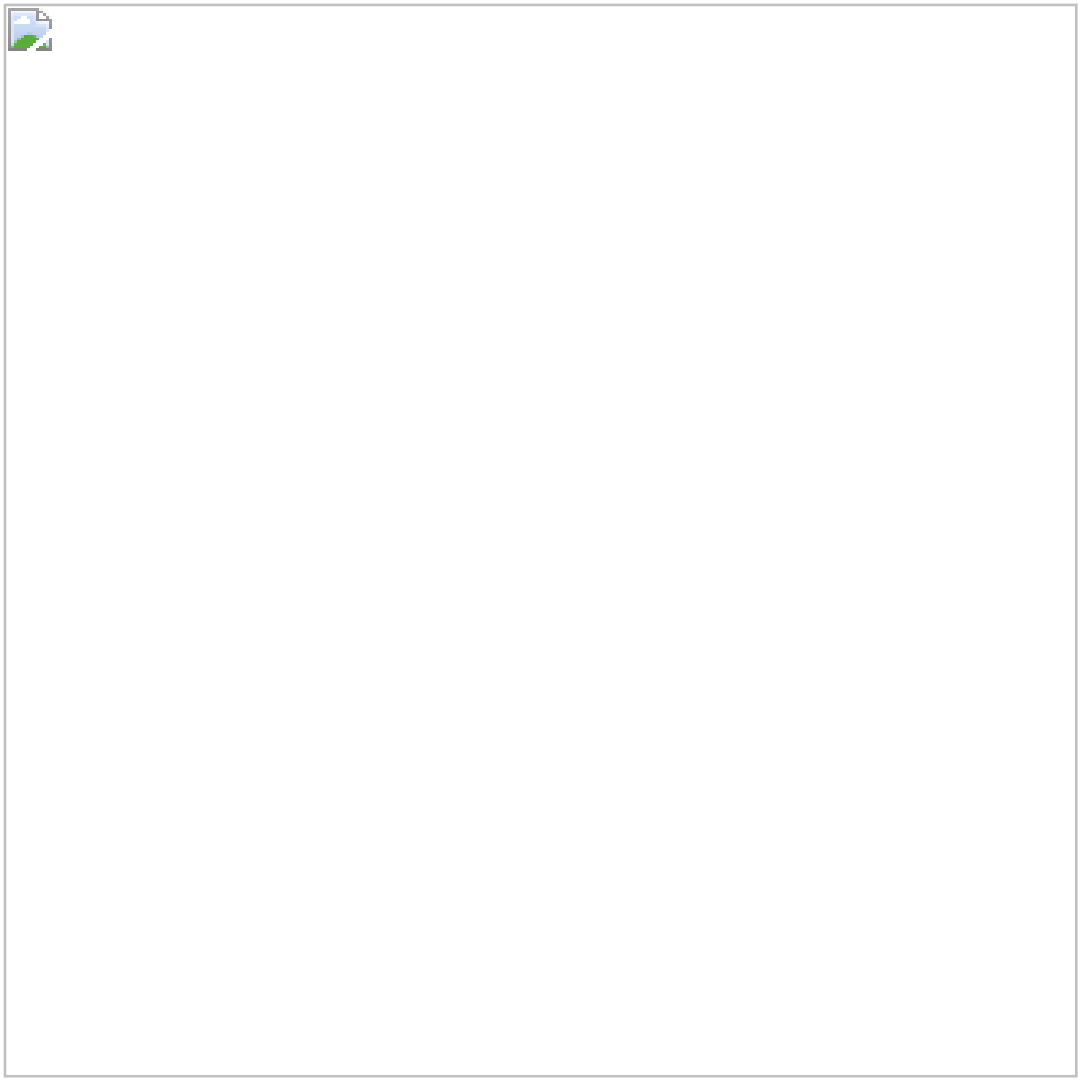

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Books

Yellowstone's Destabilized Ecosystem: Elk Effects, Science, and Policy Conflict

By Frederick H. Wagner. Oxford, United Kingdom: Oxford University Press, 2006. xii + 371 pp. US$ 64.50. ISBN 0-19-514821-5.

In an influential book of the 1960s, *Fire and Water: Scientific Heresy in the Forest Service,* Ashley Schiff (1962) documented how, for over 3 decades, the United States Forest Service subverted ecological science to justify an agency policy of total fire suppression. This policy was especially flawed in southeastern pine forests that evolved under a regime of periodic burning. Schiff's exposé showed how, in a technologically-based society, science could be systematically manipulated to become clever advocacy for a political end. The book became a must read for a generation of ecological researchers and natural resource policy specialists.

Fred Wagner, formerly associate dean of the Natural Resources department at Utah State University, continues this tradition of exceptional scholarship to describe policy-driven research in Yellowstone, the United States' flagship national park. Ironically, the general political and ecological scenario is in many respects similar to the southeastern pine forest debacle—management actions driven by a strong political constituency were imposed on an ecosystem ill-adapted to them, and scientists were unwilling or unable to evaluate and document obviously negative outcomes. In Schiff's example, the fire suppression program was rooted in a strong American land management and resource husbandry movement of the early 1900s. In Wagner's work, Yellowstone's management and scientific research is motivated by equally powerful, but opposite societal forces supporting wilderness or "natural regulation."

