Review of Web Sites and Books

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Web Sites on Conservation and Protected Areas

Online information on protected areas and conservation in mountains is widely available but usually found among pages focusing on many other topics. The following web sites provide reliable and interesting information and archives specifically on mountain protected areas.

World Commission on Protected Areas

wcpa.iucn.org
wcpa.iucn.org/biome/mountain/mountain.html
The World Commission on Protected Areas of the World Conservation Union (IUCN) is a major global organization. The Mountain Theme can be reached directly by using the second web address listed above.

World Parks Congress

www.iucn.org/themes/wcpa/wpc2003/
This IUCN site offers official information on the 2003 World Parks Congress in Durban, South Africa.

Commission on Ecosystem Management (IUCN)

www.iucn.org/themes/cem/initiatives/mountains/index.htm
The mountain web site of IUCN's Commission on Ecosystem Management.

Ecosystem Management in Mountains, Watersheds, and River Basins

wcpa.iucn.org/pubs/pdfs/Amman_IntractSes.pdf
Summary of an IUCN report on an interactive session in October 2000 devoted to the "Big Picture Approach." The report argues that environmental and social challenges are growing rapidly, both in extent and complexity. Issues such as climate change, extinction of species, poverty, and security transcend far beyond national boundaries. There is a need to develop and implement a combination of innovative, forward-looking approaches. This is particularly relevant in the case of mountains, watersheds, and river basins, where individual site-specific approaches such as protected areas are unlikely to succeed on their own. The summary mentions case studies, issues raised, and recommendations. The entire report also can be downloaded.

Mountain Forum online library

www.mtnforum.org/resources/library/liblevels/lib311a.htm#parks
The Mountain Forum has a "Parks and Protected Areas" section in its online library. This is where material that is sent to the Mountain Forum on this topic is stored. Currently, this section harbors about 30 full-text documents related to mountain parks and protected areas and 46 summaries and links.

Mountain Protected Areas Update

www.mtnforum.org/resources/library/mpaup.htm
The Mountain Forum library also has an archive of Lawrence S. Hamilton's "Mountain Protected Areas Update." This newsletter offers a useful overview of events, initiatives, and other interesting information worldwide.

African Mountain Protected Areas Update

www.mtnforum.org/resources/library/ampaup.htm
Peter Blignaut's "African Mountain Protected Areas Update" has been discontinued because of the lack of funds, but the archived issues are a great information source on Africa's protected areas.

International Parks Documentation Center

www.unifi.it/unifi/deeaf/CEDIP
The web site of the International Parks Documentation Center (CEDIP) in Pratolino, Italy, founded in 1988. Mountain protected areas are included.

Montane cloud forests

www.strybing.org/cf
www.cloudforestalive.org
Information on montane cloud forests is posted at several places. The first site listed here is the site for the Strybing Arboretum in San Francisco. The World Bank maintains the second web site.

International Mountaineering and Climbing Federation

www.uiaa.ch
The web site of the International Mountaineering and Climbing Federation (Union Internationale des Associations d'Alpinisme) has many items relating to protected areas, threats, access issues, etc.

European Mountain Protected Areas

www.alpmedia.net
This site offers a weekly electronic posting on protected areas in the European Alps. It is issued by the Commission Internationale pour la Protection des Alpes in the Alpine languages.

Resources Himalaya

www.resourceshimalaya.org
Resources Himalaya, in Kathmandu, is a not-for-profit research and education organization, GPO Box 2448. It is lead by Pralad Yonzon. A newsletter, "Habitat Himalaya," is produced regularly, with some orientation toward wildlife conservation.

Himalayan Environment Trust

www.himalayanenvironment.org

The web site of the Himalayan Environment Trust, based in New Delhi, mainly contains mountaineering news items but sometimes includes material relevant to protected areas. R. S. Mehta, Administrative Officer, publishes a monthly Internet newsletter, "Himalayas Online." Contact hetrust@del2.vsnl.net.in

Finally, a CD ROM titled *Regional Cooperation for Sustainable Mountain Development in Central Asia,* published by the Asian Development Bank Project RETA #5878-REG in English, Russian, and Chinese, underlines the major role played by protected areas in the national strategies and action plans of Kyrgyzstan, Kazakhstan, Tajikistan, Uzbekistan, and Xuar, People's Republic of China. The CD ROM presents information on several proposed transboundary protected areas and corridors.

