Books


Many parasitologists who teach in undergraduate institutions lead a double life. In our classrooms we dutifully extol the virtues of the biomedical approach to parasitism, pandering to the premed students who provide the enrollment necessary to ensure that our administrators permit us to teach parasitology. And yet, when we teach graduate students and when we interact with our colleagues at meetings, we all acknowledge that the glue that holds the discipline of parasitology together is the ecological–evolutionary nature of host–parasite associations. This is true for medical, veterinary, and wildlife disease parasitologists, just as it is for the systematists, ecologists, population biologists, developmental biologists, physiologists, and cell and molecular biologists.

I have often heard parasitologists muse about teaching a different kind of undergraduate course, one that would emphasize the basic diversity of parasites and then explain their associations from the ground up. Such a course would place the species of biomedical/veterinary/wildlife disease importance in their proper evolutionary and ecological context. Previous textbooks that attempted this task are long out of print, and the past decade has seen such an explosion of interest in the evolutionary biology and ecology of parasites that most of those texts are outdated in any event. Most of us are barely able to keep up with advances in our own areas of specialization and find the task of distilling the information in those specialized texts into undergraduate teaching material daunting.

A fair number of highly technical and scholarly texts on parasite ecology and evolution have appeared in the past decade, and they continue to appear (Brooks and McLennan 1993, Poulin 1998, Combes 2001, Moore 2002). This attests to the growth of interest in parasitism, but none of those books is appropriate as an introductory text. The trend adds to the disjunction between the teaching of parasitism at the undergraduate and the graduate levels. It is the reason so many nonparasitologists, sitting on search committees and making decisions about funding for basic research, view parasitology as primarily a clinical or pharmaceutical activity, and parasites as bizarre evolutionary products having...
little to offer general biology on their own. Further, those nonparasitologists who become fascinated with parasites and their possible influences on the evolution of their hosts often have only a rudimentary appreciation for the diversity and complexity of parasites and their associations.

The authors of this text have changed all that. They represent a “dream team” of superstars, with superb credentials both in undergraduate teaching and in graduate training and research. Three have had the dubious honor of chairing an academic department at some point in their careers, after which writing a general textbook with only four authors must have seemed quite peaceful. Two are among the authors of one of the few parasitology articles that has become a Citation Index classic publication, a seminal position paper setting out standard terminology for important aspects of parasite ecology (Margolis et al. 1982).

What these authors clearly comprehend is that one cannot understand parasites without adopting a fundamentally macroevolutionary viewpoint—understanding both their evolutionary legacies (which explains, for example, why all species of Schistosoma have similar life cycles and morphologies), as well as their ecological interactions with their environments, most of which are other living organisms.

Accordingly, the text of this book comprises two parts: In the first part, the authors emphasize the diversity of the various major, and minor, parasite groups; in the second part, they begin from first principles and basic population biology. They proceed to describe the structure of parasite diversity hierarchically from infracommunities to component communities to compound communities. As they do so, they weave in larger spatial and temporal scales.

At the end of the book, the astute student has glimpsed the enormous panorama of parasitism on a global scale. Parasites are everywhere, inhabiting everything. They are deeply embedded throughout all ecosystems, to such an extent that simply knowing the parasites and their life cycles is sufficient to know much of the trophic structure of communities of free-living species. Parasites influence, and are influenced by, the population biology and community ecology of their hosts. They have long evolutionary histories of associations with ancient and modern host groups, often revealing aspects of the distant past, including episodes of global climate change and the drifting of continents. They are the very essence of Darwin’s tangled bank. Parasites thus are intrinsically interesting to study not simply because they are complex and beautiful but also because they are such wonderful examples of many general evolutionary and ecological principles. One could use this text to teach a general introductory evolution or ecology course as well as a parasitology course.

Finally, the student who uses this text as part of an educational voyage of discovery learns to think about parasitic disease in a new way. Evolutionary theory teaches us that all evolutionary changes are the summation of both costs and benefits, and many parasitic diseases in humans are part of the cost of civilization. Those species represent a relatively small percentage of all parasites, and they exhibit very interesting yet in many ways atypical biology. We humans have created many of the conditions in which parasitism becomes parasitic disease; paradoxically, we have produced an arms race between parasites and our technology that parallels the evolutionary arms race between many parasites and their hosts.

In this parasitology text, the student comes to understand that the connection between parasitism and parasitic disease is ecological and highly contextual. In my mind, this object lesson in humility is something that can benefit every student, but especially those intending a career in human or veterinary medicine.

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More than any other living biologist, and likely more than any biologist in history, Janice Moore has devoted her professional life to discovering, documenting, and explaining the behavioral consequences of host–parasite interactions. As in numerous other areas in evolutionary biology and ecology, theories and models about such effects have developed far more rapidly than the empirical database. As a parasitologist, Moore understands why this is so and, characteristically, says so.

Parasites have extremely complex lives, and they can be found in a wide variety of taxa, each of which is characterized by a unique and complex evolutionary legacy. In addition, the great majority of the research funds spent on parasites throughout the world is focused on a tiny percentage of parasitic species. What Moore does not say is that the intersection of these two realities, one biological and one socioeconomic, means that only a few intrepid souls with an iron will and almost obsessive desire to peer into the unknown will be able to manage the long march of discovery. People like Moore are seldom recognized adequately for their efforts. If a field does not develop rapidly, does not become trendy, no one pays much attention to the efforts. If a field does become trendy, few remember or acknowledge, in the flush of excitement and the competition for professional fitness in a hot area, the pioneers who made it all happen in the first place.

Fortunately for the progress of science, people like Moore are not deterred by these unpleasant realities. In this book, Moore has managed to capture the spirit of why she does what she does, the magic of discovery in a virtually unknown world. She conveys to the novice (that is, anyone not fortunate enough to have spent much time looking at parasites) the wonder of the tangled bank of host–parasite interactions that may have behavioral consequences. She does so through a sequence of examples illustrating each conceptual point. All of this is done in a comfortable, conversational writing style and with a perfect mix of illustrations that does not in any way de-