



Book Reviews

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BOOK REVIEW . . .

Snail-transmitted Parasitic Diseases, by Emile A. Malek, CRC Press, 2000 N.W. 24th St., Boca Raton, Florida. 1980. Vol. I, 362 pp. Vol. II, 336 pp. Vol. I, \$79.96 (US); Vol. II, \$77.95 (US).

The author's objective in writing this two-volume set was to present an up-to-date account of the major infections or diseases that are transmitted by snails. He has done this well, and has treated these diseases in much greater detail than is usually done in textbooks of general, medical, or veterinary parasitology. The emphasis is on parasites of human importance, but much useful information is included also on zoonoses where humans are only incidental hosts, and there are brief discussions of a few parasites that occur exclusively, or almost exclusively, in wild mammals and birds. By far, most of the parasites treated here are digenetic trematodes; a few are metastrongyle nematode parasites of vertebrates, which also use molluscan hosts.

The trematodiasis are dealt with in Chapters 1 and 2 of Vol. I, and in Chapters 1 through 15 of Vol. II. Chapter 16 of Vol. II presents information on nematodiasis.

After a brief introduction, Chapter 1 contains a general, but rather detailed, account of the morphology and biology of digenetic trematodes, with light and electron micrographs as well as drawings. Included also is a section on taxonomy of the Digenea with families, subfamilies, and appropriate genera and species. An interesting account of digenetic zoonoses is then followed by a section on molluscan hosts, which includes information on systematics, morphology (gross, microscopic, and ultrastructural), ecology, and physiology, then a section

on control of trematode infections including an account of experience with various molluscides.

Chapter 2, Vol. I, deals with schistosomiasis, and Chapters 1 through 15, Vol. II, treat other trematode infections; some are important infections in man, others primarily or exclusively affect wild or domestic animals. Information is given on life cycles, distribution, molluscan and vertebrate hosts, epizootiology, diseases, treatment, and control.

Chapter 16, the final one, describes the more familiar *Angiostrongylus cantonensis* and then several species in five genera of metastrongyloid nematodes that parasitize cats, dogs, and herbivores.

The chapter on schistosomes extends over 62 pages and reflects the author's long interest and expertise in this group. In addition to accounts of the three principal species that parasitize man, others that are chiefly parasites of domestic and wild mammals are included.

The books are well illustrated, with many drawings and photographs, which are generally good. A few photographs seem to have suffered from reproduction. There are two colored plates containing eight figures.

Tables are very good; some are extensive; e.g., Table 1-2 (Vol. II) lists 17 species of *Paragonimus* with geographical distribution, morphological features, mammalian hosts, and world-wide distribution.

I noticed relatively few typographical errors.

Not a correction, but rather an updating, might be in order regarding the egg of *Schistosoma margrebowiei* and

the African schistosome group to which it belongs. The egg is described (p. 285, Volume I) as similar to that of *S. japonicum*, and this was the way Le Roux (1933) originally described it. However, Southgate and Knowles, since Dr. Malek's account was written, have shown that the egg of *S. margrebowiei* actually has a small terminal spine and thus belongs in the terminal-spined egg group.

Although the major slant of these volumes is toward human parasitoses, certain parts should be of interest to wildlife biologists or anyone else interested in parasites of vertebrate animals. Of particular value in this respect should be the considerable amount of general information (Vol. I) on morphology, life cycles, taxonomy, and ecology of trematodes, as well as data on molluscan hosts. Other sections containing more specific information about primarily non-human parasites should also be of interest. They include the accounts of *Nanophyetus salmincola*, the trematode vector of salmon poisoning of dogs on the Pacific coast, *Fasciola hepatica* and *F. gigantica* (family Fasciolidae), and species in several other families (Paramphistomatidae, Dicrocoelidae, Heterophyidae, Echinostomatidae, and others) containing parasites of wild birds and mammals.

I have found these volumes very interesting and helpful. They are generally well written and well illustrated; they have an attractive and sturdy binding and contain much valuable information for use by teachers of parasitology and students, and, although the emphasis in these volumes is primarily toward human parasitology, wildlife biologists and veterinary parasitologists should find them useful as references for snail-transmitted diseases. These volumes should be in every institutional library and on the shelves of those who are

primarily parasitologists. However, their relatively high cost may hinder their purchase by the less affluent worker.

