



## Book Reviews

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## BOOK REVIEW . . .

**Heartwater: A review**, E. Camus and N. Barre. Office International des Epizooties, 12, rue de Prony, 75017 Paris, France. 1988. 147 pp. FF100.

This book is a much needed review of information on heartwater disease that is caused by the rickettsia, *Cowdria ruminantium*. The review is timely because several laboratories throughout the world have joined with the South Africans in researching this organism. The recent discovery of heartwater in the Antilles poses a problem of possible spread to the American continent. The material for this review was compiled in 1982 with cooperation from laboratories in Utrecht, the Netherlands and Onderstepoort, Republic of South Africa, and was translated into English in 1986 by Pamela Oberem, Veterinary Research Institute at Onderstepoort. The review includes both referenced material and personal communications from researchers throughout the world.

The review is divided into five chapters that cover general information, etiology, epidemiology, pathology and diagnosis. Along with current information on heartwater, the review pro-

vides a critical assessment of research needs and priorities and highlights areas of research that are important to understanding the epidemiology of heartwater. Specific gaps in our current knowledge about this disease are clearly identified. Since this review was compiled the South Africans have successfully propagated *C. ruminantium* in cell culture and have shared this technology via an international conference in 1986. The culture of *C. ruminantium* has led to studies on the molecular biology of this organism now underway in several laboratories. Also, much of the developmental cycle of the organism in the tick vector is now known.

The review provides an excellent reference book on heartwater for professors and researchers and is accompanied by a thorough review of the literature up to 1982. The material is organized efficiently for easy access and provides a good, basic review of this disease.

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## BOOK REVIEW . . .

**Ecotoxicology: Problems and Approaches**, Simon A. Levin, Mark A. Harwell, John R. Kelly and Kenneth D. Kimball (eds.). Springer-Verlag, Inc., New York, New York 10010, USA. 1989. 547 pp. \$49.00 U.S.

*Ecotoxicology: Problems and Approaches* is another book in the Springer Advanced Texts in Life Sciences series. Publications in this series are high quality, advanced texts designed to provide the reader with an in-depth exploration of a very specific subject area. *Ecotoxicology: Problems and Approaches* is a product of the Ecosystems Research Center at Cornell University which is largely supported by the U.S. Environmental Protection Agency (USEPA). As defined in the Preface, "Ecotoxicology is the science that seeks to predict the impacts of chemicals upon ecosystems." The editors readily admit that this science is in its infancy and have directed the focus of the book to illustrating concepts and methodologies used in assessing ecosystem effects of chemical insult, from both scientific and managerial (i.e., risk assessment) perspectives. With this in mind, the book is organized into four parts. Part I is a general introduction to ecotoxicology, its problems and approaches. The two chapters in this section touch on definitions of ecosystem stress, response, and recovery, useful ecological endpoints to measure, and what constitutes good indicators of ecosystem "health." Part II, "Responses of Ecosystems to Chemical Stress," begins with two chapters about effects of specific pollutants (heavy metals and petroleum hydrocarbons) on aquatic ecosystems. The next three chapters examine broader issues: the effects of chemicals on composition and community structure of aquatic ecosystems, variability in responses of aquatic ecosystem processes to chemical stress, and mechanisms of distribution within and patterns of change of terrestrial ecosystems in response to chemical stress. The eight chapters in Part III, "Methods and Models," provide specific examples of deterministic and stochastic models of chemical fate and transport in the aquatic environment, including movement of chemicals through the food chain, bioaccumulation potential, and biogeochemical cycling. The last two chapters of this section provide an in-depth discussion and evaluation of the advantages of using terrestrial microcosms and mesocosms to validate model parameters. Also included in this section is an interesting discussion of proper approaches to and uses of bio-

monitoring programs to assess ecosystem health. The book concludes with a section (Part IV) reviewing relevant statutes, methods and uncertainty in ecotoxicological decision making ("risk assessment").