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Books

The Ecology, Land Use and Conservation of the Cairngorms

Edited by Charles Gimingham. Chichester: Packard, 2002. viii + 224 pp. £39.99. ISBN 1-85341-117-5.

Within the UK, the Cairngorms are an area of superlatives, including the greatest extent of high-altitude arctic alpine plateau; the largest areas of native forest; and significant numbers of rare plant, bird, and insect species. As a result, the area's importance for conservation has been recognized in a wide range of Scottish, UK, and European designations—most recently as Scotland's second national park. Yet, as with many such areas, there are many challenges for the management of the area, including grazing by sheep and large populations of deer, burning to provide habitat for grouse, bulldozing of tracks to allow access for field sports, and various pressures from recreation in both summer and winter. In a country where "wild" country is quite rare, the Cairngorms are also "the largest block of hill country in Britain distant from public roads" (p. 161).

This book is an excellent primer on the Cairngorms and, indeed, on many of the key characteristics of, and issues facing, Scotland's mountains as a whole. This reflects the large scale of the Cairngorms, in British and Scottish terms, and the fact that a significant proportion of the natural scientific research conducted in Scotland's mountains has taken place within them. The book begins with a short introduction, which is followed by Part 1, "The Ecological Basis," with chapters on physical geography, vegetation, birds and mammals, insects, and ecology of aquatic and subaquatic habitats. All of these are up-to-date overviews on their particular themes. Part 2, "Key Issues," contains 9 chapters on land use (which also rather too briefly covers demographic and socioeconomic issues), agriculture, woodlands (2 chapters), red deer, grouse and moorland management, fish populations, recreation, and conservation of nature and landscape. All these chapters read well, and those on grouse and moorland management, red deer, and fish are detailed overviews. However, it is not entirely clear why they are in Part 2 and not in Part 1. There is also some repetition between chapters, especially the 2 on woodlands, and the chapter on conservation of nature and landscape says little that is not said elsewhere in the book. For a reader who wishes to browse through the book, the repetition is perhaps not important and is in line with the editorial policy defined in the Introduction; but some tighter editorial control could have improved the book as a whole. Similarly, there are cross-references in some but not all chapters.

Part 3 considers "The Future of the Cairngorms," with 2 chapters by the editor: "Towards an Integrated Management Strategy" and "The Cairngorms in the Future." Both these are excellent overviews of the history of conservation and other key issues in the area and look forward to the implementation of the new national park; but again there is repetition—these 2 chapters could really have been 1. They also reflect the emphasis of the book, as expressed in its title, with relatively little discussion on economics, social issues, and the planning and policy environment that will need to be considered as the new national park develops. A number of unresolved issues remain, particularly relating to the park's boundaries, some of which have been drawn largely according to political rather than conservation or land management criteria, and the planning powers are weaker than in Scotland's other national park (Loch Lomond and the Trossachs) or any of those in England and Wales.

The book is very attractively produced, with a good index and 99 well-chosen color photographs that illustrate many of the reasons why the Cairngorms not only are described as "Britain's foremost conservation area" but are also a major attraction for recreation and tourism, attracting about a million visitors a year. It is to be recommended to anyone with an interest in the Cairngorms or in Scotland's mountains as a whole.

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Towards a Vision for Biodiversity Conservation in the Forests of the Lower Mekong Ecoregion Complex

Edited by M. C. Baltzer, Nguyen Thi Dao, and R. G. Shore. Hanoi: WWF Indochina, and Washington, DC: WWF-US, 2001. 2 volumes: main report xvi + 109 pp, ISBN 0-89164-162-9; technical annex xiv + 228 pp, ISBN 0-89164-163-7.

This publication is an outcome of WWF's efforts to build on their ecoregion concept developed in 1998, focusing on the conservation of the globally significant forests in this part of mainland Southeast Asia. Specifically, the documents derive from a workshop convened with the support of IUCN and the Wildlife Conservation Society in Phnom Penh, Cambodia, in March 2000, as well as desk studies. The core information and the process by which it was derived benefit from the input of specialists with extensive field research experience in the region and collaboration with staff of national policy and conservation agencies and nongovernmental organizations.