For those unfamiliar with the Yellowstone situation, removal of native peoples from the park in the 1800s and reduction in large carnivores in the early 1900s provided favorable conditions for the population of elk (*Cervus elaphus*), a generalist herbivore, to increase dramatically. After government biologists observed the effects of high densities of elk on soil and vegetation in the 1920s, park rangers routinely culled the herd for over 4 decades. In the 1960s, recreational game hunters lobbied to take over the cull. Given the potential political incompatibility of sport hunting with conservation in one of the world's premier national parks, the federal government made the decision to cease elk culling. Park managers and senior scientists then carefully selected a generation of researchers to evaluate the revised policy. The result was a new paradigm of "natural regulation" that was underlain by 4 key hypotheses: 1) long-term human hunting, gathering and burning had not substantially influenced the ecosystems of North America's Rocky Mountains; 2) ungulate populations in Yellowstone were, over the long term, generally high; 3) carnivore predation was a "non-essential adjunct" having minimal influence on elk numbers; and 4) high elk numbers would not cause major changes in plant communities, ungulate guilds, and other long-term ecosystem states and processes.

Although the natural regulation paradigm seems rather farfetched today, remember that it was born in the 1960s, a time of anti-establishment flower children, when wilderness was untrammeled by Native Americans, when biologist and author Farley Mowat's wolves subsisted on mice (Mowat 1963), and the only "good fires" were caused by lightning. Moreover, an excellent argument can be made that ecological science needs large "control ecosystems" with minimal human influences.

In the 40 or so years since the implementation of the national regulation policy, both the National Park Service and outside institutions conducted many ecological studies. These culminated in 1997 with a congressionally mandated review by the National Research Council. It is this wealth of research and documentation that Fred Wagner uses to evaluate changes over time in the Yellowstone ecosystem. He provides meticulous summaries of research in chapters on each of several different vegetation communities, the ungulate guild, riparian systems, soil erosion dynamics, bioenergetics, biogeochemistry and syntheses for the "weight of evidence" on the primary drivers of ecological change. This background allows readers to develop their own understanding on the results of this textbook case of applied ecological science.

Wagner clearly shows that most studies did not support the hypotheses of natural regulation. In cases where studies did seem to support a hypothesis, methods and results were suspect. The elk population clearly grew beyond predictions, some plants and animals began to disappear, and the importance of Yellowstone's lost predators and Native Americans should have become undeniable. However, faced with these incongruities, park managers still supported the natural regulation policy. Some researchers closely affiliated with management then began to invoke climate change as a potential factor for observed ecosystem degradation, but the evidence for this was similarly tenuous. On the basis of the almost overwhelming evidence, Wagner concludes that much of the park-sponsored science on the natural regulation paradigm "missed the mark" and that "Yellowstone has been badly served by science."

For scientists or managers working in similar arenas of high ecosys-

tem values and intense politics, the book's concluding chapters will be of most interest. Here, Wagner explores the interface between science and policy. As an alternate model to Yellowstone's research and management system, he promotes an adaptive management process (Walters 1986) where an open political environment exists between scientists, stakeholders, and managers. Here, a controversial management option such as natural regulation could have been evaluated, as Wagner advises, "in the bright light of objective scientific understanding." Stakeholders and managers could then use this knowledge as a basis to adjust policies quickly before grave ecological consequences occur.

However, the limited and, in terms of literature review, dated discussion of the public policy process is a weakness of the book. A more complete discussion of ecosystem management in a highly polarized political environment could have described a range of current approaches for collaborative problem solving. In fact, another recent review of wildlife management in Yellowstone concluded that the major problem facing the park was not the quantity or quality of the science, but the lack of mechanism to resolve conflicts between and within groups of scientists, stakeholders and agency managers. Gates et al (2005) remark that "collaboration is necessary to define what is acceptable; science is necessary to define what is possible; organizing people to use knowledge to design and implement management in the face of uncertainty is fundamental." Applied ecological researchers, progressive managers, and stakeholders with a strong civic responsibility should strive for this ideal. Our parks, and indeed most places on our planet, need high-profile models such as Yellowstone, where science should help people to understand, value, and maintain the biodiversity of ecosystems.

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Environment Assessment of Nepal: Emerging Issues and Challenges

By the Asian Development Bank. Kathmandu, Nepal: Asian Development Bank and International Centre for Integrated Mountain Development, 2006. xii + 224 pp. Free download at http://books.icimod.org. ISBN 92-9115-004-5.

Who knows best what to do about the environment in Nepal? This is a question that is not put by the publication under review here, because it tells you what is to be done: make information consistent, bring data sets from different environmental sectors into coherent dialogue, provide training and infrastructure where it is lacking, and align standards of quality on environmental governance with benchmarks that are internationally applicable.

Environmental problems become pragmatically manageable through synoptic clarity of all the factors contributing to them: poverty, lack of education, birth rates, stagnant agricultural production, deforestation, endangered species, renewable technology. This book ploughs through tables and charts of evidence in all these conventionally environmental domains, with modern-day add-ons to the environmental frame also considered, including gender, citizenship, conflict, and social exclusion. In this attempt at bringing all the facts into few, it is cross-cutting issues that emerge as recalcitrant obstacles to measuring predictability.

There is an unacknowledged dilemma in the Asian Development Bank's (ADB) catalogue of spheres of activity and instruments of surveillance for monitoring change and impact. This consists of the fact that, although this publication calls for better knowledge, it is stuck in a tunnel vision of what needs to be assessed about the environment in Nepal. In the book's block-by-block assemblage of sectoral assessments, it fails to mention the relevant and intense debates over Nepal's environment that have moved the agendas for research in the last decades. It is as if years of world-class data gathering, analytical reflection and policy argument have entirely missed the radar for this report. Anyone familiar with the exceptional contributions made by this very journal in the last 3 decades will be disappointed in the extreme. Many of the two-dimensional, hard/soft fact-divisive category errors are routinely repeated. The bibliography has not a single mention of the landmark Ives and Messerli (1989) *Himalayan Dilemma*, the articles by Mahat et al (1986) published in *Mountain Research and Development*, Stevens' (1993) exceptional *Claiming the High Ground*, or even more recent outstanding contributions with time depth, analytical rigor, and interpretive sophistication (eg Smadja 2003). For all the complaints made in this book about the quality of data deriving from different organs of the state and their track record of environmental policy implementation, there is no awareness of scarcity with regard to competing analytical approaches to environmental change, and the social and political implications of

different kinds of analysis being applied to the environment.

