

Book Reviews

Natural Grace: The Charm, Wonder, and Lessons of Pacific Northwest Animals and Plants. By William Dietrich. 2003. University of Washington Press. Seattle, Washington. 236 p. US\$16.95 paper. ISBN 0-295-98293-4.

How would you like to be referred to as an animal? Whether or not you like it, that is the first thing that William Dietrich does in his latest book, *Natural Grace: The Charm, Wonder, and Lessons of Pacific Northwest Animals and Plants*. In fact, he doesn't just imply it, he comes straight out and says: "You animal you." From there, he allows you to wander through essays about the little things that make the Pacific Northwest what it is.

Natural Grace is the third and most recent of author William Dietrich's non-fiction books about the Pacific Northwest. It is a collection of short essays adapted from his articles in the Seattle Times' *Pacific Northwest* magazine. Ranging from geology and jellyfish to geoducks (gooey-ducks) and cedar trees, *Natural Grace* offers information on a wide range of topics. These topics are arranged in sections that group essays with similar features. For example, the section entitled *Secret and Small* includes essays on stream life, dirt, and spiders, among others. Most of the essays are under a dozen pages in length and include sketches by illustrator Brenda Cunningham. The book also includes an index, as well as a suggested reading list. I found both of these features to be handy, especially since the essays encourage the reader to dig more deeply and further study the Pacific Northwest.

Greater understanding of the natural world is the common thread that ties together Dietrich's essays. His belief is that understanding nature will help us better understand ourselves. Each of the 21 essays in the book offers an array of facts and comparisons about nature and humans. Many of these facts came from books in the suggested reading list, as well as from personal interviews with experts from state, federal, and private organizations. While offering an eye-opening education about the Northwest, Dietrich writes in such a fashion that I often found myself grinning, even laughing. For example, while discussing the success of mosquitoes, he writes:

"Researchers in Canada once allowed themselves to be exposed to a swarm and were bitten nine thousand times in one minute, an experience which calls into question the entire scientific method." In this one sentence I learned just how good mosquitoes are at what they do, and also was reminded about how dedicated researchers are, although I suspect that they were graduate students or interns.

I was not surprised to learn that Dietrich had won a Pulitzer Prize for his coverage of the *Exxon Valdez* oil spill. His writing style is easy to follow and engages the reader's attention. Plus, he uses a strong dose of charm and wit to liven up 236 pages of facts and scientific knowledge. *Natural Grace* is a book that can be easily read from beginning to end, or essay by essay, in whatever order the reader decides upon. Dietrich proves himself to be appealing yet technically competent in his knowledge of the Pacific Northwest. In fact he has every right to begin by calling his readers animals. He eventually apologizes for the reference, but then compare readers to an organism that is much more unflattering. If you wish to learn which life form that is, I suggest you discover your own copy of *Natural Grace*. — *Cassandra Wannamaker*, Washington State University, Pullman, Washington.

Rangelands of the Arid and Semi-arid Zones of Uzbekistan.

By G. Gintzburger, K. N. Toderich, B. K. Mardonov, and M. M. Mahmudov. 2003. Centre de Cooperation Internationale en Recherche Agronomique pour le Development (CIRAD) and the International Center for Agricultural Research in the dry areas (ICARDA). 426 p. 76.00Euros, flexible binding. ISBN CIRAD 2-87614-555-3, ICARDA 92-9127-137-8.

Rapidly escalating international interest in the rangelands of Central Asia is manifested in the new book, *Rangelands of the Arid and Semi-arid Zones of Uzbekistan*, a joint publication of CIRAD and ICARDA, by G. Gintzburger, K. N. Toderich, B. K. Mardonov, and M. M. Mahmudov. It is a broad, introductory survey of the rangeland ecosystems, and range-livestock systems, and pastoral culture of the region. The book draws on the collective work of many international researchers that have been active in the area over recent decades, including the work of Russian-speaking scientists, much of which has been inaccessible to Western scientists.

The content of *Rangelands of the Arid and Semi-arid Zones of Uzbekistan* essentially consists of 7 parts. Following a brief introduction, Part 1 examines aspects of the environment of the region, including geological, climatological, edaphic, phytogeographic, and agricultural fundamentals of the zones. The book contains notably detailed descriptions of the region's bioclimatology, including some informative, statistical figures showing climatological relationships. Although the book has significant emphasis on grazing throughout, it contains surprisingly few data or estimates of forage production, especially considering the depth of the bioclimatological content. This first section does contain some descriptions and data of trends in livestock numbers and agricultural land use.

The second principal section of the book is a description of the flora and of the main vegetation types of the region. This section includes a number of detailed tables of data on the soils, flora, and especially, the climate of the area. Forage production data, and forage supply/demand information are again limited. Some of the tables in this section are sufficiently detailed that they might have been moved to an appendix, but they are uniformly well designed.

Section 3, involving the descriptions of individual plants, is the largest section of the book. The plant species are arranged alphabetically by family name. Many of the plant names are familiar here, which will remind North America range management scientists of the rich history of plant introductions from Central Asia. The plant descriptions are informative, and include individual subsections describing characteristics of morphology, reproduction, pastoral importance, fodder value, economic interest, habitat, and distribution. Each species description contains from 1 to 4 color photographs of the plant or its parts. Monthly production tables are provided for a few species for which such data are available.

Section 4, on the ecology, biology and economic importance of arid and semi-arid range plants briefly surveys a range of subjects, including floral life forms, chemical composition of plants, toxic and medicinal plants, plants that cause mechanical injury, seed characteristics and germination ecology.