The Forests of the Lower Mekong Ecoregion Complex (FLMEC) are defined as consisting of the Greater Annamites, Central Indochina Dry Forests, Cardamom Mountains, and Lower Mekong Floodlands ecoregions. Although the name "Mekong" is central to the concept, a significant part of the FLMEC—the Greater Annamites—includes all of Vietnam, of which only the far south lies in the Mekong River Basin. The methodology also strikes a problem in trying to make the FLMEC a terrestrially based unit because the Mekong River Basin constitutes a significant part of this ecoregion complex, and the entire basin is a freshwater Global 200 Ecoregion. The report describes how it was necessary to add on an assessment of the freshwater conservation priorities of the FLMEC (p 12). Defining the region of analysis simply as the Lower Mekong Ecoregion Complex would have allowed for a more integrated ecological approach from the outset. This apparent problem of compartmentalizing ecological complexes on the basis of particular elements of ecosystems calls into question the effectiveness of the ecoregion approach as a tool for identifying conservation priorities—notwithstanding its value as a biogeographic mapping tool.

The report presents the process followed to derive a "biodiversity vision" for the FLMEC, although the purpose and structure of the report are not succinctly explained until page 7. A biodiversity vision is described as being "a critical component of the ecoregion conservation strategy," which "should clearly state the desired target for the program, *based not on what is considered achievable with the resources and techniques available* [emphasis added], but what is required to adequately conserve the biodiversity" (p 6). After this explanation, the text adds a new word to the lexicon of biological conservation: "biovisioning." While recognizing that language is constantly evolving, one has to question the efficacy of deliberate word invention in a field where the relay of longstanding, fundamental scientific terms and concepts to a global audience is already a challenge and where the word "conservation" itself has many connotations. With respect to the definition, the report is not consistent. For example, Chapter 6 describes the basis for delimiting the boundaries of priority landscapes, noting that the area should "not be too large and cumbersome for effective management"—which is somewhat at odds with the definition quoted above.

The values of conservation planning at the ecoregional scale are highlighted, and it is noted that this "will more effectively conserve the full range of biodiversity" (p 5). However, the best planning in the world will not automatically result in implementation of practical, sustainable conservation measures, and the task is that much harder at regional scales—with very few successful examples anywhere, let alone in a geopolitically complex area such as the Lower Mekong. In fairness, the report does identify that the biovisioning component is the first stage in a process that will hopefully lead to practical conservation gains.

Chapter 3 provides a good assessment of the conservation values of each ecoregion of the FLMEC, reinforcing that many of these are indeed of outstanding global, let alone regional, significance. Despite the need for further scientific survey work and the continuing discovery of new genera and species, the knowledge base of the region has improved significantly over the past 10 years, as reflected in the summary. However, the focus of the assessment on vegetation, large mammals, birds, and butterflies has resulted in the omission of some key aspects of biological value. For example, in the description of the Greater Annamites Ecoregion, limestone karst (which covers significant areas of the region) is discussed in terms of its vegetation but not of its endemic cave fauna. Although significant areas of karst lie within protected areas, large areas are also under threat from limestone extraction. However, the report does include karst endemism in Chapter 4, on Freshwater Conservation Priorities. Other threats facing wildlife are discussed, and it is noted that "many species are verging on the brink of extinction" (p 25) through hunting, wildlife trade (including the impact of the Chinese market), and habitat destruction.

Chapter 5 provides an overview of the status of biodiversity conservation in the FLMEC, in the context

of natural resource exploitation, infrastructure (roads, dams) impacts, institutional capacity limitations, and conservation interventions (protected areas, conservation strategies). Although the report was published in 2001, there is no mention of Lao People's Democratic Republic (PDR) undertaking a National Biodiversity Strategy and Action Plan, even though it was agreed in 1999. The impact of habitat fragmentation throughout the region is, quite rightly, noted as an issue of concern—unfortunately, a trend that is likely to continue, given the expansion of infrastructure in all the Lower Mekong countries and the emphasis on regional and subregional development activities. There is a lack of emphasis on the importance and value of nontimber forest products (NTFPs), despite NTFP projects in Vietnam, Lao PDR, and Cambodia. NTFPs are important for forest conservation because they are both a challenge and an opportunity. The report refers mainly to their subsistence, not commercial, values.