The environment is simply "out there" to be surveyed dispassionately. For myself as an anthropologist, this kind of influential perspective on the environment is a marker of certain culturally specific attitudes which have been historically very powerful. They displace other modes of relating with environments, of which Nepal has interestingly many examples from its own unique ecocultural mixings. The privileged expert view represented by the ADB has consequences on how some people, rather than others, can be seen to hold a legitimate view or interest on the environment out there.

Calls for technical control systems and information coordination proliferate in the chapters of this book, but where are the citizens, the journalists, the aggrieved and environmentally dispossessed? The chapter on pollution and climate change concludes that "scientific information remains the basis for any pollution-control efforts" but avoids the need to challenge the power of polluters, or encourage citizens to protest, and instead calls for managing institutional pluralism as the social mechanism for translating scientific knowledge into action. Only in the urban chapter halfway through the book is there a picture of a traffic protest, suggesting that more than experts care for the environment. The description of the women's organization of Kupandole in Lalitpur turning waste into resources brings an occasional vignette of intelligent and organized people breaking up the book's juggernautical outpouring of data. However, the section on rivers has no element of the citizens' movement that has recovered the sense of a sacred river network in the Kathmandu Valley, which could be capable of transformation from the open sewer it became with development. As for the data on municipal waste, the latest information is admitted to be only up to 1998, missing the enormous impact of urban building as the wealthy came to the capital since the onset of the People's War.

It is welcome that there should be a chapter on conflict, and there are some genuine moments of insight here, such as the recognition that conflicts are rarely to do only with environments and scarcity, and that solutions involve more than simply environmental factors. The chapter does not discuss the indigenous groups' claims to ethnic territories, nor does it connect to the following chapter on trade. To imagine that Nepal's civil conflict can be explained by rural land and forest scarcities, but not global labor and capital markets, is not convincing. The chapter on trade has a different and more "racy" writing style, but its categorical disapproval of anything that could be seen as protectionism is not justified by a considered view of the risks that the penetration of market values into the Himalayan environment entail. Bioprospecting, for instance, is not even mentioned.

What we are presented with is a particular vision of what the environment consists of, what can be known about it, whether it is measurably improving or degrading. It is an environment that is "out there," amenable to control, and something towards which different kinds of people can be sensitized. What this report misses is the contribution that can be made by the people and environment of Nepal to global understandings of environmental change, beyond talk of capacity-building. The sensitizing that the ADB mentions actually requires a de-sensitizing in the form of a detachment of responsibility from day-to-day interaction.

The solutions proposed by the ADB involve the production of GIS information, assumed to be easily intelligible by policy-makers and the public, in a pyramidal flow of data down from scientists. There is no countercurrent or iterative flow here. People's own knowledge systems, information-sharing and existing familiarity with pluralism of viewpoints are not thought important in this view.

This is conventional development that pretends to a green complexion; it does not see that the environmental threat requires an overturning of the measures and kinds of knowledge that have prevailed until recently. Environmental justice needs new forms of adjudication and rights recognition. The judiciary is naively portrayed as a tool for sustainability, but also described as not responsive to public opinion. The unproblematized use of the level of consumption of energy as a benchmark for the standard of living (p 65) seems to be a singularly inappropriate measure for sustainable development.

In explaining why policies have not improved the environment, the failure of institutions, "poor performance," incoherent and involuntary data supply from institutions are identified. On the upside, renewables are given an upbeat heralding. The combined potential of hydro, biomass, solar and wind energy could provide for demand in the foreseeable future, and Nepal would be a prime location to develop a hydrogen economy.

The copy of the book in my possession has already fallen apart with just one reading from cover to cover. In contrast to the women of Kupandole mentioned above, is this not turning a resource into a waste? Is this an institutional failure and mark of lack of quality control in managed dissemination of the movement of data from experts to policy-makers to the public?

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Mountain Resort Planning and Development in an Era of Globalization.

Edited by Thomas Clark, Alison Gill, and Rudi Hartmann. Elmsford, New York: Cognizant Communication Corporation, 2006. 348 pp. US$ 74. ISBN 1-8823445-47-9.

The connection between landscape and tourism is obvious insofar as, for many people, the desire to experience different environments is a major motivation to travel. In this regard, mountains have a long-held, cherished allure: they stimulated some of the earliest travel writing, and were the subject for some of the earliest scholarly work on tourism. While mountain areas continue, by virtue of their dependency on tourism, to feature prominently as case-study locations in many journal articles on tourism, it is surprising that there have been relatively few dedicated volumes on mountain resort development. In compiling this collection, Clark, Gill and Hartmann set out to raise awareness of mountains and their role as "vital contributions to the welfare of all living things" (p xi) not least as they are connected to tourism, and to stimulate greater dialogue among scholars of different backgrounds to further this aspiration.

Substantively, the volume comprises 19 chapters in 5 sections, with 32 contributing authors. The first section (4 chapters), which covers issues of globalization, tourism and mountain resort development, gives way to discussion of the interconnected challenges of sustainability in the face of growth (Section II, 4 chapters) and the question of "Resort development for whom?" (Section III, 2 chapters). Contributions on the strategies and policies involved in the stewardship of the mountain environment (Section IV, 4 chapters) precede an examination of emerging themes in resort design and planning in the fifth and final section (4 chapters).

