



Mountain Media

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Web Sites on Grasslands in Mountains

Conservation and use of grasslands, rangelands, and pastures worldwide is well documented on the Internet. The following list offers a small selection of hits with a focus on mountains; most of the sites give access to relevant documents or search functions that will allow users to focus on very specialized grassland interests.

Mountain Voices (Panos)

www.mountainvoices.org

This web site—part of the Panos Oral Testimony Programme—presents interviews with over 300 people who live in mountain and highland regions throughout the world.

Their testimonies offer a personal perspective on change and development. Among the interview themes are livestock, including herding and grazing practices; pasture control; diseases; and the significance of livestock.

Global Mountain Biodiversity Assessment

www.unibas.ch/gmba/workshops.html

The Global Mountain Biodiversity Assessment is a global network concerned with mountain biodiversity research that is part of DIVERSITAS (Paris), an international global change research program on biodiversity sciences. This page contains information about workshops on the links between mountain grassland diversity and grazing, fire, and erosion (see also the report in the MountainNotes section of this issue).

Eldis Pastoralism Resource Guide

www.eldis.org/pastoralism/index.htm

Resource guides produced by Eldis, the Gateway to Development Information, offer quick access to key

documents, organizations, research themes, discussions, and other key resources. Although mountains are not a specific topic, most of the information presented in the Pastoralism Resource Guide is related to mountain areas.

Rangeland Management in the Hindu Kush–Himalayas

www.icimod.org/focus/rangelands/range_toc.htm

Rangeland management is an area of strategic focus for the International Centre for Integrated Mountain Development (ICIMOD). This page offers basic information as well as access to other documents related to this aspect of mountain environments.

Western Rangelands Partnership (US)

rangelandswest.org/index.html

Web site of the Western Rangelands Partnership in the United States. The site is part of the Agriculture Network Information Center (AgNIC). It is one of many web sites that are part of the national effort to bring a broad range of agricultural information, resources, and tools to the web. Among several other useful functions, it has a sensitive map showing links to research and development organizations throughout the West and gives free online access to the *Journal of Range Management*.

New Mexico Rangelands

lib.nmsu.edu/subject/agnic/range.htm

Web site of the New Mexico Rangelands, one of the partners in the rangelands of the western US (see above). The site is maintained by an agriculture librarian, with assistance from rangeland experts, and is a good example of a selective, centralized resource with an integrated interface. Like other sites maintained by Western Rangeland part-

ners, it has a powerful search engine leading to online articles and other web sites.

Tussock Grasslands in New Zealand

tussocks.net.nz/

A site providing information about the ecology and management of tussock grasslands. It includes research updates, online references, and management modules.

New Zealand Journal of Agricultural Research

www.rsnz.govt.nz/publish/nzjar/

An international journal of temperate and subtropical pastoral science: forage, animals, and environment. A link to abstracts (full texts from 2002 onwards) facilitates access to relevant information.

GeoRange: Geomatics in the Assessment and Sustainable Management of Mediterranean Rangelands

www.georange.org/start.html

Funded by the European Union, GeoRange was set up by experts in range ecology and management, ecosystem conservation and restoration, remote sensing, and spatial information systems. With the direct involvement of responsible land managers, it aims to define optimized management strategies for multifunctional rangelands. GeoRange is active in 3 test sites, all with slopes or mountainous areas.

Cultural Heritage of the Australian Alps: Grasslands

www.ahc.gov.au/infores/HERA/alps/natural/grass.html

This page offers a brief bibliography, with abstracts, of books and articles from Australian journals.

“Dancing with Yaks”

www.landfood.unimelb.edu.au/research/yaks/

University of Melbourne, Institute of Land and Food Resources. Description of a project on the rangelands of the Tibetan Plateau in western China, where nomadic pastoralism and a unique flora and fauna have flourished for thousands of years. The project focuses on rangeland dynamics, wildlife, and nomadic production systems.

“Mongolian–Manchurian Grassland”

www.worldwildlife.org/wildworld/profiles/terrestrial/pa/pa0813_full.html

A detailed description of the Mongolian–Manchurian grassland ecosystem, including types and severity of threats and a list of references. Part of the WWF Ecoregion Profiles series.