The book's fifth main section, on rangeland improvement and rehabilitation in Uzbekistan, includes 17 pages of text and tables

on the history of, and the prospects and botanical options for, range improvement and rehabilitation. Several tables here include important general information on species characteristics relevant to range improvement.

A 25-page section describing the nature reserves of Uzbekistan is the next major section. Included here are interesting descriptions and photographs of reserves located in the different ecosystems of Uzbekistan.

In the book's final main section, a one-page statement of general conclusions precedes 10 pages of color maps, the book's extensive bibliography, an interesting glossary in English and Cyrillic, appendices of meteorological stations, climatological figures, and phylogenetics of major rangeland plants, a general index, and bios of the authors and acknowledgements of their cooperating organizations.

Any limitations of *Rangelands of the Arid and Semi-arid Zones of Uzbekistan* likely reflect more the limited information available on the region than limitations of the authors' efforts. In any case, the book's outstanding features overwhelm any limitations in available regional data that might be manifested in the book. An exhaustive summary of admirable features would include diverse technical elements of content and format, but more philosophically, the book exemplifies at least 3 important elements.

First, the book shows how far range management science has come internationally, not just as an application of ecology, but also as a management science integrally involved with a broader culture. Its excellent photographs are particularly effective in binding together the diverse elements of the book's content into a coherent cultural landscape, and should remind *Westerners* (of a couple of kinds) of the diversity of potential environmental, ecological, and cultural content of range management science. Rarely has range management science seemed more coherent.

Second, plenty of information useful in management is included in a thoroughly bioclimatological, ecological, and cultural context, with a refreshingly natural, unapologetic tone characteristic of a part of the world where *grazing* on a range is not a discouraging word. Grazing seems a natural part of ecology in this book—more natural that it ever does in current American books on ecology or grazing management, or in books from any region where grazing is not naturally accepted as the major element of the prevailing culture. Rarely has range management science seemed more comfortable.

Third, as a result of (1) and (2), the range management science in the book does not seem economically marginalized to irrelevance by pressures of industrialized, specialized agribusiness and eco-business. Range management science is inherently important for the landscape and the culture. Rarely has range management science seemed more relevant.

Rangelands of the Arid and Semi-Arid Zones of Uzbekistan will be an indispensable reference for range management scientists and range managers in Central Asia, and parts of it will be fascinating reading for individuals involved with rangeland plants, the bioclimatology of steppe regions, and pastoral societies. It will certainly be a valuable referential base for future regional research. In fact, any individual traveling in the drier parts of Uzbekistan who has more than a superficial interest in the climatology and ecology of the region would find this book extremely valuable as a field guide to plants, vegetation types, and climate.

Readers will find photographs of Dr. Gintzburger and his colleagues accompanying their brief bios near the end of *Rangelands of the Arid and Semi-Arid Zones of Uzbekistan*. Their book is a

tribute to how attractively range management science can be packaged and presented to both professionals and to the public. A text that keeps moving, insightful photography, efficient, attractive figures, and concise tables are combined with an energizing format to create an aesthetic scientific contribution. Rarely has range management science ever looked better. — *David L. Scarnecchia*, Washington State University, Pullman, Washington.

Battling Resistance to Antibiotics and Pesticides: An Economic Approach. Edited by Ramanan Laxminarayan. 2003. Resources for the Future Press, Washington, DC. 377p. US\$65.00 hardback. ISBN 1-891853-51-1.

Researchers in disparate fields now agree that the growing resistance of bacteria to antibiotics and pests to pesticides threatens to undo some of the most noteworthy advances that have taken place in agriculture and in public health. As a result of this agreement, economists, biologists, and researchers in public health have begun to focus increasing research attention on some of the most vexing questions concerning the phenomenon of resistance. This important edited book consists of 12 chapters and related commentaries. The individual chapters were presented as papers at a conference on the economics of resistance organized by Resources for the Future in April 2001. Rather than proceed with a tedious chapter by chapter account, in the rest of this review, I shall focus on 7 of the 12 chapters. This should give the reader a flavor for the intellectual contributions of this book.

The first 3 chapters analyze issues concerning the optimal management of resistance. Chapter 1 generalizes a previous economic-epidemiological model of the optimal use of antibiotics by allowing for the possibility that there are fitness costs associated with genes that permit a disease to be resistant to treatment with antibiotics. What is the difference between economic and epidemiological control policies? The authors use an optimal control-theoretic framework to shed light on this basic question. The analysis in this chapter tells us that "the economic policy takes into account both the costs today to treat and the increasing costs associated with future treatment because continuing to treat at high levels builds up resistance" (p. 79).

Chapter 2 is a generalization of Chapter 1 in the sense that this chapter studies the case of 2 antibiotics and 2 types of infection. Once again, an optimal control-theoretic framework is used to shed light on the antibiotic treatment regime when resistance is renewable. Although the authors are able to obtain definitive answers only for special cases, they intelligently discuss why it is not possible to determine the optimal solution. As they helpfully point out, their "Hamiltonian is not concave in the state variables, and [hence] the standard sufficiency theorems of Mangasarian or Arrow and Kurz do not apply" (p. 51).

The brief Chapter 3 focuses on the value of treatment heterogeneity for infectious diseases. The authors begin by correctly noting that for well known reasons, treatment homogeneity is valued in the medical profession. This notwithstanding, the authors use a static framework to argue that "from a societal perspective, it may even be desirable to treat some patients with more expensive drugs even while it is individually suboptimal to do so" (p. 67). Put somewhat differently, the basic argument here is that there are circumstances in which it is more desirable to treat an infectious disease with a mixed strategy that calls for the use of an antibiotic cocktail.

Even though the problem of resistance management is fundamentally *stochastic* in nature, a drawback of the chapters I have