The Crisis Discipline of Conservation Medicine


Because modern medical training has such a strong diagnostic and clinical focus, most human health professionals have, understandably, little to no training in ecology and evolution. Veterinarians have a much broader training but share a focus on diagnosing and curing a sick individual. This may be changing. New human health scares such as Lyme disease, West Nile virus, and SARS have generated public angst, motivating some health professionals to consider the ecological context of disease and, in particular, to worry about how global change may facilitate these and other health crises.

Conservation Medicine: Ecological Health in Practice is a pioneering effort to bring together professionals and academics on the forefront of treating disease in an ecological context. The diverse range of expertise held by the 65 contributors is the key to the book’s value and illustrates the means by which new disciplines emerge. The editors have loosely organized 29 chapters into five sections. An introductory section on “Ecological Health and Change” defines the discipline and argues strongly that an ecological health crisis is upon us. The second section on “Monitoring Ecological Health” describes the challenges of getting information about ecological health and reveals that there are far too few systematic programs to monitor disease in nature. The third section on “Ecological Health and Humans” hits us with the headline-making impacts to the environment that can have direct negative consequences on our quality of life, from reducing potential medicines to increasing exposure to diseases. The fourth section, “Implementing Conservation Medicine,” describes the problem-solving side of conservation medicine, with case studies of wildlife management and human health. The final section, “Conservation Medicine and Challenges for the Future,” considers the next steps and hurdles for the discipline, with a chapter on ecotourism that may make you reconsider your next vacation. The first chapter in this section presents a fascinating evaluation of funded research at the National Institutes of Health, indicating many studies on topics related to biodiversity (e.g., drug discovery, medical models, disease ecology, and environmental indicators) but few that consider the relationship between environmental degradation and disease. For conservation medicine to grow as a discipline, this funding barrier will need to be overcome. Although each chapter is concise and scholarly, I believe that, as is usual for such compiled volumes, several chapters would have benefited from additional synthesis, focus, or analysis.

To most people, the term conservation medicine will be puzzling initially, given that it is not clear where the fields of conservation and medicine interact. The cover’s Venn diagram provides an excellent visual definition of conservation medicine. Here, three partially overlapping circles represent human health, animal health, and ecosystem health. The intersections of these concepts are ecological health, which in practice is conservation medicine. Other concepts are defined in the initial chapters, including the pursuit of ecological health, the relationship between health and environmental concerns, examination of health concerns beyond the species-specific approach, understanding of and solutions for the relationship between the environmental crisis and human and nonhuman animal health, and the unification of medical and veterinary science with ecology and conservation biology.

Although conservation medicine is a new term (Koch 1996), academic interest in the intersection of conservation and disease is not new. Epidemiology, wildlife biology and management, and ecological parasitology are examples of fields that have rich histories and developed literatures on this topic. All have profited from collaborations between ecologists and health scientists, and the rise of conservation medicine is symptomatic of growing interest in these collaborations. The key to appreciating this book is in understanding what makes conservation medicine different from past approaches. This difference is made most obvious by the title of chapter 3, “Conservation Medicine: the Birth of Another Crisis Discipline.” Conservation medicine is about finding solutions, and, as we learn to appreciate in academia, for every solution there must be a problem. By definition, conservation medicine emphasizes crises.

For this reason, I worry that readers of this book might come away with the simple message that the more we mess up the planet, the less healthy its inhabitants will be. Although this is likely to be true for some noninfectious or nonspecific infectious diseases, it is quite likely that many host-specific infectious
diseases will decline with stress (Lafferty & Holt 2003). Take digenetic trematodes (parasitic flatworms with complex life cycles) that use water birds as final hosts. In some degraded habitats, these trematodes tend to disappear and their hosts become healthier. This is because each species, to complete its life cycle, must find a series of required hosts. If the water is toxic or some hosts absent, the trematodes go extinct. A rich community of trematodes, therefore, makes a very good indicator of a healthy ecosystem (Huspeni & Lafferty 2003). Parasites are sensitive to the environment, and as we change the environment we will change the role of parasites and the diseases they cause (Lafferty & Gerber 2002). Some diseases increase with stress, others decrease. Some diseases are unaffected, and the pattern varies according to the type of stress (Lafferty 1997). Conservation medicine, as a crisis, problem-oriented discipline, focuses on the diseases that are increasing, but, in focusing on problems, it can give the false impression that problems are the rule.

Conservation Medicine: Ecological Health in Practice is well worth owning, particularly at the price of $0.69 per author. The chapters provide a breadth of well-referenced topics on problems and solutions related to disease in the environment, and these will be of interest to an equally broad audience. Perhaps its greatest value to conservation biology is as a reference for communicating utilitarian examples of how conservation can serve humans through improved human health.

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Literature Cited
Huspeni, T. C., and K. D. Lafferty. 2003. Using larval trematodes that parasitize snails to evaluate a salt-marsh restoration project. Ecological Applications 00:000–000.
Queries

Q1 Author: 2003 correct date for Hupeni & Lafferty?

Q2 Author Huspeni & Lafferty: 2003 correct date? Please provide vol. & pp. nos.

Q3 Author: 2003 correct date for Lafferty & Holt?

Q4 Author: Lafferty & Holt: 2003 correct date? Please provide vol. & pp. nos.