“Qilian Mountains Subalpine Meadows”

www.worldwildlife.org/wildworld/profiles/terrestrial/pa/pa1015_full.html

A description of the Qilian Mountains subalpine meadows as an ecosystem, in the same format as the description of the Mongolian–Manchurian grassland ecosystem; also from the WWF Ecoregion Profiles series.

International Center for Agricultural Research in the Dry Areas (ICARDA)

<http://www.icarda.cgiar.org/index.htm>

The International Center for Agricultural Research in the Dry Areas (ICARDA) aims to improve agricultural productivity in dry areas, with a major interest in dry area highlands (eg in Turkey, Iran, Afghanistan, Pakistan, Algeria, and

Morocco). Among other things, ICARDA is concerned with the improvement of nutrition and productivity of sheep and goats, and the rehabilitation and management of rangelands.

The International Livestock Research Institute (ILRI)

<http://www.cgiar.org/ilri/ilri.cfm>

The International Livestock Research Institute (ILRI) works to enhance the well-being of present and future generations in developing countries through research that improves sustainable livestock and mixed crop-and-livestock production. In a joint project, ILRI collaborates with CIP, ICIMOD and ICRAF to link research on crop-and-livestock systems in the Andes, the Hindu Kush–Himalayas, Central Asia and the African highlands.

FAO web site on grassland and pasture crops

<http://www.fao.org/WAICENT/FAOINFO/AGRICULT/AGP/AGPC/doc/pasture/pasture.htm>

On this site, the Grassland and Pasture Crops Group of the Plant Production and Protection Division (AGP) of FAO provides short descriptions of field projects, several of which are partly or specifically concerned with mountain grasslands (Eastern Europe and Nepal).

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Books

Sustaining Agropastoralism on the Bolivian Altiplano: The Case of San José Llanga

Edited by Layne D. Coppock and Corinne Valdivia. Logan, UT: Department of Rangeland Resources, Utah State University, 2001. xlix + 292 pp. + 38 pp. summary in Spanish. ISBN 0-9703899-0-6.

For many centuries, agriculture has been the major economic activity of rural communities in the tropical Andes. At higher elevations, campesinos have traditionally relied on various forms of agropastoralism, reflecting the economic principle of *complementaridad* and an environmentally adapted utilization of different resources. But Andean agriculture and rural life are also embedded in the social and cultural context of a population that may still cherish and rely on traditional values and knowledge but also responds to the challenges and opportunities of modernization, technological adaptation, and new development initiatives.

This volume addresses a wide range of issues related to agropastoralism and rural livelihoods of Aymaras on the central Bolivian Altiplano. The cantón of San José Llanga, about 120 km southeast of La Paz, was chosen for an extended multi- and interdisciplinary research program, with field investigations carried out between 1991 and 1995. The analysis of data continued through 1998, and an “Epilogue” reports on relevant events until 1999. The project was undertaken in partnership with the Instituto Boliviano de Tecnología Agropecuaria and with the cooperation of the people of San José Llanga. It also provided an in-field practical experience for 27 Bolivian students. Although this report may be considered as yet another rural case

study at a microspatial scale, this reviewer shares with the editors the view that there is great “utility in knowing one place very well” and that such in-depth studies will foster the “development dialogue in the Andean zone and beyond” (p 257).

The book includes the following chapters: “Project Objectives and Research Approach”; “National, Regional and Local Context”; “Ecology and Natural Resources of San José Llanga”; “Household Economy and Community Dynamics at San José Llanga”; “The Grazing Livestock of San José Llanga: Multiple-Species Resource Use and Management and Productivity of Sheep”; “Household Socioeconomic Diversity and Coping Response to a Drought Year at San José Llanga”; “Patterns of Technology Adoption at San José Llanga: Lessons in Agricultural Change”; and “Conclusions and Recommendations.” Four annexes deal with the following aspects of rangeland management: improving fallow fields with forages and manuring at San José Llanga; range improvements at Santiago Machaca; performance of introduced halophytes at San José Llanga; nutritional supplementation of grazing sheep at San José Llanga during the dry season.

One of the principal objectives of the study was to examine the role of small ruminants in sustaining agropastoralism on the Altiplano and how this role might be strengthened or improved through a better use of technology or policy (p 257). The following ambitious research priorities formed the basis for this documentation of the continuity and changes of agropastoralism (p 23):

1. Getting a better understanding of precipitation cycles on the Altiplano.
2. Examining the issues of an alleged decline in productivity of croplands and linking this to possible soil management problems.

