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BOOK REVIEW . . .

Field Manual of Wildlife Diseases in the Southeastern United States, William R. Davidson and Victor F. Nettles. Southeastern Cooperative Wildlife Disease Study, College of Veterinary Medicine, University of Georgia, Athens, Georgia 30602, USA. 1988. XVIII + 309 pp. $10.00 U.S.

The authors prepared this book primarily for wildlife biologists in the southeastern United States. Its goals are "to aid biologists in the recognition of common wildlife diseases and parasites, to provide guidelines for the collection of diagnostic specimens, and to serve as a field reference when questions on wildlife diseases arise." The book begins with a chapter on field investigations in which helpful information is given on obtaining case histories and on the collection and submission of specimens. This section contains two very useful tables. One is a list of 22 questions which should be considered when a field investigation of wildlife mortality is initiated. A second table provides general information on the collection, preservation, storage and handling of various samples taken for diagnostic purposes. The next section is on toxicoses and contains discussions on organophosphates, carbamates, organochlorines and mycotoxins. Information is presented for each of these on clinical signs, animals affected, diagnosis, wildlife management significance and public health implications. The following 22 sections are presentations of the diseases and parasites of importance to 18 species of mammals (white-tailed deer, wild swine, black bears, raccoons, striped skunks, red foxes, gray foxes, coyotes, bobcats, opossums, mink, river otters, muskrats, beaver, cottontails, grey squirrels, woodchucks and armadillos) and four species of birds (wild turkeys, ruffed grouse, bobwhites and mourning doves). The last section deals with waterfowl collectively and refers to a number of ducks, geese and swans. Each section is nicely organized by disease agent or parasite and information is given on causative agent, clinical signs, lesions, hosts, diagnosis, transmission, wildlife management significance and public health implications. At the end of the book there is a glossary of technical terms and a five-page index.

The book is attractively done. It is small (11.5 by 18 cm) and has water resistent pages and a soft, vinyl cover which is waterproof. It is designed to be used in the field and should fit easily into glove-compartments of vehicles or in backpacks or coat pockets. There are 105 color photographs, most of which are excellent. A few are underexposed, but still useful. There are also five line-drawings which illustrate life cycles of parasites. The manual is fittingly dedicated to Frank A. Hayes who served as the director of the Southeastern Cooperative Wildlife Disease Study for 30 yr.

Each person who reads a book of this type can think of ways that "the authors should have done it." Hindsight comes with ease. The authors have done an excellent job of fulfilling their goals as stated earlier and I am a bit reluctant to point out possible problems or weaknesses. However, with the possibility that a revised edition may be planned, the following notations are made in a spirit of helpfulness.

Throughout the book the authors have used such terms as "burdens," "heavy infections," "heavy infestations," "high levels of infection," etc. in referring to intensities of infection, especially in relation to parasitic diseases. Also in several places the term "incidence" is used where the word prevalence would have been better. The American Society of Parasitologists has issued a formal plea for the standardization of such terms (see Margolis et al., 1982, The Journal of Parasitology 68: 131–133). It is recognized that the authors are attempting to use language that will be understood readily by wildlife biologists, but the preferred terms could be used and definitions of these terms included in the glossary.

The book contains no references to the voluminous literature on diseases and parasites of wildlife in the southeastern United States. I am sure that a decision was made to exclude such, probably in the interest of saving space and money. It would have been helpful, however, to include a selected list of citations of pertinent publications.

Specific information on the prevalence and distribution of various diseases and parasites is presented only in a limited number of cases. I feel the lack of such data is unfortunate and may lead to erroneous conclusions. As an example, on page 249 it is stated that histomoniasis "is an important disease of wild turkeys in the Southeast." This statement is true for some areas of the Southeast, but not all. In Florida, for example, histomoniasis is of little or no significance, whereas in Mississippi it is an important disease in turkeys. Perhaps the authors will consider preparing distribution maps for inclusion in a revised edition. Some prevalence and distribution data are available for many, if not most, of the diseases mentioned in the book.

In summary, I would like to make it very clear that this book is a fine addition to the

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literature and regardless of the short-comings pointed out above, it will fulfill the stated goals. It is amazing that such a book could be produced and sold for only $10.00! Wildlife biologists in the southeastern United States and perhaps elsewhere should have a copy of this handbook on their shelves and in fact, may not want to "leave home without it."

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BOOK REVIEW . . .