Given the size of the book and the number of chapters, it would be inappropriate to attempt a chapter-by-chapter synopsis. As with any edited volume, there are inevitably variations in the narratives in terms of their nature and quality; however, the editors have done a good job in tackling the unenviable task of harmonizing a diverse array of contributions stemming from quite different intellectual backgrounds. These days, publishers like to extol their high production values as a lure to potential authors and editors. Aesthetically, this volume is beautifully produced. It appears almost a cliché to be writing that it is richly illustrated but it is! Over 70 figures and 25 tables tell only part of the story; the graphics are generally excellent, and it was a pleasant surprise to find several reproduced in color, adding an extra vibrancy to the volume.

A somewhat predictable observation would be that, at times, the book can appear fragmented insofar as the sections are relatively small despite (or perhaps because of) the number of contributions and contributors. Some chapters are much shorter than others and, however interesting they may be, sometimes left the reader with feelings of frustration and of an opportunity missed. Each section begins with a short introduction by one of the editors. These entrées and the introductory chapter provide helpful overviews and contextualization. Far from being the last word on mountain resort development and tourism, they demonstrate that there is a place in the market both for a more integrative text synthesizing issues as they relate to a wider range of mountain settings, and for a more theoretically- and conceptually-driven volume dealing with major issues in the social sciences as they relate to mountain environments—which, as we are reminded (p 1), comprise as much as 20% of the earth's landmass but remain relatively marginalized in discourse.

In terms of geographical coverage, 12 of the 19 chapters deal substantively with mountain resorts in North America, the home region of the editorial team and the location of the conference from which this volume was developed (p x). Given the ambitions of the volume and the poignant issues tackled in each section, specific contributions from mountain resorts in other notable parts of the world, such as Scandinavia or the Southern Alps, would have been welcome. The European Alps (and other European ranges) are under-represented, and the developing world (eg Morocco, India, Central Asia, the Andes) is invisible, save for a short but thought-provoking chapter on the lessons that mountain resorts may learn from their coastal counterparts in the Caribbean. This criticism may be a little uncharitable, insofar as the coverage of any edited collection is a function of those willing to contribute and/or aware of the project in the early stages of its development. Agendas can move on apace and in unpredictable manners, but this book begins to engage with several serious issues, such as globalization, capital flows and property markets, social exclusion, risk society, corporate responsibility, and geopolitical integration. There is no doubt that the emphasis on

sustainable development in mountain resorts is both relevant and welcome.

The publication of this book in 2006 paralleled increased international public debate on climate change, and its apparent role in reduced snowfall in the European Alps that year. Climate change is not a new issue, and it is surprising to find only brief mention of it in this volume, with less still on mitigation and adaptation. Mountain environments and ecosystems are extremely sensitive to climatic stimuli. Whether the issue is resort design, stewardship, sustainable development, or resource allocation, climate change will induce new sets of winners and losers which a volume like this provides an important, albeit first, step towards identifying.

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Karakoram in Transition—Culture, Development and Ecology in the Hunza Valley

Edited by Hermann Kreutzmann. Karachi, Pakistan: Oxford University Press, 2006. vii + 419 pp. PKR 895.00. ISBN 0-19-547210-1.

This compendium is the work of 34 contributing authors—although the dust cover lists only 29—and comprises 28 contributions loosely divided into 3 sections, "Environment and Resources," "History and Memory," and, finally, "Culture and Development." The sections do not follow the sequence given in the title, which favors Section 3.

Both the preface and the introduction are by the editor, who provides a much-needed roadmap of the book in the introduction (pp 2–4). While attempting a conceptual framework, the introduction injects political overtones by referring to the "failure of the communist modernization project" and criticizing both the command economy and globalization approaches (p 1). Hunza's position as a centerpiece is emphasized by tracing its evolution since colonial times and placing it as a central node in a complex network (p 2).

Section 1 deals primarily with the geology and geomorphology of the Karakorum, with glaciation as a major theme. Mike Searle's concise opening article in Section 1 provides a broad technical overview of the geology, noting that the "Karakorum is surprisingly quiet seismically" despite the northward movement of the Indian plate into the Asian mass. He also notes that erosion effectively offsets the rise of the Karakorum Mountains. Lewis Owen, in Chapter 3, addresses the crucial issue of glacier fluctuations; conclusive evidence regarding which climatic processes determine these is still awaited. Chapter 4 by Matthias Kuhle summarizes the knowledge base on glacier history, identifying the gaps in absolute datings of past glaciation. In Chapter 5, Kenneth Hewitt takes up the glacier fluctuation issue again, describing a wide number of variables and providing a 160-year chronology of glacier lake outburst floods (p 68), but primarily claiming that the moraine complexes mapped by previous researchers are actually not moraines but paraglacial rock avalanches (p 69)—a claim that Owen notes is not yet assessed (p 17). Edward Derbyshire and Monique Fort address natural hazards in Chapter 6, running the whole gamut of geohazards from outburst floods (pp 87–89) to debris flows (pp 89–90) to the ever-present rockfalls and rockslides (p 91). Chapter 7 by Lasafam Iturrizaga is a case study of transglacial landforms in the Shimshal Valley containing valuable instructional material on these landforms through clear graphics (pp 99–100, Figures 7.3 and 7.4) connected with 6 photographic examples from the research area (Photos 7.1 to 7.6, pp 101–106). All articles reveal that prognosis of future events lacks precision.

Section 1 contains 3 more articles. Chapter 8, by Einar Eberhardt, W. Bernhard Dickoré, and Georg Miehe, describes the altitudinal zonation of vegetation, modified by effects of ice-masses and cold-air currents, with periglacial habitat as a "barometer" of climate change (p 119). Expanding human settlements are the primary load on the carrying capacity of vegetation (p 120). Chapter 9, by Udo Schickhoff, bemoans the degradation of evergreen conifer forest cover by indiscriminate timber extraction, while appreciating mitigative measures of wood production by fast-growing species (p 141). The placement of the wild goat (*Capra falconeri*) in a rapidly degrading forest habitat is the subject of Chapter 10, by Ruedi Hess, with its future salvation seen in such diverse avenues as trophy hunting and its high status in local folklore (p 153).