The penultimate chapter presents the biodiversity vision for the FLMEC in terms of priority landscapes and specifically in terms of the taxa used as benchmarks for the analysis. The priority landscapes are mapped at a small scale using a simple 3-tiered prioritization of "high," "acute," and "critical." The final chapter, "Defining Success," does not actually provide—as the title might suggest—detailed prescriptions for assessing conservation success at some point in the future. Rather it describes broad foci and targets as a general guide. Clearly, considerably more work needs to be done, and the report concludes that the next step will be to produce more detailed conservation strategies. One wonders, though, when the time will come to move from strategizing to practical implementation.

From a user perspective, the report would have benefited from the inclusion of forest cover and topographic maps to give a clearer understanding of the relationship of the "real world" to the ecoregion zonations, and representative photographs of ecosystem types. Some of the maps are difficult to read. However, the report and its detailed technical annex make a significant contribution to the broad conservation knowledge base of one of the most biologically important regions on earth.

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Conserving Biodiversity in East African Forests: A Study of the Eastern Arc Mountains

By William D. Newmark. Ecological Studies, Volume 155. Heidelberg: Springer-Verlag, 2002. xii + 197 pp. €59.95, US$69.95. ISBN 3-540-42429-6.

Changing Roles in Natural Forest Management: Stakeholders' Roles in the Eastern Arc Mountains, Tanzania

By Kerry A. Woodcock. Aldershot: Ashgate, 2002. 204 pp. US$69.95, £39.95. ISBN 0-7546-1935-4.

To anyone who works on practical aspects of the conservation of natural resources, it is clear that the preamble to the Convention on Biological Diversity contains 2 conflicting statements. The first is something that all conservationists can agree on. We want to conserve biodiversity, preferably in its natural location rather than in zoos or botanical gardens:

> *Affirming* that the conservation of biological diversity is a common concern of mankind.

The second is also something that most people would agree with. We want social equity, so that people can be prosperous and happy:

> *Recognising* that economic and social development and poverty eradication are the first and overriding priorities of developing countries.

The difficulty is reconciling these 2 goals. In developed countries, we have eradicated much of the indigenous large mammal fauna and converted most of the fertile land to agriculture. Nature conservation is sidelined to marginal infertile land on mountains and heaths; and even here, it is often subject to management through burning and grazing. In tropical developing countries, land suitable for agriculture is often on mountains with relatively fertile soils and high rainfall. Under natural conditions, these mountains are covered with species-rich rain forest, and many of them are biodiversity "hot spots" of global conservation importance. To people living in the mountains, the land on which the forest stands is worth more than rare and unique species in the forest, but it is these species which are the "common concern of mankind."

The Eastern Arc mountains of eastern Africa are a good example of the tension between conserving ecology and providing equity. They are a global biodiversity hot spot with thousands of endemic species and are also high-rainfall islands in a predominately dry country. This makes them key areas for both large-scale cash crop and smallholder agriculture. The 2 books reviewed here offer very different insights into forest management in the Eastern Arc mountains. The first is by an ecologist, William Newmark, and resulted from a review report written for the Tanzanian Catchment Forestry Project. The

second is by a sociologist, Kerry Woodcock, and is based on the extensive fieldwork she carried out for her PhD thesis.

Newmark's book is a mine of useful information and reviews a wide range of ecological literature over a broad taxonomic spectrum. The book is geared to providing the data and theory needed to make ecologically informed decisions on management of the Eastern Arc forests for biodiversity conservation. This is covered in 7 chapters: What is Biodiversity?; The Eastern Arc and their Biological Significance; Importance of Biodiversity; Current Threats to Biodiversity; Site Specific Knowledge Important for Conserving Biodiversity; Site Specific Activities Useful for Conserving Biodiversity; and Summary and Conclusions. The strength of the book lies in the discussion of ecological information with informed presentation of key factors such as minimum area requirements for different bird species. This is vital information for a forest manager and would help avoid a tragedy such as establishing a forest reserve area at a size below a critical threshold. There is also fascinating ecological information, such as the strong positive relationship between numbers of restricted range bird species and the logarithm of precipitation. This type of relationship is of fundamental interest in ecology. As the complexities of the relationships between distribution patterns and environmental parameters start to be unravelled, it seems likely that some classical ecological shibboleths will be cast aside by the study of remarkable places such as the Eastern Arc mountains.