Pyrrolizidine Alkaloids, C. C. J. Culvenor, A. R. Mattocks, and H. D. Tandon (eds.). World Health Organization, Geneva, Switzerland. 1988. 345 pp.

Pyrrolizidine alkaloids are found in 3% of the flowering plants distributed throughout the world. These plants have long been known to be a health hazard to livestock and were documented as early as 1902 to cause mortality in grazing livestock. Less recognized is human disease caused by pyrrolizidine alkaloids. Several outbreaks among humans have occurred and have been attributed to contaminations from seeds of plants containing pyrrolizidine alkaloids mixed with grain crops. The sites of these outbreaks have been documented in Russia, Afghanistan, India and southern Africa and have been reported to affect large masses of the human population resulting in high mortality. Occasional human deaths have been reported in the West Indies and even the United States from contaminated herbal tea. It was the realization of the human health hazards that prompted the World Health Organization through the United Nations Environment Programme to gather together a number of international experts and produce a report that contains a collected view of these scientists and physicians. This book on pyrrolizidine alkaloids joins an impressive group of other titles found in the Environmental Health Criteria.

The organization of the book is centered on the human health effects as related to pyrrolizidine alkaloids. The first chapter is a must, summarizing the pathophysiology of the toxicity, especially on humans. It also covers chemical structure and mechanisms, finishing with recommendations for future research. The second chapter discusses chemical structure and analytical methods for detection of the alkaloid. The following chapter covers pathways of exposure. This discussion includes the references to pyrrolizidine alkaloid containing plants as food including contaminated honey, milk and meat. Chapters four and five discuss metabolism and mechanisms of toxicity in great depth. These latter chapters are a must for anyone considering research in the field and would further be of interest to those trying to understand this toxicosis in an animal where no research has been documented. Chapter six reports on the effects of pyrrolizidine alkaloids on both domestic and wildlife animals. Specifically addressed is information on deer, insects and fish. The last three chapters consist of the evaluation of human health risks and effects on the environment. One of the nicest features is the tables at the end of the book. These tables summarize the plants that contain the hepatotoxin pyrrolizidine alkaloids as well as a list of the alkaloids and their plant sources. Each of these entries is referenced.

This book is primarily concerned with human health effects from pyrrolizidine alkaloid toxicosis. From this stance, the book is not necessarily appropriate for the readers of the *Journal of Wildlife Diseases*. However, in Chapter six, there is a large section dedicated to field observations and experimental animal studies on a wide variety of animals. In several chapters, they discuss the mechanism of toxicity and the metabolites associated with the biological action of the pyrrolizidine alkaloids. An understanding of these pathways as well as the pathology reported will assist a wildlife biologist in the understanding of toxin in unreported species.

This monograph is an important reference for a wildlife pathologist or biologist to understand a portion of the area of toxic plants and how they may affect the environment of wildlife.

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BOOK REVIEW . . .

Immune Responses in Parasitic Infections: Immunology, Immunopathology, and Immunoprophylaxis. Volume I, Nematodes, 336 pp.; Volume II, Trematodes and Cestodes, 220 pp.; Volume III, Protozoa, 349 pp.; and Volume IV, Protozoa, Arthropods and Invertebrates, 344 pp. E. J. L. Soulsby (ed.). CRC Press, Inc., 2000 Corporate Blvd., N.W., Boca Raton, Florida 33431, USA. 1987. $495.00 U.S. (recent reduced price when ordered within U.S.).

Published information on acquired immunity of vertebrate animals to parasites continues to expand at a rapid rate. This is particularly true as contemporary methodologies of molecular biology become more readily available. In response to this information explosion, numerous reviews continue to be published on the immunobiology of specific host–parasite interactions. Texts on the topic of immunoparasitology also appear at regular intervals. At first consideration this set of volumes may appear to be another of these texts, and a rather expensive one at that. However, it differs from the others in one important characteristic. That is its breadth of coverage. The majority of other volumes on this topic are generally limited in scope to major parasitic diseases of man. Professor Soulsby has extended the coverage in this series to include chapters on other parasites as well, particularly those of veterinary significance. In addition, separate chapters on parasites within taxonomic groups are also included. This has the advantage of utilizing an increased number of authors with different views and expert specialties, as well as giving the reader detailed information on host species other than man and laboratory rodents.