Section 2 opens with Chapter 11, in which Jason Neelis analyzes and refines the readings of the Sacred Rock of Hunza (Dani 1985), extracting evidence of Hunza as the crossroads of transregional movement and intercultural transmission (p 167) between Pakistan, Iran, China, and Central Asia (p 160). He notes that this rock contains the highest number of Kharoshthi inscriptions in the Gandhari language, testifying to a Buddhist heritage. Iranian (Sogdian), Chinese and Tibetan inscriptions are also to be found (p 164). Moving on to the living culture, Chapter 12 by Wolfgang Holzwarth traces the oral history of the region between the 16th and 19th centuries, as recorded in recent times with folklore as the primary

source. In Chapter 13, Irmtraud Müller-Stellrecht challenges the "myth" of Hunza as a center of regional power, asserting that it grew from a small cluster of 3 villages influenced by "testicle squeezing" of external factors (p 197) that gave an impetus to internal solidarity and the growth of irrigation and defense infrastructure. This led to the evolution of a military organization capable of brigandage and slave trade (p 205), culminating in state formation in the early 19th century. Jürgen Wasim Frembgen tells the "other side of the story" of the British annexation of Hunza (and Nager), juxtaposing Knight's (1893) account based on oral traditions recorded during fieldwork, reaching the conclusion that despite fragmentary and contradictory oral history, a picture of indigenous actors emerges (p 223).

Hugh van Skyhawk's contribution in Chapter 15 is a text analysis of a manuscript which validates local claim to royal descent. The language of the text is phonetically transcribed with an English translation, although the author fails to mention that the transcribed language is Burushaski. This is followed in Chapter 16 by a brilliant contribution by Georg Buddruss on Hunza's unique linguistic diversity. This article covers a wide spectrum of spatial and temporal language structure, distribution, research and growth, pointing out future rewarding avenues of research in texts of Shina, Burushaski and Wakhi (p 242). Chapter 17, by Beate Reinhold, on Wakhi in upper Hunza, mainly focuses on language awareness among the speakers. Chapter 18, by the editor, is the longest in the section and is a prime example of empiricism in action, showing how qualitative data can be reduced to numerical and spatial representation. Studded with inventories, charts and semi-statistical data, the article intertwines strands of language, ecology and demography to trace the settlement history of the Hunza Valley. The final article in this section, by Julie Flowerday (Chapter 19), traces six decades of history by presenting photographic evidence from the colonial period, and dynamically juxtaposing this base with two subsequent layers taken by the author in the 1990s.

The third and last section, on culture and development, begins with an article by Stefano Bianca (Chapter 20) which presents the philosophy of the Aga Khan Trust for Culture of grafting modernity onto tradition (p 287) and broadly describes the achievements of donors in the sensitive restoration of important built structures in the Hunza Valley. This is followed by a more concrete article (Chapter 21) on the conservation of the Baltit Fort in Hunza by Richard Hughes and Didier Lefort, which follows the philosophy of the previous chapter by strengthening traditional architecture (cator and cribbage, p 299) while ensuring community participation. Chapter 22 by Masood Khan takes up the thread of community participation in a broad geographical swathe encompassing areas beyond Hunza, outlining the strands of social organization at all institutional levels with a detailed topography. Anna Schmid's theoretically strong vignette on the musician and artisan settlement of Mominabad (Chapter 23) notes that the traditionally disadvantaged status of this group does not change immediately through its integration into the physical infrastructure (p 327) of the dominant groups. Chapter 24, by the editor, addresses agrarian transformations, noting that the opening up of the area has resulted in the destruction of the traditional agrarian and livestock economy, with increasing reliance on off-farm income and the exacerbation of conflicts centered around scarce resources (p 351). This issue is supported in Chapter 25, by Abdul Malik and Mujtaba Piracha, which provides data on the increase of per capita income, bringing into focus that the Hunza Valley spends more than its neighbors. Chapters 24 and 25 both note the radical shift from traditional cropping of buckwheat and barley to potatoes and maize, with an increase in fruit trees (p 364).

Turning to education, Chapter 26 by Sabine Felmy provides an informative overview of Pakistan's educational policy (pp 371–372) and then focuses on the Northern Areas of Pakistan, noting that the literacy rate is higher there than the national average. Finally addressing the Hunza Valley, she shows that increased female literacy and the burgeoning educational standards are the direct result of enlightened policies of Aga Khan III (p 373). Chapter 27, by Amin Beg and Khwaja Khan, addresses more specific issues of civil society empowerment, convincingly presenting the Karakorum Area Development Organization (KADO) and its subsidiary bodies as the prime movers in institutionalizing enterprise efforts in artisanship. Chapter 28, by David Butz, concentrates on the high porters of the comparatively peripheral settlement of Shimshal, showing that, although porterage increases village income and reciprocal learning between trekkers and porters, there are concerns about the erosion of indigenous culture and self-identity (p 399). Pakistan's premier mountaineer turned politician and social worker, Nazir Sabir, closes this volume in Chapter 29 with a brief look at the recent development history of the Northern Areas.

Despite the fact that the volume is littered with typographical errors (for example, p 84 refers to a missing Figure 12A), low-resolution reproductions, and inconsistent systems of measurement symptomatic of the publishing house, this book is low-priced and should be recommended reading for anyone work-

ing in the Northern Areas of Pakistan or any other high-mountain zone.

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Floods in Bangladesh: History, Dynamics and Rethinking the Role of the Himalayas

By Thomas Hofer and Bruno Messerli. Tokyo, Japan: United Nations University Press, 2006. xxx + 468 pp. US$ 45. ISBN 92-808-1121-5.

Thomas Hofer and Bruno Messerli's book brings a much-needed scientific perspective to the question of how forests can affect floods, an issue which has long been the subject of controversy and myths.

