology and Ecology of Earthworms* in its three editions. In 1972, they cited 565 references; in the second edition (1977), they cited 674; but in the third edition (1996), they cited more than 1500. This probably represented only a third of scientific papers published up to that time.

The first edition of *Earthworm Ecology* (1998) owed its origin to the Fifth International Symposium on Earthworm Ecology, which was held in Columbus, Ohio, in July 1994. At this Symposium, attended by more than 220 scientists from 38 countries, 165 research presentations were made, many of which are published in a special volume of the journal *Soil Biology and Biochemistry*. In the eight sessions that were held at the Columbus Symposium, each opened with an invited review paper of a key topic by a distinguished earthworm scientist and concluded with a final overview of the subject and conclusions by another well-known earthworm scientist. The 16 invited papers were edited to form the eight sections in the first edition of *Earthworm Ecology*, which covered all the major aspects of earthworm ecology, including earthworm diversity, behavior, physiology and general ecology, and the roles of earthworms in nutrient cycling, soil maintenance, plant growth, ecotoxicology, and waste management, with two chapters summarizing research on each topic. Since the first edition of *Earthworm Ecology* was published in 1998, there have been two further Symposia on Earthworm Ecology, in Vigo, Spain, in 1998 and in Cardiff, Wales, in 2002; the number of publications on earthworms has continued to increase rapidly. The first edition was extremely well received by scientists, students, and the general public. In view of the rapidly expanding developments and discoveries in earthworm biology and ecology, it seemed appropriate to update, and revise extensively, the first edition of the book and add new chapters that address the most rapidly developing areas of earthworm research.

This second edition includes extensive revisions of the original chapters as well as additional chapters on the history of earthworm research, mechanisms by which earthworms increase soil fertility and promote plant growth, and the importance of invasions of exotic species of earthworms in North America and other regions of the world; there is a new chapter on vermiculture and vermicomposting in Europe. These changes make this book an even more valuable addition to the

publications that summarize the increasing importance of earthworms in natural ecosystems and crop production. It also addresses key issues in earthworm biology and ecology and is an essential key reference work for soil scientists and agronomists as well as those people with a great interest in earthworms.

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