As the volume titles indicate the text is organized by major parasite group. Fourteen chapters are included in Volume I which deals with nematode parasites. Topics covered in separate chapters include: gasterointestinal nematodes of ruminants; *Trichinella spiralis*; *Trichuris* spp. and *Capillaria* spp.; *Strongyloides* spp; hookworms; *Ascaris* spp.; equine strongyles; lungworms of cattle, sheep and pigs; *Onchocerca* spp. and *Dracunculus* sp.; other filarids; *Dirofilaria immitis*; *Angiostrongylus cantonesis* and other aberrant forms; and *Toxocara canis* and visceral larva migrans. Volume II deals with trematodes and cestodes and contains seven chapters. These chapters cover: schistosomiasis in general; *Schistosoma japonicum*; *Schistosoma bovis*, and other animal forms; *Fasciola hepatica* and *Fascioloides* spp.; adult cestodes; and hydatid disease and cysticercosis. Protozoan parasites are covered in Volumes III and IV. Volume III contains seven chapters. These deal with: African trypanosomiasis; stercorarian trypanosomes; *Leishmania* spp.; *Babesia* spp.; *Theileria* spp.; *Eimeria* spp., *Isospora* spp. and *Cryptosporidia* spp.; and toxoplasmosis. Volume IV contains four chapters dealing with protozoa. These include chapters on the immunopathology of malaria, immunoprophylaxis of malaria, amoebiasis, and trichomonads and *Giardia* spp. Volume IV also contains four other chapters. These cover tick and mite infestations, other blood-sucking and myiasis producing arthropods, host responses of molluscs to helminths, and insect host responses to parasites and other pathogens. This preceding list demonstrates the text's broad range of coverage.

The style and content of each chapter vary considerably due to the differences in numbers of parasites discussed per chapter and individual differences between authors of which there are 51. Some authors effectively utilized figures and tables and others did not. Extensive references are listed in each chapter, many documenting the earliest studies on each topic. These are of particular value. The major weakness of this text is that the majority of chapters seem to have been completed in the early 1980's. Thus, although the copyright of the volumes is 1987, few references are found beyond 1983–1984. Because of the recent impact of molecular biology on this field, many of the more current studies on specific parasite protein antigens are not included in these volumes. In a similar way, more recent studies which have been able to take advantage of molecular probes directed toward the detection and manipulation of interleukins other cytokines and lymphocyte subsets are also absent. In addition the price of the entire set is prohibitive to most individuals even at its reduced rate within the U.S. However, this series is a valuable reference which would add a great deal to any institutional parasitology library collection.

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BOOK REVIEW . . .

Wildlife Diseases, a special issue of *La Revue scientifique et technique de l'Office International des Épizooties* (1988, Vol. 7: 653–1051); 12, Rue De Prony - F-75017 Paris, France.

The Office International des Épizooties (International Office of Epizootics) headquartered in Paris, France, publishes *La Revue scientifique et technique de l'Office International des Épizooties* on a quarterly basis, intending it "primarily for the use of those responsible for Government Veterinary Services." This multinational organization (111 member countries) devoted its 56th General Session (16 to 20 May 1988) to a consideration of the diseases of wildlife transmissible to domestic animals. A review in French, English and Spanish by P. P. Pastoret and five co-authors summarizes reports from 22 countries on about 50 diseases of wild animals known to be transmissible to domestic animals, including those due to viruses (e.g., foot and mouth disease), bacteria (e.g., anthrax and tuberculosis), protozoans (e.g., toxoplasmosis and babesiosis), helminths (e.g., hydatosis, trichinellosis) and arthropods (mange). There are general comments on specificity, the role of national parks and protected species, management of specific diseases and recommendations which include a call for more research with an ecological perspective. This extensive review is followed by shorter articles of more limited scope in French and English. B. A. Child contributes a chapter outlining the economic significance and potential of wildlife in Zimbabwe. He notes that in some situations wildlife may be more profitable than livestock and more environmentally acceptable. W. Plowright calls for more study of wildlife diseases as an important branch of wildlife ecology. J. W. Glosser and V. F. Nettles describe the services available in the United States for the study and monitoring of wildlife diseases. R. G. Bengis and J. M. Erasmus review wildlife diseases reported in South Africa. M. G. Garner and P. H. O'Brien review wildlife diseases in Australia and C. Riggenback those in Switzerland. D. Jakovljevic, S. Valentincic and M. Radovanovic briefly mention the situation in Yugoslavia. J. M. Baradel and 18 co-authors report and discuss the results of a serologic survey of various wild animals in France. D. Trap describes the importance of small mammals as a source of leptospirosis in France. A. Firinu and C. Scarano describe African swine fever in wild boars in Sardinia. A. Shimshony reports foot and mouth disease in mountain gazelles in Israel and D. Baharav reports on efforts to control the infection in these animals. F. A. Stuart and J. W. Wilesmith describe the presence of bovine-type tuberculosis in badgers in the United Kingdom. C. P. Arthur and C. Louzis review myxomatosis in rabbits in France. Herpesvirus in Cervidae is reviewed by P. F. Nettleton and three co-authors. J. Blancou and four co-authors discuss the role of vaccination in the control of rabies.

