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BOOK REVIEWS

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best sites to find Olive-tree (*Hippolais olivetorum*) and Barred (*Sylvia nisoria*) Warblers in May, and breeding Lesser Kestrels (*Falco naumanni*). Along the coastal plain, several reservoirs such as Hulda and Revadim have produced many good birds.

One last point that I felt was lacking, and one unfortunately absent from most bird-finding guides, is a discussion of birding behavior and species protection. A short mention is given in the *Some Final Tips* section (Volume 2 only) regarding desert birds, advising the birder not to pursue birds. The only other mention I found for cautioning birders about disturbance is at the end of the description for sub-site KM 33 (Southern Arava, Volume 2). Israel is a rapidly growing, industrialized country with diminishing biological resources. Although the main problems are habitat loss and degradation, direct human disturbance can significantly impact rare and sensitive breeding species. In the spring, some birding hotspots such as KM 33 are inundated daily by hordes of birders, and although most are responsible, it only takes one trek off the path to cause site abandonment, crushed eggs, etc.

Altogether this two-volume set is an indispensable addition for anyone interested in birds, including Israelis and those visiting Israel for the first or twenty-first time. The two volumes are compact and portable, even in the field (in fact, they could easily have been combined into a single volume). So if you have not planned your next vacation, this guide will certainly whet your appetite.—ZEV LABINGER, Bio Logic Consulting, 18a Narkisim Street, Kiryat Tivon 36073, Israel, e-mail: labinger@netvision.net.il

Diseases of Wild Waterfowl, 2nd Edition.—Gary A. Wobeser. 1997. Plenum Press, New York. xii + 324 pp., 24 plates and illustrations. ISBN 0-306-45590-0. $79.50 (cloth).

For many of us working in the field of ornithology, the impact of disease on avian populations is often recognized, but rarely surfaces among the myriad factors that we identify as influences on population regulation. But for groups of birds that congregate in high densities during some period of the annual cycle, such as waterfowl, disease can become an important factor influencing population dynamics. *Diseases of Wild Waterfowl* is a practical reference text that provides ornithologists working with waterfowl species a complete up-to-date guide on diseases that could occur within their study populations. Material contained in this book would also prove essential to waterfowl management biologists (particularly those on National Wildlife Refuges), aviculturists (especially game-farm waterfowl producers), wildlife disease investigators, and those interested in having the most up-to-date reference on waterfowl diseases.

The Introduction outlines basic concepts of waterfowl diseases, then relates that to the rapidly changing environments in which we live, a subject dear to the hearts of many waterfowl biologists. The book covers all known diseases (over 70), divided into eight sections: (1) viral infections, (2) bacterial infections, (3) fungal infections, (4) parasitic infections, (5) toxicoses, (6) miscellaneous conditions, (7) investigative techniques, and (8) references. This subdivision allows the reader to easily separate and find disease issues. Each disease discussion is subdivided into sections on etiology, epizootiology, clinical signs and pathology of sick birds, diagnosis, and, for a few of the diseases, present knowledge about control mechanisms.

Section I focuses on viruses, highlighting duck plague (a subject of several detailed investigations by the book's author), avian influenza, and Newcastle disease. Highlighted is the importance of transmission from domestic to wild bird populations, as exemplified by duck plague. The remainder of this section provides concise summaries of hepatitis, parvovirus, reovirus, adenovirus, and poxvirus infections, the reticuloendotheliosis group of viruses, eastern encephalitis, and bursa of Fabricius infections.

Section II is devoted to bacterial infections, of which avian cholera is undoubtedly the most important to ornithologists studying waterfowl populations. This disease is usually thought of as a disease of wintering waterfowl in the western U.S., but Wobeser points out that die-offs have occurred in all flyways and during northern and southern migration through Canada. Avian cholera can devastate wild populations, with >60 000 birds dying in Texas during an epizootic in 1956–1957, about 70 000 succumbing in northern California in 1965–1966, an estimated 80 000 in Nebraska in 1980, and even larger outbreaks at Chesapeake Bay in 1970 and 1978. The remainder of Section II presents substantial information on tuberculosis, salmonellosis, staphylococcosis, and seven other types of bacterial infections reported from waterfowl.