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BOOK REVIEW . . .

Key to Trematodes Reported in Waterfowl, by Malcolm E. McDonald, U.S. Dept. of the Interior, Fish and Wildlife Service, Washington, D.C. (USA) Resource Publ. 142. 1981. 156 pp., 65 figures.

This work continues the series of articles on helminth parasites of waterfowl started by McDonald in 1969 (U.S. Fish. Wildl. Serv. Spec. Sci. Rep. Wildl. Nos. 125 and 126), and is the second key that he has published. The first one, which was well received, dealt with nematodes of anatids (McDonald, 1974, U.S. Fish. Wildl. Serv. Resour. Publ. 122).

A brief introduction, in which it is noted that no general keys are available for the identification of waterfowl parasites, is followed by a table of known pathogenic and lethal trematodes. A checklist of trematodes, noting prevalence and status of hosts is also given along with a table of host anatomical habitats and trematodes that one might expect to find in each. The bulk of the work is composed of keys and illustrations. The initial key takes one to the family and genus level, with all genera being illustrated. A second set of keys extend to the species level, with these keys being correlated with a series of diagrams showing each species mentioned. The beginning worker will find the diagram showing the basic anatomy of a trematode useful. A guide to iden-

tification of species, consisting of a listing of known genera of waterfowl trematodes, and the numbers of species in each genus taken from waterfowl, as well as known synonyms, is given. The work is completed by a reference list, and an insert containing new species and corrections which were obtained too late for inclusion in the publication.

As a worker in this field I have checked the keys and found them to be very good generally, although some of the features used in the keys are difficult to see unless the trematode is treated in specific ways (eg. the number, size and disposition of ventral papillae (glands) in the Notocotylidae are not always easy to see). Indeed it has been my experience that the parasites are best examined for these features immediately on removal from the host and *before* they are fixed and stained. The neophyte will find this book of great use, but should be cautioned that correct identifications are somewhat harder to arrive at than is perhaps indicated by the simplicity of the keys and clarity of the illustrations, and that the present work covers only those species which *have already been recovered* from waterfowl. New species of digeneans, and new hosts for known species, will undoubtedly be discovered in the future. Finally many of the species given in the book may be synonyms, as pointed out by McDonald himself, this complicating what appears to be a crystal clear picture.

I recommend this book to professional parasitologists, zoologists, graduate students, and those employed in the field of waterfowl management who realize that parasites do have an effect, largely unknown at the present time, on their charges.

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BOOK REVIEW . . .

Diseases of Wild Waterfowl, by Gary A. Wobeser. Plenum Press, New York (USA). 1981. 300 pp. \$39.50 US, \$47.40 outside USA.

"Diseases of Wild Waterfowl" is a practical text that waterfowl biologists, refuge managers, wildlife disease investigators and others with an interest in or need to know about diseases of waterfowl will want to have on their desk. It is a valuable, up-to-date reference to salient and uncommon diseases of wild waterfowl. No attempt is made to provide exhaustive coverage of the various diseases addressed. Instead, the discussion is limited essentially to what is known about these diseases in wild waterfowl. While this approach may be disturbing to some readers, it allows for rapid determination of what is known and what isn't known.

The practical orientation of this text is evident from the introductory chapter that relates disease to waterfowl management by identifying concepts of variability in host response, the impact of changing environmental conditions, the interface between wild and domestic waterfowl and disease impacts on waterfowl populations. This is placed in perspective by concluding with a brief discussion on State of the Art. Additional practical contributions are the concluding chapters on Disease Investigation and Necropsy and Sample Preservation Techniques.

The discussion of disease is divided into six sections: Viral Infections, Bacterial Infections, Fungal Infections, Parasitic Infections, Toxicoses and Miscellaneous Conditions. All known major disease problems of wild waterfowl are well-described and in general, the amount of information provided for any specific disease condition is a reflection

of how much information has been published. In several instances diseases have been included that are not recognized as important problems, but have the potential to become problems in wild waterfowl. The final section involves Investigative Techniques.