Whenever devastating monsoon floods are reported in the Himalayan region, the traditional, self-reinforcing message from the media is that the farmers are to blame for deforesting the mountain slopes. The simplistic, popular underlying narrative assumes that the frequency and severity of floods in the region have increased in recent years because of the deforestation.

Primarily using data from a 5-year research project investigating highland–lowland linkages in the Ganges–Brahmaputra–Meghna Basin, the authors show that the factors determining big floods in Bangladesh are far from simple. Their study indicates a complex combination of factors including simultaneous discharge from the big rivers, high runoff from the Meghalaya Hills, heavy rainfall, high groundwater tables, and spring tides. They also show that, on examination of the historical data since 1890, there is no statistical evidence for an increase in the frequency of major floods in Bangladesh. This lack of correlation with the recognized deforestation that has taken place in the Himalayas over parts of that period also undermines the simplistic narrative which attributes deforestation as the cause of the big floods. The authors, however, underline that this finding does not relieve the mountain people of their responsibility to use their environment in a sustainable manner. They also note that politicians and engineers often focus on monsoon floods as the main problem for Bangladesh, whereas the flood-affected people themselves report that problems that are more related to lateral erosion of rivers, landlessness, and economic survival.

This book is highly commended to all those interested in flood issues, particularly development-workers, hydrologists, and engineers. It is timely for the message it contains to be communicated to the media, politicians, and development organizations: this will allow us to move away from placing unwarranted blame for flood damage on frequently poor upland farmers, and towards initiating efforts to understand and address the real causes of distress related to flooding and the general underdevelopment in the region.

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where the land is greener—case studies and analysis of soil and water conservation initiatives worldwide

Edited by Hanspeter Liniger and William Critchley. Wageningen, The Netherlands: CTA, UNEP, FAO, and CDE, 2007. xi + 364 pp. US$ 45. ISBN 978-92-9081-339-2

Extensive and comprehensive in nature, this book provides a broad coverage of soil and water conservation (SWC) technologies and approaches globally, but with a local focus. SWC technologies are defined as "agronomic, vegetative, structural and/or management measures that prevent and control land degradation and enhance productivity in the field." SWC approaches are defined as "ways and means of support that help introduce, implement, adapt and apply SWC technologies on the ground."

As a typical reader, I started in the case studies of Part 2, and delved immediately into cases of interest. The map-based table of contents, together with titles and short descriptions on the next few pages, provide the reader with the ability to quickly navigate to technologies, approaches, or locations of interest. The case studies cover conservation agriculture, composting, vegetative cover, agroforestry, water harvesting, gully rehabilitation, terraces, and grazing land management. The consistency in format, use of color, symbols, tables, charts, diagrams, and photographs enhances the readability and comparability between technologies or approaches. Readers can gain an understanding of who is doing what and where, and how challenges have been faced in various parts of the world. By highlighting local achievements in a systematic manner, *where the land is greener* brings these success stories to soil and

water conservation specialists, planners and decision-makers at the field and planning levels.

Each case study is summarized in 4 pages, starting with photographs, a sidebar containing location and metadata, and a concise text description of the technology or approach. Technologies are classified by the land use problems they address, the specific land use of interest, climatic conditions, type of soil degradation, and relevant SWC measures. The natural and human environments are summarized in a series of ranked charts including data on climate, topography, and cropland per household, along with point form descriptions of soil characteristics, land ownership, market orientation, and off-farm income. A detailed technical drawing of the technology is shown. Activities to establish and maintain a technology including equipment, timing, energy, labor, and materials are provided—including total costs and the proportion of costs met by the land user. The section on assessment of adoption offers an indication of the acceptability, eg in percent of households adopting with or without incentives. Impacts are ranked + and – for production, socioeconomic, sociocultural, ecological, and offsite benefits and disadvantages. A "Concluding statements" section summarizes strengths and weaknesses.

For approaches, a list of the main problems addressed and a description of the principal objectives of the approach are given. The section on constraints provides guidance on the challenges and constraints faced (eg financial, religious, labor) and options that the approach offers to overcome these. The target groups and donors are listed, including the proportion of costs met by the local community. The roles of user groups, land users, GOs, NGOs, and national and international specialists are summarized, and community involvement is described through all phases of the approach. An organogram is provided for most cases, illustrating the relations between social organizations, private and public institutions, and other stakeholders. Two text sections cover extension and promotion, as well as incentives. Monitoring and evaluation is tabulated, and the methods and indicators used are listed. The impacts of the approach are organized by changes resulting from monitoring and evaluation, improved soil and water management, adoption and sustainability. Similar to the technologies, a "Concluding statements" section summarizes strengths and weaknesses for the approach.

The 42 case studies provide consistent and detailed information on local-scale technologies and approaches. The ways in which data are tabulated, synthesized and evaluated are unique in comparison with other compilations of success stories. I found the format straightforward and yet comprehensive.

Part 1 of the book describes land degradation at the global level, and the goal of WOCAT (World Overview of Conservation Approaches and Technologies) to focus on achievements at the local level, the documentation of case studies using standardized questionnaires, and the development of a public domain knowledge base. An analysis of the technologies and approaches compiled is presented. As might be anticipated, the compilation of costs associated with the establishment and maintenance of systems is difficult—and it is even more difficult to compare between regions where costs, particularly of labor, vary dramatically between countries. However, the editors do a credible job discussing the challenges in assessing costs and benefits in both the short and the long term, and present a series of comparative charts and graphs, including livelihood and ecological impacts for each SWC technology group. An interesting discussion of incentives, funding, and participation is included, as well as the relation to short- versus long-term returns to land. The authors' assessment of land use rights appears to be influenced by the selection of case studies, which overwhelmingly fall under individual rights, and, while not the focus of the book, their deduction that security rather than ownership provides a greater incentive to undertake SWC may be an oversimplification.