Although Newmark's book covers social aspects, this treatment is not as strong as the ecological side. For example, the section on economic valuation of forest products is not supported by empirical data from the region, and a value of US$28.5 million is given for nontimber forest products (NTFPs) in the Eastern Arc mountains on the basis of data from elsewhere. It is very difficult to transfer values, and a major criticism of the general use of NTFP values as a justification for forest conservation is that they vary so much from place to place. One forest may have a wide range of useful products, whereas another might contain little of value. Does this mean that forests with few useful products can justifiably be converted to alternative uses? A conservationist using economic valuation as an argument would reply that "ecosystem services" should be included on the plus side of forest benefits, thereby including forests that might be providing little of direct financial value. Newmark does this in the valuation section, drawing on the controversial article by Costanza et al (1997) to suggest that the annual nonmarket value of ecosystem services provided by the Eastern Arc forests might be as much as US$1.14 billion. This is a dangerous argument to make because these ecosystem services can be provided by vegetation formations other than endemic, rich, ancient tropical forests. The policy maker might point out that tea estates provide both financial returns and water catchment properties and then replace natural forest with cash crop agriculture. This then brings us back to the Convention on Biological Diversity because, of course, natural forests are the "common concern of mankind," and it is the moral argument for conservation that trumps the economic one.

The custodians of this "common concern" include the small-scale farmers who live adjacent to state-controlled forest reserves in the Eastern Arc mountains. Although they may benefit from NTFPs and ecosystem services, for them the cost–benefit analysis is quite simple. The forest grows on valuable land, and when the option arises, farmers will convert forest to agriculture. This happened in the West Usambara mountains when 12,000 hectares of forest was degazetted from state control in 1963. By 1978, this area was completely deforested. In the Uluguru mountains, the same has happened to forest under village ownership. These are practical examples of the tension between ecology and equity. For villagers in these mountains, forest conversion is a simple way of promoting economic and social development to overcome poverty—but underlying this process are complex social dynamics. Kerry Woodcock's book, resulting from many years of fieldwork in villages of the East Usambara and Udzungwa mountains, explores some of these dynamics. It briefly describes the history of forest management in the Eastern Arc mountains, proposing a division of time into a local customary era, a technocratic era, and a participatory era. The most interesting parts of the book are the voices of the villagers themselves. We can compute minimum area relationships for forest organisms or discounted returns from nonmarket values, but ultimately it is people that matter. Like people anywhere, they do not agree, as shown by 2 statements (p 132) that mirror the contradiction inherent in the Convention on Biological Diversity:

> It is best to have foresters guarding the forest, because villagers here are only interested in making money and would destroy the whole forest without thinking (Mzee Shekerage, Kambai elder).

> I am very disappointed in the government. They are preventing my development. By conserving forest, they are leaving me without land (Kambai villager).

What is the way forward? Can these 2 divergent views be reconciled? The short answer is "No": they represent different parts of a broad spectrum of opinion. The trick is to aim for optimizing benefits and capturing values. The challenge is to integrate the ecological knowledge presented in Newmark's book with the social insights

of Woodcock's study. In the Eastern Arc mountains, this process is only just beginning—and these 2 books will provide a valuable resource to people actively engaged in the management of the forests.

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Bridging Human and Ecological Landscapes: Participatory Research and Sustainable Development in an Andean Agricultural Frontier

Edited by Robert E. Rhoades. Dubuque, Iowa: Kendall/Hunt Publishing Company, 2001. xiv + 368 pp. US$40.97. ISBN 0-7872-8473-4.