The first viral disease described is duck plague (duck virus enteritis). An excellent summary of the etiology, epizootiology, clinical signs, pathology, diagnosis and control of this disease is provided. Literature citations are complemented with personal communications where important information has not yet been published. Influenza A and Newcastle Disease are other viral diseases given substantial treatment. The section on viral diseases is completed with concise informational summaries on duck virus hepatitis, goose virus hepatitis, poxvirus infection, reticuloendotheliosis group of viruses, eastern encephalitis and adenoviruses.

Avian cholera is given "center stage" in the section on bacterial infections. The author supplements the scientific literature with some significant personal observations while providing a good review of this disease. Substantial chapters are also provided on tuberculosis, salmonellosis and *Pasteurella anatis* infection. This section is completed with concise summaries on erysipelas, yersiniosis, *Actinobacillus* spp. infections, necrotizing enteritis, goose gonorrhea, mycoplasmosis and chlamydiosis.

Aspergillosis is the only fungal disease dealt with, although several others are identified. Treatment of parasitic infections is subdivided into Hematozoan Parasites (*Leucocytozoon simondi*, *Haemoproteus* and *Plasmodium*), Coccidia and Other Protozoa (intestinal coccidia, renal coccidia, *Sarcocystis* infection and other protozoa) and Metazoan Parasites (ectoparasites, leech infections, trematodes, cestodes,

nematodes, and acanthocephala). *Leucocytozoon simondi* receives the greatest coverage of these diseases.

The section on Toxicoses is subdivided into chapters on Botulism, Lead and Other Metals (mercury, copper, zinc, cadmium, vanadium), Pesticides and PCBs, Mycotoxins (aflatoxicosis, fusariotoxicosis, and ergotism), Algal Toxins (freshwater blue-green algae and marine dinoflagellates) and Other Toxins (oil, salt poisoning and castor bean poisoning). Botulism and lead poisoning receive the most extensive treatment in this section in keeping with their importance as major disease problems of wild waterfowl.

Miscellaneous disease conditions covered are malnutrition-starvation, nutritional deficiencies, weather effects, traumatic injuries, capture myopathy, esophageal impaction in Canada geese, gout and amyloidosis.

"Diseases of Wild Waterfowl" is not a picture book. Illustrations are infrequently used. Therefore, except for some of the more common diseases most readers will not be aided in the identification of pathological conditions before them. However, readers that wish a rapid assessment of technical knowledge available on disease conditions in wild waterfowl will find this well-referenced, moderately priced, up-to-date text published by Plenum Press to be of considerable value.

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BOOK REVIEW . . .

Alaskan Wildlife Diseases, by Robert A. Dieterich, ed., University of Alaska, Fair-

banks, Alaska, (USA). 1981. 524 pp. Paper bound, \$40.00. US.

This volume provides a synopsis concerning diseases known to occur, or that conceivably might occur, in wild mammals, birds, and fishes within the geographic limits of Alaska. Conceptually, the term *disease* is applied in the broadest sense, to include disorders caused by pathogenic organisms and exogenous physical factors, as well as conditions involving ectoparasites and helminths. Eighteen authors, representing a wide range of experience and specialization, have contributed.

The book is arranged logically, by host-group and etiologic agent. The list of contributors, the acknowledgements, a preface by Robert A. Dieterich, and the table of contents are followed by three major sections (478 pp) concerning vertebrates of the three classes. A fourth part (5 pp) deals with invertebrates that are important economically or as a source of disease or injury in man. The first three parts are subdivided into chapters, each with a list of references, and in Part I, each is preceded by a brief introduction by editors. Parts I-III are followed by series of plates of color-photographs (48 in all) depicting signs, lesions, or other aspects of the conditions discussed. The book is further illustrated by 42 figures (mainly in Parts I and III). Eleven tables are included. Four appendices and a glossary complete the volume.

Part I consists of five chapters devoted to viral, bacterial, parasitic, non-infectious, and miscellaneous diseases of mammals. Seventeen viral diseases are considered (Randall L. Zarnke, chapter-editor), of which eight have been reported in Alaska. The most detailed discussion concerns rabies, which is endemic in foxes in the zone of tundra. Next in length, with four pages each, are sections

concerning contagious ecthyma and canine distemper. Only about a page is devoted to arboviruses, and only the indigenous subtype of California encephalitis virus is specifically mentioned. A list of the several other arboviruses isolated in Alaska by Donald G. Ritter and his associates would have been desirable.