Readers may find that a soil and water conservation case study with which they are familiar is not included. However, the WOCAT team have undertaken a momentous task in assembling a range of technologies and approaches from some 23 countries. The documentation of local knowledge in a standardized format, quality assurance, and the associated database pulls together dispersed information and provides positive experiences that can be drawn upon for future SWC project implementation. The authors' suggestions for improved monitoring and evaluation (M&E) and further research are supported by the weak M&E and noncomprehensive research components of many case studies. Prevention and mitigation are promoted over costly rehabilitation despite less visible results. Combined SWC measures, either superimposed, spread over space, or phased over time, are supported through their versatility and effectiveness.

The bulk of the book—300 of the 364 pages—is devoted to case studies, providing practitioners with systematic information and additional references and contacts. While not a light read, *where the land is greener* fulfils its goal of documenting, standardizing, evaluating, and disseminating SWC technologies and approaches.

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Carpathians Environmental Outlook 2007

By the United Nations Environment Programme. Geneva, Switzerland: United Nations Environment Programme, 2007. 232 pp. Free download at www.grid.unep.ch; US$ 40. ISBN 978-92-807-2870-5.

The Carpathians are Europe's longest mountain range, with a length of 1500 km. Definitions of their area vary, as discussed in a recent publication (Ruffini et al 2006). According to the present publication, the greatest proportion of their area is in Romania (43%), followed by Slovakia (22%), Ukraine (14%), Poland (11%), Hungary (6%), Czech Republic (4%), and Serbia (0.5%). All but two of these countries are now members of the European Union (EU). The Carpathians are a highly diverse region in many respects: environmental, economic, political, and historical. This report is the first to attempt to provide an overall synthesis of information and possible futures for this complex region. It derives from a 3-year process based on the integrated environmental assessment (IEA) approach and was coordinated by UNEP offices in Europe, including the Vienna Office, which is also the Interim Secretariat of the Carpathians Framework Convention (CFC), signed in 2003. This convention is identified as the raison d'être for this report, given that the implementation of such instruments and associated policies should be based on the best possible information.

The report is highly illustrated in color, with many maps, tables, both ground- and satellite-based images, and a number of "boxes" in addition to the general text. It was compiled by experts from the region and, following an explanation of its origins and an executive summary, comprises 5 chapters. The first provides a general background and introduction, with sections on main geographical features, human influences, and current environmental impacts and responses. Within the second and third of these sections, the long historical legacy—including that of the communist decades and more recent political changes—is evident.

Chapter 2 considers socioeconomic driving forces, beginning with a macroeconomic and structural policy overview and continuing with sections on both economic and societal driving forces and pressures. In this section it becomes evident that, while it is possible to evaluate trends for the Carpathian countries as a whole, there are relatively few data specifically for the mountain areas of these countries. Thus, almost all graphs and tables in both this and the following chapter portray the diversity of national situations, but not the diversity within the mountains, which is likely to be even greater than the former. Some maps give more detail for regional units within the Carpathian mountain area; but even these are at an inadequate level of disaggregation to provide a possibility to portray the situation on the ground. Thus, while general statements are made about the situation in the mountains, these cannot be substantiated. This problem is not unique to the Carpathians; for instance, similar problems were experienced when compiling data for a 2004 report for the European Commission (Nordregio 2004): only for few variables were data consistently available at the municipality level. These variables did, however, include demographic data—including for the Carpathian countries that are now EU members. However, these data are not included or analyzed in the present report: data on population trends are presented at the national level only.

Chapter 3, on "The state of the Carpathians environment and policy measures," is the longest chapter of the book. It includes sections on species, habitat and landscape diversity; forest, land (mainly agricultural), mineral and water resources; atmospheric processes; waste and hazardous chemicals; environmental security (cf natural hazards); as well as urban development and cultural heritage. In line with the IEA approach, the sections generally address state and trends, threats and impacts, and policy measures and responses. As in the previous chapter, many of the presented data are at the national level. These are complemented by some statistics for specific mountain regions, and also by information derived from research activities at specific mountain sites, particularly in Poland, Romania, and Slovakia. Thus, again, a general overview is provided, but the available information is not adequately focused on the mountainous parts of the Carpathian countries. The structure of these sections also results in a fair amount of repetition, as there are overlaps between topics, and many policies are relevant to multiple issues. An index would have been useful in identifying these overlaps.

Chapter 4 presents 3 scenarios for the future development of the Carpathians, with a target date of 2020. The stated aim is "to help policy-makers and other stakeholders identify the key environmental challenges faced by the Carpathian region, and to understand the economic and environmental impacts of the policies that could be used to address these challenges" (p 190). Given the general lack of quantitative data at a sufficient level of disaggregation, the scenarios are primarily based on qualitative analyses. They primarily derive from a regional stakeholders' consultation which involved "a broad range of regional participants from all seven countries, international organizations and NGOs" (p 7). Unfortunately, the participants are not listed, so it is not possible to judge how representative this meeting was.

The 3 scenarios are: "Business as usual," in which "globalization and liberalization forces are strong and propagate throughout the Carpathians"; "EU Policy First," with "the successful implementation of EU environmental regulations in the entire Carpathians region"; and "Carpathian Dream," which "assumes that pro-environment and anti-poverty policies are given highest priority at a nearly unlimited cost" (p 12). These divergent scenarios raise important issues and have considerable potential to stimulate debate. As noted, their further development would benefit from more quantitative data and analyses.