This book reports on the many facets of a large research project on sustainable development that started in 1993 in 4 rural communities of the eastern Andean foothill region of Nanegal in northeastern Ecuador. Edited by Robert Rhoades, the team leader, the compilation contains contributions from more than 30 collaborating researchers based in Ecuador and the United States. The chapters are divided into 4 sections: "People and Land"; "Ecological Diversity, Land Use Change, and Production Systems"; "Landscape–Lifescape in Social and Political Context"; and "Community and the Dynamics of Sustainable Development." Including the "Introduction" and "Epilogue," there are 19 chapters in total.

Bridging Human and Ecological Landscapes is important, interesting, and innovative. It raises several issues of relevance to current thinking about the combined social and environmental dimensions of sustainability in the Andes and elsewhere. Before addressing these points, it is appropriate to acknowledge the notable success of this project being published. Write-ups on multiyear, field-based team research projects such as this are prone to remaining unpublished, dispersed into multiple reports, or confined to the gray literature. In contrast, Rhoades and his collaborators have marshaled the sizeable efforts and editorial vision that are necessary for piecing together the varied topics that were framed within their research project on sustainable development.

The importance of *Bridging Human and Ecological Landscapes* is severalfold. To begin, it provides a book-length account of one of the kinds of sustainable development research projects that followed the 1992 U.N. Conference on Environment and Development (UNCED) in Rio de Janeiro, or Earth Summit. In the Introduction, Rhoades traces how UNCED and its Agenda 21 blueprint led the U.S. Agency for International Development and other U.S. agencies to create a program known as Sustainable Agriculture and Natural Resource Management (SANREM). One major undertaking of the SANREM-Andes Team and SANREM-Ecuador was the participatory sustainable development project in the communities of Nanegal, which is the basis of this book. The project in these communities can therefore be seen as an example of the innovations of sustainable development research in certain key institutional channels after the Earth Summit.

Participation is important as a core principle of this book and the research that was undertaken in the Nanegal communities. This is representative of many innovative approaches for sustainable development that have taken place during the past decade. The project's idea of participation was geared primarily to research. Community members actively participated in the setting of research priorities, carrying out the research, and evaluating and disseminating the project results. Given the project's emphasis, one wonders how the participation of local residents in research may have influenced the policies, planning, and politics of environment-related issues in and around the study communities. As the book states, it may be too early or outside the scope of the project to discern the impacts of their participatory research on these other dimensions.

Interdisciplinarity is similarly important as a core principle, reflecting sustainable development approaches in the wake of the Earth Summit. Both social scientists and natural scientists are amply represented among the contributors, with both groups carrying out a large number of investigations. Although diverse, the book's social science perspective is centered on identifying social and cultural groups within the communities (based on such factors as migration history, age, gender, education, and household production strategies) and investigating the correlations of these categories to access, use, and personal views of the environment and resources (the "lifescape"). The natural science perspective is centered on categorizing vegetative cover and agricultural land use and determining several of the key properties of these categories. This perspective is used to describe changes in vegetative cover and type of agriculture. The analysis of change is backdated to the mid-1960s (using air photos) and extended into the future by scientific extrapolation as well as by an ethnographic-style envisioning exercise that involved local residents.

Interest in *Bridging Human and Ecological Landscapes* is sure to come from a number of quarters. To this reviewer, 2 distinguishing features of the Nanegal study communities are subject to particularly rewarding insight. First, the innovative social and environmental history accounts

ably demonstrate that these communities represent a postfrontier situation, where settlement has stabilized and migration has slowed (though it continues, especially the outflow of younger people). The postfrontier setting suggests an alteration in the trajectories of land-use change and social and political processes within the communities and region. Second, the Nanegal area is located adjacent to the important Cotacachi-Cayapas Ecological Reserve and other nearby protected areas. Many chapters touch on this important fact, which apparently guided the choice of the study area (p. 207). Overall, the land use and settlement of Nanegal people are apparently not much of a threat to the reserves at present, and one chapter (by Diamond) explores how reserve management could evolve successfully as ecodevelopment or, conversely, could coalesce into ecohaciendas.