The second chapter (edited by Jamie K. Morton) concerns six diseases caused by bacteria, with brief mention of organisms that may be involved in abscess-formation. Of these, tularemia, brucellosis (in reindeer, caused by *Brucella suis*, type 4), and necrobacillosis occur widely in Alaska. The space allocated to leptospirosis, tuberculosis, and Tyzzer's disease (not recorded from the state) is perhaps excessive. On the other hand, no mention is made of pseudotuberculosis, the causative organism of which was isolated by B.E. Huntley in 1962 from a varying hare collected near Palmer. The organism was initially identified as *Pasteurella* (= *Yersinia*) *pestis*, and was confirmed as such by the National Communicable Disease Center (now the Centers for Disease Control), but was later determined to be *Yersinia pseudotuberculosis*. In addition to shared somatic antigens, the organism contained an antigen similar to Fraction I of *Y. pestis*, and erroneous results were obtained by use of standard tests.

As stated in the introduction by R. Barrett and J. Dau, the intent in chapter 3 was to include parasites of importance to mammalian wildlife and, so far as feasible, to provide basic information concerning taxonomy, cycles, ecology, pathogenicity, and control of the respective organisms. Throughout this section, the generic names of parasites, rather than names of conditions caused by them, are used as headings. Of the five genera of trematodes considered, only three are known from Alaska. Cestodes of ten genera are discussed, with

emphasis placed on species of *Taenia*, *Echinococcus*, and *Diphylobothrium*. Of the nematodes considered (12 genera), *Trichinella* receives emphasis (11 pp). A single genus of acanthocephalans, *Corynosoma*, is discussed. To the five genera of protozoa included (*Trypanosoma*, *Giardia*, *Eimeria*, *Sarcocystis*, and *Besnoitia*) should have been added *Babesia*; *B. microti* occurs commonly in voles, *Microtus oeconomus*, in southern Alaska. The treatment of ectoparasites is very brief and incomplete.

The fourth chapter (47 pp edited by Albert W. Franzmann) essentially concerns metabolic, stress-induced, and degenerative disorders of mammals, as well as some of physical or chemical origin. The manifestations of mineral deficiencies are summarized in detail in one table. Some additional conditions of diverse etiology are considered in chapter 5 (10 pp).

Part II, diseases of birds, consists of four chapters following an introduction by L. Michael Philo. Of the four each of viral and bacterial diseases discussed, only avian pox and avian tuberculosis have been recorded in Alaska. Similarly, in chapter 3, *Leucocytozoon* and *Trypanosoma* are known to occur in that region, but neither *Plasmodium* nor *Haemoproteus* has been reported. Chapter 4, entitled *Miscellaneous Conditions*, deals with lead poisoning and nematodes of the genus *Splendidofilaria* in gallinaceous birds. Other helminths are not mentioned, nor are ectoparasites.

Part III, edited by Roger S. Grischkowsky, concerns viral, bacterial, parasitic, and environmental diseases of fishes. Of the three viral diseases discussed, only infectious hematopoietic necrosis is known to occur in fishes in Alaskan waters. All seven bacterial diseases discussed have been recorded, mainly in salmonids in hatcheries or rearing-pens. Seven parasitic diseases, all but one (saprolegniasis, a fungal

disease) caused by protozoa, are described by A.K. Hauck in chapter 4. The last chapter deals with gas-bubble disease, saltwater gill disease, and coagulated yolk disease, which are known from Alaska. Part IV, *Invertebrates*, edited by Richard A. Nevé, consists of five pages and considers paralytic shellfish poisoning, intoxication by cones, *Conus striatus*, and injuries caused by other invertebrates. Some diseases and parasites of crabs are mentioned.

Three of the four appendices provide information for the preparation and submission of specimens for diagnosis of rabies (D. Ritter), instructions for the collection and preservation of other materials and methods of necropsy (J. Dau), and lists of the common and scientific names of mammals, birds, and fishes. The fourth appendix, attached to the back cover, consists of three tables that correlate diseases and parasites with their hosts.