This book is highly recommended reading for any student of ecotoxicology. Although most of the examples focus on aquatic systems, the underlying principles of community and ecosystem functions, measurements and assessments are equally applicable to terrestrial systems; the aquatic emphasis merely reflects the more advanced state-of-the-art in this area over terrestrial systems. The reader of this well-written book will gain a basic understanding of underlying principles and the emerging terminology of this new interdisciplinary science, particularly from the introductory chapters of Part I. For a student of ecosystem modelling, Chapters 8 to 12 in Part III provide a good overview of different modelling approaches (e.g., deterministic versus stochastic) and a variety of ecosystem components that can be measured (e.g., food webs and physical/chemical cycles). The extensive references in these and other chapters enable the more serious student to access the literature in a particular area. The major failing of the book is its obvious bias toward approaches and concerns of the USEPA, particularly in Part IV, the regulatory framework concerning ecosystem protection and management. Here, only legislation enforced by the USEPA is discussed while regulatory approaches and land use management decisions by other agencies such as the U.S. Fish and Wildlife Service, the U.S. Forest Service, or the Bureau of Land Management are ignored. However, within this limitation, the book does provide the reader with insight into how management decisions are reached by the USEPA.

In today's chemical-oriented society, any student of ecology must be cognizant of the potential for environmental toxicants to alter the balances and relationships among the plants, animals and biogeochemical cycles in an ecosystem. *Ecotoxicology: Problems and Approaches* provides a well-balanced overview of this subject that would be useful for specialists in ecotoxicology or in related applied ecology disciplines and as a supplementary text for graduate-level courses in ecology.

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## BOOK REVIEW . . .

**Cryptosporidiosis: A cosmopolitan disease in animals and in man**, 2nd Edition, Technical Series No. 5, R. Chermette and S. Boufassa-Ouzrout (eds.). Office International des Epizooties, Paris, France. 1988. 122 pp. FF50 (ca. \$8.00 U.S.).

*Cryptosporidium* spp. are small, 4–9  $\mu$ m coccidian parasites that infect the gastrointestinal, respiratory and, rarely, pancreatic and biliary epithelium of a wide variety of vertebrates, including humans. In immunocompetent humans, the disease normally manifests itself as a moderate to severe, 5 to 14 day diarrheal illness, with accompanying weight loss, abdominal cramping, low grade fever and headache. In immunosuppressed individuals, however, the parasite may recycle and cause diarrhea and dehydration to occur to such an extent that the disease becomes life threatening.

The second edition of this paperback book has been updated and now includes 527 references that cover 58 of the 122 total pages. This book, which appears to be designed predominately for individuals new to the field of cryptosporidiosis, brings together a large amount of literature into a concise and relatively well organized format.

The book is divided into six short chapters. The first chapter, on geographic and host distribution of the parasite, is curiously short and includes only two sentences. Chapter Two deals with the taxonomic position, life cycle, and structure of the parasite. Extensive tables, which include bibliographic references, are presented in this chapter and summarize geographic distribution, types of host species affected, results of experimental cross-transmission studies and the site of infection of the parasite in various host species. The only real discrepancy that I noted was that the authors still refer to the isolates from reptiles as *C. crotali* rather than *C. serpentis*, the former of which should be considered a synonym of *Sarcocystis* spp.

Chapter Three deals with epidemiology and, as in the preceding chapter, provides a number of useful tables that include information on the prevalence of the parasite in diarrhoeic calves

and in humans worldwide. In addition, sources of infection, modes of transmission, and receptivity and susceptibility are covered. Chapter Four then covers pathology and, after summarizing what can be deciphered from the scant amount of published immunological response data on the parasite, covers the clinical course of disease and case reports from a variety of higher and lower vertebrates.

Chapter Five deals with laboratory diagnosis, including both invasive and non-invasive procedures. Staining techniques, electron microscopy, immunological techniques and xenodiagnosis are all mentioned briefly. Particularly useful is a table that lists 23 separate published diagnostic techniques, including references, and briefly reviews the advantages and disadvantages of each.

Chapter Six, the final chapter, covers methods of control, including the lack of adequate treatment and recommendations for prevention. Tables are provided that review the various compounds and dosages that have been tested in various animals and in humans. Two appendices are then offered, which cover five principal staining techniques and how to perform a sucrose flotation.

For the novice who wishes to gain some insight into the basic biology of *Cryptosporidium* spp., the simplicity of this book will be useful in understanding this complex organism. For those either contemplating or currently working in the field, the book is also useful because the numerous tables and large literature cited section will provide valuable and considerably less expensive information than any computer search. Numerous papers are cited from foreign journals that are often overlooked and I found reference to several European dissertations on the disease from the early 1980's of which I was totally unaware. Therefore, I believe that this paperback book has something to offer for both the experienced and unexperienced worker in the field of coccidiosis.

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