The multifaceted nature of this book is also able to raise larger issues for sustainable development research. One such issue is presentation and overall interpretation. Virtually all research activities are reported to have gone extremely well. This success is undoubtedly a credit to the researchers, their skills, experience, and expertise. Yet, we are often reminded that participatory research, even the most exemplary, involves learning lessons through difficulties and even failures. The editor highlights this element in the first point of his thoughtful conclusion (Bringing Sustainability Down-to-Earth): learn from the mistakes of others. Although no one wants to write or hear only about failures, future participatory sustainable development research must continue to look for ways to present a style of account that offers interpretations beyond the seamless-seeming success of the "just-so story."

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Perspectives pour une géobiologie des montagnes.

By Paul Ozenda. Lausanne: Presses Polytechniques et Universitaires Romandes, 2002. x + 195 pp. €37.48. ISBN 2-88074-493-8.

Ozenda is a well-known expert in the field of mountain vegetation. In 1983, he published an excellent summary on the Alpine arc for the Council of Europe (Ozenda 1983). Now, he has extended this overview to include all mountains of the Northern Hemisphere, that is, the Holarctic zone between 30° and 70° latitude, with an emphasis on Europe. He uses the concept of altitudinal zones and examines mountains from the montane zone upward. In medium latitudes, this means zones above 500 m asl. Tropical mountains and mountains in the Southern Hemisphere are not included in the overview because their vegetation is very different from the vegetation found in Holarctic mountains.

Beginning with the Alps in the narrow definition of the term, in Chapter 7 the author develops a new, synthetic view of mountain vegetation: the concept of "orosystems." He then includes the Pre-Alps and the Jura mountains, followed by the Apennines, Pyrenees, Carpathians, and Dinaric Alps, thus defining a "Central European orosystem." This approach is based on an earlier concept, according to which all biocenoses developing toward, or substituting a specific terminal community, are united in a "series." This makes it possible to recognize the potential natural vegetation of mountainous regions, with their great ecological diversity and large areas of vegetation still in development, and—based on the potential natural vegetation—to recognize homogenous areas. Ozenda's concept relies mostly on comparison between the different altitudinal zones, as he defines the climates of mountains, and thus also their vegetation, through 3 pivotal factors: altitude above sea level, geographical latitude, and continentality.

Ozenda's concept of orosystems makes it possible to compare the vegetations of the various European mountain ranges with each other and with those in extratropical Asia and North America. Earlier, Walter suggested the term "orobiome" (mountain system). But Ozenda relies more on floristics to define orosystems; he compares similarities and differences between the various ranges with regard to the species growing there, successively extending comparison to more and more ranges. This has enabled him to establish connections over great distances between mountain ranges that seem entirely different in direct comparison. This method of indirect comparison strongly relies on altitudinal zones, which allow certain correlations despite their diversity.

An important chapter is dedicated to the significance of mountains for biodiversity. Highly different types of vegetation are concentrated on small areas because of the close succession of altitudinal zones. This leads to a greater probability of flora intermingling and thus of new species emerging. Another important factor is the great diversity of locations in the pronounced mountain reliefs: the great number of endemisms usually found in mountainous regions is because of the gaps between mountain ranges. In this discussion, Ozenda also considers endemic species across several ranges, such as *Abies alba*—a Central European endemism found in the Alps, Pyrenees, Carpathians, and Dinaric Alps. These connections are the object of an in-depth discussion. The term biodiversity refers not only to species but also to genera, families, and especially biocenoses and communities. In a separate chapter, Ozenda shows that even in

this altitudinal zone the biodiversity of mountains is as rich as locations are diverse.

In this book, in which each chapter is preceded by a summary in English, Ozenda presents us with a synthesis of the great knowledge he has acquired in a lifetime of research on the mountains of the Northern Hemisphere. This synthesis has great clarity—a major achievement, given the diversity of these mountains. We are indebted to him for this.

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Frank Kingdon Ward's 'Riddle of the Tsangpo Gorge.' Retracing the Epic Journey of 1924–1925 in South-East Tibet

Edited by Kenneth Cox, Kenneth Storm Jr, and Ian Baker. Woodbridge, Suffolk: Antique Collectors' Club, 2001. 320 pp. £35. ISBN 1-85149-37-19.