The recommendations of the General Session were that (1) more research should be undertaken on diagnostic methods and epizootiology; (2) the risks of transmissible disease between wildlife and livestock should be evaluated; (3) ecologic and behavioural studies of wildlife in relation to disease should be intensified; (4) there should be more research into sustainable production and marketing of wildlife products; (5) there should be improved communication between the various member countries of the International Office of Epizootics and that wildlife diseases should be included on the agendas of conferences; and (6) co-operative steps should be taken to vaccinate wild animals against rabies.

This is the first time wildlife diseases have been emphasized by the International Office of Epizootics. Although there is little new information in the volume it will be welcomed by scientists interested in wildlife diseases because it is evidence of a growing global interest in the subject.

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BOOK REVIEW . . .

Vogelkrankheiten (Bird Diseases), I. Gylstorff and F. Grimm. Verlag Evgen Ulmer GimbH and Co., Wollgrasweg 41, 7000 Stuttgart 70, Federal Republic of Germany. 1987. 609 pp. 118 DM (approximately $60.00 U.S.).

A number of avian medicine books have been published during the last five years. Why consider a review of one written in German? Because, for those who read German or have access to translation, this is the most complete and well-documented treatise on avian diseases available in any language.

The table of contents is detailed, containing most of the topic headings in the book. The first chapter provides elementary information on the unique anatomy and physiology of avian organ systems. There are no illustrations to augment this section. References are listed at the end of each topic. Unfortunately, all references are printed in the original language. If the reference was published in English, that is the way it is listed. The second section of this chapter deals with the social organization of birds as it relates to captive management and care of orphaned chicks. Section three discusses caging and the captive environment. The section on feeding is short, but includes some excellent tables listing birds in categories according to their feeding preference. A section on the equipment and facilities needed to conduct an avian practice is informative. The caging facility at the avian institute where the authors work is one of the simplest, but most functional systems that the reviewer has seen anywhere. Birds with infectious diseases can be safely housed near non-infected birds because of the air flow design. The first chapter concludes with detailed sections on clinical examination and general therapy. Tables list body temperatures and reported normal hemogram and serum chemistry values for numerous species of birds.

There are 35 color plates with 4 to 6 illustrations per plate. There are 61 black and white illustrations and 55 informative tables. The table of drugs, dosages and indications is useful without translation because most of the drugs are written in Latin and will be recognized by most. Unfortunately, some drugs are available only in Europe.

The second chapter of the book is devoted to infectious and parasitic diseases. It is in this chapter that the great value of this book lies. An extensive table lists all of the reported infectious diseases and compares them with organ systems affected, clinical signs, prepatent period and many other categories. In addition to the tables, each infectious disease is discussed by etiology, pathogenesis, clinical signs, diagnosis and treatment. Other tables list all of the parasitic diseases and their reported hosts, clinical signs, diagnosis and treatment. The narration describes each in turn.

Nutritional deficiency diseases are discussed in a chapter, followed by a chapter on poisonous substances. Of special note is the table on reported drug toxicities in various species.

A major chapter deals with diseases of organ systems. Each component of all the 10 organ systems is covered in as much detail as there is information available.

The chapter on surgery is detailed, but without illustration of the surgical techniques. Illustrations would have enhanced this chapter. However, the radiographs in the chapter are superbly reproduced. These are the best that this reviewer has seen.

The index is extensive and quite usable, although the type size is small. The paper stock and printing are excellent.

This book should be in reference libraries and in the hands of those with moderate facility in the use of the German language or with translation facilities available.

The authors are clinicians and researchers with extensive experience in avian medicine. The facility at Munich is one of the largest clinical and research facilities in Europe that deals with caged birds.

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