As exemplified by the differences in format between Parts I and III, the book is somewhat uneven in organization and style. Probably more distracting are the typographical errors. Scientific names are generally accurate and valid (although sometimes misspelled). Some of the tables include minor inaccuracies. These deficiencies, however, are not substantive and do not make this volume less beneficial to those to whom it is directed.

Alaskan Wildlife Diseases is intended primarily for the use of biologists and laymen in Alaska, and it seems adequately to fill the need for such a basic reference. With this intent in mind, the inaccuracy of the title becomes of less consequence, for the inclusion of numerous diseases and parasites not known to occur in the region may be justified on the grounds that their recognition will be made easier in the event of their appearance. Dr. Dieterich

writes of a possible future edition. In it, an expanded consideration of environmental contamination (oil-spills and the like) and its effects on wildlife would be important, and rather than an extensive discussion of pathogens that might be met, a more complete listing of organisms that already have been recorded would be appropriate. Much effort has gone into preparation of the present volume. It should be a very useful manual for those concerned with wildlife diseases in northwestern North America.

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BOOK REVIEW . . .

Diseases and Parasites of White-tailed Deer, by W.R. Davidson, F.A. Hayes, V.F. Nettles and F.E. Kellogg, eds. Heritage Printers, Inc., Charlotte, North Carolina, (USA). 1981. 458 pp. \$30.00 US.

This volume is an expanded and updated presentation of most of the talks given at the Second International White-tailed Deer Symposium held at the University of Georgia, Athens, Georgia in August of 1977. There are 29 chapters written by 42 contributors, most of which are specialists on the topic they cover. The book begins with a Preface written by F.A. Hayes, the Director of the Southeastern Cooperative Wildlife Disease Study at the University of Georgia where numerous contributions to our knowledge of diseases of white-tailed deer have originated. In the preface the history of efforts to understand the impact of disease on whitetails is traced. The first two chapters deal with field investigations and necropsy procedures in a concise and clear fashion. These are

followed by chapters on physiologic values, trauma, toxic problems, anomalies, neoplasia and nutritional requirements. Next are three chapters on viral diseases and one on rickettsia (anaplasmosis). The chapter on hemorrhagic disease is notable because it is accompanied by eight pages of excellent color photographs illustrating the lesions seen commonly in peracute, acute and chronic forms of the disease. Bacterial and mycotic diseases are presented in seven chapters and include leptospirosis, brucellosis, salmonellosis, anthrax and dermatophilosis. Included also is a brief discussion of foreign infectious diseases such as foot and mouth disease, rinderpest, peste des petits ruminants and contagious bovine pleuropneumonia. Parasitic diseases are covered well and comprise seven chapters including treatises on protozoans, trematodes, cestodes, nematodes and arthropods. The important nematode diseases caused by lungworms and gastrointestinal nematodes are covered in detail. The book ends with chapters on management implications, prevention, control and socio-economic aspects of white-tailed deer diseases.

Most chapters follow the same format and include sections on etiologic agents, life history, epizootiology, distribution, prevalence, intensity, clinical signs, gross and histologic lesions, diagnosis, prognosis and sequelae, prevention, control and implications for white-tailed deer, other wild animals and domestic stock. For the most part the chapters are well written and the editors are to be commended for producing a book with few typographic errors. Some chapters are brief and others would have been better if more illustrations had been included. Photographs and line drawings could have been used to good advantage in many of the chapters. Use of life cycle drawings (such as that of *Parelaphostrongylus tenuis* on p. 277) would have enhanced the presentations

considerably. The reference lists are extensive and will be of great value to anyone seeking additional information on the topics discussed. The use of the numbered-reference system for citing literature is somewhat distracting and will cause some readers to flip back and both to the literature cited sections to find out who did what. The more standard author-date system would have been a better method.

From a technical standpoint, the book is attractively done and has a useful cross-referenced index. The last few pages contain the complete addresses of the contributors.

This book provides much valuable information and, despite the minor problems mentioned above, is a treatise that will prove of considerable use to wildlife biologists and managers, veterinarians, disease workers and others interested in this important North American big game animal. It is a bargain for \$30.00 and should become a standard reference and remain as such for some time.

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