The *Riddle of the Tsangpo Gorge* by Frank Kingdon Ward (FKW) (1926) fascinated this reviewer half a century ago while working on a thesis on the vegetation in the Himalayas (Schweinfurth 1957a,b). To reread it now—with updated botanical nomenclature and embellished by superb color photographs, taken wherever possible on the very spot of FKW's collecting—is a rare pleasure provided by the enterprising editors. FKW's travelogue has lost nothing of its early appeal. On the contrary, the photographic revelations make the story all the more exciting and, in a way, moving, when contemplating that some of the views escaped FKW altogether by sheer accidents of weather.

The text of FKW's original book is followed by a section dealing with research in the gorge country after FKW, concentrating mainly on the riddle of the Falls. Compared with FKW's classic, this second part of the volume comes rather as an anticlimax. Without any attempt at improving FKW's map—the enlargement of the gorge section is no more than a technical improvement—the reader is left bewildered by ever new cliffs—sheer and unapproachable—more rain, more water, more falls, or, rather, rapids? Even the photographs are often of no help in finding one's direction: no doubt, this feeling reflects very much the nature of the country. In fact, we have to be glad that the explorers reappeared out of the gorge to report on their experience. Alas, the sense of anticlimax is increased, when it all seems to end up in quarrels over priorities—not surprisingly so, when one side still works under the veils of secrecy.

It might have helped the editors in preparing and reporting about their expeditions if they had considered a vegetation map of the Himalayas (1:2,000,000) (Schweinfurth 1957b), which FKW had the satisfaction to see barely 2 months before his sudden death. In addition, since 1975, an annotated bibliography of FKW's publications is available, listing 25 books and 709 articles (newspaper contributions not included), plus a map (1:1,000,000) showing the area of his expeditions (Schweinfurth and Schweinfurth-Marby 1975). Forever planning the next trip, he never spared the time to keep records of his publications (Schweinfurth 1985).

When referring to research in the Tsangpo region after FKW, mention must be made of the *Vegetation of Tibet* (Zhang et al 1988), a comprehensive treatise, written in Chinese, with a vegetation map of Tibet (1:3,000,000), richly illustrated (black and white), and with botanical names in Latin. In the spirit of FKW, when frontiers were not yet such formidable declarations of the territorial imperative—at least not in the area under consideration—reference should also be extended to publications from the Indian part of the gorge, for example, by Bhattacharjee (1988, 1992, 1993), who served from 1952 to 1989 in the Assam Himalaya resp. Arunachal Pradesh with residence in Tuting, the Yang Sang Chu Valley, Anini (Dri Valley) and elsewhere, full of exciting observations with regard to climate, vegetation, animals, and, above all, people.

After all the exertions to solve the riddle of the Tsangpo Gorge, we now hear the distant rumblings of trucks extracting ever more timber from the hitherto untouched forests (p. 339) and about plans for an extensive hydroelectric project; and why not? Presently, the great river gorges further east are subject to such development, and the nature of the Tsangpo Gorge, as the explorers unveil, seems to offer inviting preconditions to go ahead with planning. If the sequence of exploration in the gorge evolves in this way, it surely would be in FKW's spirit for the FKW Appreciation Society (p. 285) to lodge a claim with the United Nations for World Heritage Protection of the Tsangpo Gorge. Perhaps, such a move would also provide for a solution of the still simmering problem of territorial claims along the disputed colonial frontier line.

Although space does not permit one to go into more detail, the same picture is found on pp. 54 and 238 with different captions and similarly on pp. 97 and 171. And "Pemakö from the Doshong La" 3 times (pp. 64, 145, 151) seems a bit overdone. In general, for proper scientific evaluation, photographs from hitherto unexplored country ought to be accompanied by date and time of day to evaluate cloud formation, that is, local climate, and

the exact location of the photographs provided. In contrast to the extensive descriptions of the plant pictures, the captions of the landscape photographs leave much to be desired; and where exactly is this tantalizingly interesting place Abu Lashu (pp. 55, 61) situated?

It was a splendid idea, lavishly turned into reality, to republish FKW's classic on the Tsangpo Gorge, still a botanist's paradise. But this volume will not only be welcomed by the botanical fraternity, horticulturists, and gardeners to see where their treasures come from. The reissue of FKW's classic is also a timely warning to safeguard and to apply for protection of this unique treasure house, the Tsangpo Gorge.

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