

developed theories. Others are more like incomplete theorems that titillate but do not satisfy.

The 51 general principles of environmental management presented in this book are a brilliant summary of the state of the problem as defined by this emerging discipline. The principles are an enlargement of an earlier list developed in concert with Dr. Douglas Hoffman, one of Dorney's former colleagues in the School of Urban and Regional Planning at the University of Waterloo. Each principle is a gem unto itself.

These principles should be read and studied by an individual of any profession who deals with the environment. They are applicable across the broad range of environmental science and planning. I use them to provide an underlying theoretical framework for my senior students who are attempting to integrate ecological principles into recreation and parks planning.

The book is invaluable for those who wish to be or are environmental consultants. It is the only source available on many important elements of professional practice such as: study design,

bidding, field studies, report preparation, presentation in front of hearing boards, legal liability, and confidentiality.

The book should be read by all government environmental personnel who hire consultants. Efficiency in the use of private expertise would be enhanced by the understanding that Dorney provides.

The book is not an easy read. It is designed for the advanced environmental scientist or planner who has post graduate education and some applied experience.

The tragedy of the author's premature death meant that the book is not as polished, as complete or as fulfilling as it otherwise would surely have been. However, it is an important contribution to the developing field of environmental management. It is the only book of its type available.

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The Naturalist on the River Amazons

By Henry Walter Bates. 1989 Edition of 1863 publication. Penguin, New York. xiii + 383 pp., illus.

This book was originally published over 100 years ago. This was the time when evolutionary theory was being first introduced. Bates' experiences in South America and this book had considerable influence on Darwin's conclusions. However, the real value of this book lies in the detailed descriptions of the flora and fauna, as well as the peoples and lifestyles, of the Amazon River. We are only now realizing the importance to the world of the pending loss of much of the Amazon rain forest.

Even Bates, as described in the 1988 introduction by Alex Shoumatoff, was astounded at the destruction that was occurring when he returned to the area seven years after his initial travels. He is quoted as saying: "The noble forests had been cut down, and their naked half-burnt stems remained in the midst of ashes, muddy puddles, and heaps of broken branches". Shoumatoff echoes this astonishment in comparing his visits of 1977 and 1984. My own Amazon rain forest experiences in 1972 emphasized, in a very short period of time, the differences between the diversity of the still forested areas and the areas along the sides of the still under construction trans-Amazon highway, with cut and burn agricultural scars everywhere. I was privileged to see the rain forest, although in the process of being settled, and to visit a native

village, although artificially maintained as a tourist attraction. Even these similarities to Bates' times are few and far between, if they even exist, today.

In reading the detailed descriptions provided by Bates, this tends to further emphasize the sadness and horror of what we read is happening in the Amazon rain forest today. Bates was able to identify more than 700 species of butterfly in less than an hour's walk. At the same time there were only 321 species known from the whole of Europe and 66 from the British Isles. Now we hear estimates that over 50% of the species of the Amazon have become extinct, most before they were ever identified. Tropical forests are estimated to have over half the species of life on earth. All are undergoing similar destruction.

In 1988 alone according to the World Wildlife Fund, 1.3 million hectares of Brazilian rain forest were cut and burned to provide short-term agricultural and similar uses. The forest is being decimated at a rate of 20 ha per minute. The fertility of the area is largely bound up in the vegetation, thus disappearing into carbon dioxide when it burns. This not only results in losing the potential to renew the forest, but it also contributes to the global warming through both generation of the carbon dioxide and the loss of vegetation necessary to turn it back to oxygen.

We are often caught up in environmental problems around home. This is good, because our

high standard of living depends on the local environment. However, our continued life as a species on earth depends on a speedy resolution to the rapid loss of these tropical forests. This book is an excellent reminder of this. I would recommend that anyone concerned (and we all should be) read this and compare the vivid description

of what the tropical rain forest used to be with those of what it has become today. A good photographic example of the latter can be found in the December 1988 National Geographic.

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Nature Wells Gray

By Trevor Goward and Cathie Hickson. 1989. The Friends of Wells Gray Park, Box 1386, Kamloops. xv + 190 pp., illus. Paper \$9.95.

Wells Gray Provincial Park is mostly wilderness, a mountainous landscape unique in many ways. This is a book equally unique which does the park full justice with good reading, high quality illustrations, and a format demanding frequent browsing. In my experience it establishes new standards for layout and content introducing the geology, biology, and ecology of a large and wild area.

The most accessible half of the park, traversed by a road, holds abundant evidence of geologically recent vulcanism. With its cinder cones, lava flows, and other evidence of connections with Earth's molten depths, this area is, geologically speaking, among the most interesting landscapes in the province. Accounts of these features are based on the thorough explorations of co-author Cathie Hickson.

Highlights and revelations of the flora and fauna are equally well treated. The area is rich biologically, and with its several life zones ranging from a bit of steppe bunchgrass country to considerable areas of alpine-arctic heights, understandings can come only after much travel and alert observation. This is no quick regional guide among the many written following a few short hikes. Trevor Goward lives there, a naturalist in all seasons; Cathie Hickson studied the area for her doctoral thesis in geology. The authors' experience ranges throughout the region featured,

and their interests extend from mountains to hot springs, from thread-like lichen in highest mountain tops to moose in the valleys bottoms, and from why the month of June is the key to the park's rain forest to an account of the insects active on the deep snows of February.

The writing is lively and briefly detailed with an unerring gift of finding the right words for explaining appearances, selected relationships, ecological processes, and biological strategies. Page layouts are imaginative with most two-page spreads having on-going text mixed with one to five other features such as photographs, drawings, maps, tables, and boxed texts on especially noteworthy subjects. It sounds confusing, but somehow it works well. In 205 pages there are 141 photographs (all black and white), 59 small marginal drawings (most of plants and animals), 54 boxed texts (many of them quotations, or direct contributions from other authors), and four maps. A full chapter deals with winter. Helpful references to best field guides are in the text, and there is a long list of major references.

This book has two outstanding values. It is a superb introduction to a unique park. It is also, in my opinion, a standard of high quality worth following when introducing living landscapes to the public.

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The River as Looking Glass and Other Stories from the Outdoors

By Craig Woods. Stephen Green Press (distributed by Penguin, New York. vi + 121 pp. U.S. \$16.95.

This book is a collection of superbly written short stories about the author's experiences both as a youth and an adult. Of the stories *The River As Looking Glass* is by far the best. It is a reflection of the author's thoughts and experience fly fishing the South West Miramichi River, New Brunswick, for Atlantic Salmon. We feel his pain and agony of

casting for 22 hours in the drizzle and wind without a strike, the disappointment and regret of having lost the first two fish, his self doubt, and his competitive instincts rise as family members taste success.

In all there are nineteen stories that cover a variety of experiences ranging from bass fishing as a lad, trout fishing in a small stream or on the Battenkill, walleye fishing in Quebec, or the more



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