Fungal infections (Section III) are covered in seven pages of text, with the only extensive information provided on aspergillosis. Section IV is more extensive (39 pages), and, with subdivisions for protozoan and metazoan parasites, deals with the broad field of parasitic infections. In the protozoan portion, Wobeser covers blood protozoan parasites, *Cryptosporidium* and *Sarcosystis* infections, coccidia (intestinal and renal), and three other potential parasites of questionable significance in wild waterfowl populations. The metazoan portion of this chapter includes excellent discussions on ectoparasite, leech, trematode, cestode, nematode and acanthocephala infections. Many of the book's illustrations are contained in this section and should prove useful to ornithologists in referencing potential parasitic infections in their waterfowl study populations.

Section V on toxicoses is divided into chapters on botulism, lead and other metals, pesticides (including PCBs and related chemicals), and other toxic substances. The two diseases presently of most importance to waterfowl populations, botulism and lead poisoning, are covered in greatest detail. However, as we become more aware of the insidious impacts of toxicoses on bird populations (particularly the impacts of pesticides and heavy metal accumulations in the food chain), this chapter will prove even more valuable as a reference guide to waterfowl biologists. All that we have to do is reflect on the DDT story of the 1950s to understand that as anthropogenic materials accumulate in the environment, and as waterfowl are crowded into decreasing areas of habitat, the impact of toxicoses will be further amplified.

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The disease portion of this book concludes with Section VI, Miscellaneous Conditions, which may not be of paramount interest to wildlife disease workers, but does have significance to waterfowl biologists. Waterfowl reported with conditions discussed in this section often are barometers to other negative population influences that are occurring in the wild. For example, Wobeser points out that birds dying from malnutrition or starvation have symptoms similar to those of other diseases, but the total of all pathology should point the investigator to starvation as the cause of death. Specifics on this are further clarified in the following portion, ''specific nutritional deficiencies.'' Additional topics covered in this section that should be of particular interest to ornithologists are weather, traumatic injuries, capture myopathy, neoplasia, and deformities.

Section VII is a must for ornithologists interested in waterfowl diseases. The 21 pages provide a good general background on waterfowl disease investigation, describe in detail how to conduct necropsies on waterfowl, and include information on the collection and preservation of specimens. More importantly, information is provided on how to seek assistance with waterfowl disease questions in North America.

The book ends with Section VIII, which provides the reader with references and a subject index. The reference section is 66 pages and contains over 1400 publications, providing a goldmine of information for workers interested in waterfowl disease. The subject index, on the other hand, is only six pages and often makes it difficult to find specific topics within the book. The brief subject index, along with a lack of sufficient illustrations, are the two minor drawbacks that I have found with this volume.

Overall, this book is presently the best general reference available on waterfowl diseases in North America. The comprehensive discussions on each disease make this book an important reference for academic libraries, the succinct text makes it useful for public library readership, and the coverage of all known (and potential) waterfowl diseases make this book a must for all ornithologists, particularly those with a focus on waterfowl. Another positive aspect is that the author indicates where we presently lack information on specific diseases (e.g., avian cholera, botulism) and points out future research directions that will enable us to better understand the epizootiology of waterfowl diseases. With decreasing habitat and increasing anthropogenic impacts on our environment, it is only through a systematic, scientifically based attack on disease that we are going to be able to preserve present population levels of our North American waterfowl.—CHARLES VAN RIPER III, USGS Forest and Rangeland Ecosystem Science Center, Colorado Plateau Field Station, P.O. Box 5614, Northern Arizona University, Flagstaff, AZ 86011, e-mail: charles.van.riper@nau.edu

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