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A world of opportunists, the parasitic plants (Book review)

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subject elsewhere. Contrast the deleterious effects of fragmentation documented in this volume with the usual solution offered for the “Tragedy of the commons” (Hardin, Garrett. 1968. *Science* 162:1243–1248) in introductory conservation textbooks, which is the assignment of natural resources to individual owners who then have an economic motivation not to overuse (overgraze) them. In the mesic climate of Hardin’s original example, the common grazing land could be divided into portions that could each support one cow throughout the year; this approach is not possible where rainfall is sparse and spatially or temporally variable or where some of the grazing land is snow covered part of the year.

Chapter 3 by Coughenour is a good introduction to the ecology of large herbivores (primarily ungulates) in arid and semi-arid temperate and tropical regions for anyone whose training has focused on other sorts of herbivores and ecosystems and/or whose previous experience has been in more mesic regions.

Chapter 14, one of the few chapters to present original quantitative results, includes a new measure of environmental heterogeneity for continuous rasters rather than for maps of discrete patches. Interestingly, the authors use this new method to quantify heterogeneity in access to infrastructure (measured as light intensity and road density) as well as heterogeneity in elevation and NDVI (Normalized Difference Vegetation Indices, i.e., “greenness”).

This volume is dedicated to James Ellis, who until his untimely death in 2002 was P.I. of the NSF Biocomplexity grant acknowledged by each of the book’s chapters. The book itself is a testimonial to his ability to assemble and guide an impressively multi-national team. Kenya is represented by 14 authors, mostly affiliated with International Livestock Research Institute in Nairobi. Kazakhstan, Mongolia, and the United Kingdom, each provided one author, and three authors are affiliated with CSIRO Sustainable Ecosystems (Australia).

Most of the U.S. authors are affiliated with the Natural Resources Ecology Laboratory of Colorado State University, Fort Collins, as was James Ellis.

Finally, a disclaimer: substantial portions of most of the chapters in this book fall into the fields of geography, political science, or other social sciences rather than biology. They therefore fall outside my professional expertise as an ecologist and rangeland biologist and so I defer to appropriate social scientists as to their accuracy. However, the information, arguments, and conclusions in the “social science” portions of this book seem reasonable to me. These portions are straightforward and quite readable for biologists without advanced training in these fields. Very little social science jargon is used. In fact, I would recommend this book to ecologists who have not had much exposure to the social, political, or economic aspects of rangelands, as an introduction to these subjects.

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Key words: haustoria; hemiparasitism; holoparasitism; host-parasite interactions; parasitic plants.

All kingdoms of life from Archaeabacteria to Animalia exhibit organisms with a parasitic approach to living whereby they opportunistically acquire resources from a host. Plants are no exception. Approximately one percent of documented flowering plants, or ~4500 plant species, distributed across the globe are parasites. One of the first comprehensive books on parasitic plants, *Job Kujit’s classic, The biology of parasitic flowering plants* (1969. University of California Press, Berkeley, California), is the inspiration for *Parasitic flowering plants*. Since the publication of Kujit’s book, a number of texts have been written about weedy parasitic plants or particular topics on parasitism in plants, such as anatomical structures. *Parasitic plants* (Press, M. C., and J. D. Graves, editors. 1995. Chapman and Hall, New York) is one of the few books written since Kujit’s work that integrates a wide body of knowledge about the basic biology of parasitic plants. Press and Graves’ edited book is written primarily from a technical standpoint and addresses an audience of researchers and academics. Lacking from the literature is a modern book on parasitic plants that is interesting to researchers, yet accessible to everyday readers. In the preface of his new book, Henning S. Heide-Jørgensen sets out to instill in both novice and expert readers an appreciation for the world’s parasitic plants. By and large Heide-Jørgensen accomplishes this goal.

*Parasitic flowering plants* begins with the first of eight chapters by distinguishing parasitic plants from plants that might be incorrectly considered parasitic such as epiphytes, mycoheterotrophs, and carnivorous plants. Chapter 1 also distinguishes between stem vs. root parasites and hemi- vs. holoparasites and briefly describes the anatomical structure plants use to parasitize host plants, the haustorium. Then Heide-Jørgensen launches into an overview of the twenty families of plants with parasitic species. This overview consists of three chapters, comprising nearly three-quarters of the book. Recent molecular studies have moved many parasitic plant species into different families. Specifically, many species previously in the Scrophulariaceae are now in the Orobanchaceae. This work provides a timely synthesis of these recent taxonomic re-classifications. Throughout these chapters considering taxonomy there are interesting tangents on seed dispersal, pollination, and the cultural significance of parasitic plants that maintain the reader’s attention despite a bombardment of scientific nomenclature.

Following the taxonomic overview, the remaining four chapters of the book focus on the physiology, ecology, control,
Noninvasive survey methods for carnivores: Don’t touch!


Key words: carnivores; conservation biology; mammals; noninvasive methods.

Among ecologists, most mammalian predators are considered the top of the “charismatic megafauna” list. Thus, a book focused primarily on methods for surveying these animals may elicit some negative responses from ecologists studying those animals with less “appeal.” This view, however, does not change the basic fact that predators, by and large, have lower densities, are more endangered, and are more difficult to detect than other species of comparable size. When an animal species is difficult to find and trap, and endangered to boot, it becomes important to find ways to study them that have both high rates of detection, and little impact on individuals and populations. That, in essence, is where this book comes in.

First, I would like to state that much of my research has been on rodents. As anybody who studies rodents knows, the standard methodologies (e.g., mark-recapture and captive studies) are highly invasive. Therefore, it was with much interest, but also with a certain amount of skepticism, that I approached this book. I should state that the interest was justified, but the skepticism was not.

The entire book was well written and easy to follow. The methods for noninvasive surveys were, in every chapter, well explained, and accompanied by clear drawings (a highly effective tool that is underutilized in the professional literature of field biology) and informative photos. The multiple examples of utilization of each method are also invaluable, both as proofs of concept and as variations on the different themes. Add comparisons of strengths and weaknesses of methods and variations in methods, and even lists of materials that are needed and predicted costs, and this book becomes, in my humble opinion, an invaluable resource for studies of mammalian carnivores.