The concluding chapter restates many of the main conclusions from the previous chapters and then very briefly summarizes current policies as well as policy gaps and limitations. It concludes with a useful summary of major environmental issues and desirable initiatives to address them, particularly emphasizing the use of EU policies and the CFC. The report's concluding paragraph states that "Only through international cooperation and maintaining a holistic view of the Carpathian environment, and a common (or at least not contradictory or conflicting) path of development will the governments and peoples of the region succeed in building a viable future within the 'Carpathian space.'" Such cooperation and holistic approaches are essential for this dynamic region. There is also a statement early in the report (p 7) that envisages a follow-up to the present report. It is to be hoped that, in the interim, the concerned governments will support the collection of quantitative data at a sufficient spatial resolution for the mountain areas of their countries. This would not only facilitate more informed decision-making at all spatial scales, but also permit the next report to be based on data that provides a sufficient foundation for a coherent and in-depth analysis of the actual situation in the Carpathians, as has been possible, for example, in the Alps (eg Tappeiner et al 2003).

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Listening to the Mountains

By Robert E. Rhoades. Dubuque, Iowa: Kendall/Hunt Publishing Company, 2007. xx + 184 pp. US$ 44.45. ISBN 978-0-7575-4635-8.

Amidst an ever-increasing body of scientific literature on mountain research, Robert Rhoades' collection of writing on a rich life of mountain experiences and encounters with indigenous mountain people is refreshing and touching. It is a grateful recognition of the heritage and wisdom of mountain people across the world by this reputed anthropologist and development specialist. In the face of global assimilation, challenges, and crises facing mountain communities, Rhoades argues that "we need to listen to the mountains and their inhabitants for guidance as the heritage of mountain experiences has created a parallel wisdom and alternative paths to sustainable development" (p ix). This collection of Rhoades' journeys in, and writings about, the highlands of North America, Central America, Kenya, the Andes, the Alps, the Sierra Nevada, the Taurus, the Himalaya, the Hindu Kush, and other Asian mountains spans a period of over 45 years.

The volume offers an intriguing blend of scientific writing, vivid field experiences and autobiographical accounts, and is organized in three principal parts. The first section, entitled "From Flatlands to Highlands," relates to the "flatlander's" first fascination and experiences with the Himalaya and the Alps. As a young Peace Corps volunteer in Nepal, Rhoades became quickly aware of "flatland and lowland biases" that work to the detriment of mountain cultures and economies. During his visit to Switzerland in the early 1970s, he also discovered that "survival in the mountains has generated similar adaptations in geographically separated areas due to the vertical terrain, climate and socioeconomic vulnerability and marginality" (p xi). While this statement might still have had some merit in the 1970s for some remote parts of the Alps, pervasive and profound development and modernization processes have deeply transformed the cultural landscape of the Alps and its populations during the past decades. In this evolution, many traits of a traditional mountain identity and autonomy have weakened or disappeared, but so have the former socioeconomic vulnerability and marginality. A third major mountain realm, the tropical Andes, became an early focus of Rhoades' experience during his work at Peru's reputed International Potato Center. At this institution, he contributed to the development of improved seed varieties and crop storage systems. The first part of the book is completed by an early, originally unpublished paper on "Agro-Pastoral Strategies in High Mountains," and a more recent comparative paper entitled "Mountains and the Human dimension." Here the author reinforces his

strong plea that "mountains and mountain people deserve a central place in the global sustainable development plan" (p xiii).

The statement above serves as a framework for Part II of the book, titled "Valuing Mountain People's Perspectives and Knowledge." This has been a guiding ethical and scientific principle throughout Rhoades' distinguished career. In 4 loosely connected chapters, he recognizes "the long-term adaptations and rich indigenous knowledge of mountain farmers" (p xiii); he also reports on the so-called "Foxfire philosophy" of Appalachian culture based on the wisdom and the ways of life of elderly mountain people. In the chapter "Bringing Mountain People Together," he expresses his concern that the voices of mountain people in isolation would get lost without a "cross-fertilization" between mountain communities fostered by effective mountain-to-mountain programs. In the last chapter of Part II, "Participatory Watershed Research and Management," he outlines major so-called "land mines" on the road to effective management, together with suggestions to overcome these obstacles.

Part III deals with "Sustainable Mountain Futures." It is introduced by a slightly modified paper—"Agenda for Sustainable Mountain Development"—originally published in 1997 by Jack Ives, Bruno Messerli, and Rhoades, in anticipation of the International Year of Mountains (2002). This chapter is followed by Rhoades' personal account on the disappearance of the Cotacachi glacier in Ecuador, which has had a significant spiritual and economic impact on the local indigenous community. Unrelated to this paper is the following "semi-autobiographical essay on Maoism in Peru and Nepal." The concluding paper of the book, "Whither Montology?" makes a strong case for the introduction of "montology" as a recognized transdisciplinary mountain science.

This 184-page collection of writings is richly illustrated with 26 black and white photographs, and a rather inconspicuous front cover color photo. Unfortunately, the barely satisfactory technical quality of a number of the pictures detracts a little from the overall attractiveness of the book. Also, the value of the book would have been greatly enhanced by a larger number of relevant maps (there is only one map of the author's mountain visits), tables (2 tables on models of mountain agriculture and on 19th century accounts of the Cotacachi glacier) and diagrams (none in the book). The many references at the end of each chapter—most in English, some in Spanish, but only 1 (with faulty spelling) in German—are very helpful, but it is unfortunate that the vast body of relevant French literature has been ignored.

Listening to the Mountains is a very personal testimony of Rhoades' affection for mountains and mountain cultures. It reveals intriguing glimpses into his many field experiences in diverse mountain realms, as a keen and admiring observer, and as a person who is committed to mountain people and their wisdom. Yet, at the same time, Rhoades has always been engaged in offering his 'Western' scientific knowledge to indigenous populations and in building genuine partnerships based on participatory development efforts. The book is an inspiring document of respect and gratitude to mountain people; for the community of montologists and mountain *aficionados,* it is a fascinating and highly enriching read.

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