3. Analyzing the socioeconomic framework as a basis for improving risk management for rural households and communities.
4. Verifying patterns of child malnutrition and childhood morbidity.
5. Examining potential technology and management interventions to mitigate problems of salinization and frost on food crop and fodder production.
6. Studying the causes of livestock morbidity and seeking culturally sensitive and cost-effective ways to reduce the rates of morbidity.
7. Proposing range improvements and sustainable forms of range management.

Because agropastoralism remains the foundation of most rural Andean communities, the conclusion and findings of this applied research are particularly valuable. While recognizing the specific identity and uniqueness of any Andean environment and community, this in-depth study makes a new contribution to the academic literature of Andean agriculture and should be an important tool for institutions and communities in the semiarid Altiplano in their work for agricultural and rural development. However, although the study addresses a wide range of ecological, socioeconomic, and cultural topics as a basis for the understanding of agropastoralism and rural development of this Altiplano region of Bolivia, some relevant aspects receive little or no attention. For a better understanding of the development framework of the area, there could have been more information on the ecological and agricultural altitudinal zonation and specific “niches” of the study area; land tenure and the “land-market”; irrigation systems; the local political decision-making processes, including the role of women; and linkages and mutual impacts between the San José Llan-

ga Cantón and surrounding areas.

Major results of the study should have important repercussions on future rural development strategies of the area and likely also within the wider Altiplano. It is maintained that sheep raising continues to be the main stake for the agricultural economy in making indispensable manure available for supplementary cropping and in providing meat, wool, income, employment, and capital for rural households. Threats to this traditional form of agropastoralism may be linked to a reduction of the application of manure, a shift to dairying activities, and off-farm employment. The editors speculate that investing in dairying and pasture and seeking alternative employment and economic activities may be better options for some families than clinging solely to an often high-risk and low-return rangeland and sheep economy. Yet they recognize that generalizations about development interventions are not appropriate and that for some households, continued investments in sheep production may be the most effective and sustainable development option.

The authors propose a number of recommendations for development and outreach activities for local people as well as for “research management” and future research. They argue that local communities should be actively engaged in seeking to improve the profitability of sheep marketing; improving the management of soil fertility and croplands; improving the sustainability and effectiveness of irrigation; and enhancing human health, nutrition, and access to family planning information. Recommendations for research foci emphasize the importance of social science, agricultural and biological research and interdisciplinary approaches, and “off-station research.” Future research should be directed toward further studies of climate cycles and their impact on agropastoralism, cropland

management and range improvements, risk management for households and communities, human nutrition and health, salinization and frost hazards, and the causes and reduction of livestock morbidity.

The book is richly illustrated with 51 tables, 39 figures (some of them in color), and 31 photographic plates. Unfortunately, some of the photos are too small or are unsatisfactory in quality of reproduction. Each major chapter is supplemented with a very useful and ample list of international references, an impressive total of 396 titles!

In conclusion, this book is an invaluable source of information for academics and practitioners interested in Andean agropastoralism. It also provides a thorough and balanced perception for future research and applies agricultural and rural development strategies for the central Altiplano of Bolivia.

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Cover Crops in Smallholder Agriculture: Lessons From Latin America

By Simon Anderson, Sabine Gundel, and Barry Pound with Bernard Triomphe. London, UK: ITDG Publishing, 2001. xii + 136 pp. £12.95. ISBN 1-85339-530-7.

Cover crops are an important way forward for low external input agriculture. They have a multitude of potential beneficial uses, but there are a number of problem areas or disadvantages to be overcome. Thus, this book is a welcome and easily readable contribution to the wider literature and debate on cover crops.

Whereas most users or potential users of cover crops lay emphasis on increasing productivity, most defini-

tions of cover crops, such as those in this book, emphasize conservation. The best definition, probably, is a combination of those provided: "Cover crops are herbaceous crops grown to provide vegetative soil cover, create a favorable microclimate, decrease evaporation and protect soil from erosion, produce biomass that can be used for pest control and improvement of the soil, and provide food or forage *that will increase productivity on a sustainable basis.*" Cover crops are ideal for use in reduced- or zero-tillage and conservation agriculture systems.

The book provides a wealth of experience from Latin America, drawing on recent work involving a range of stakeholders—including researchers, *campesino* farmers, extensionists, and NGOs—in Bolivia, El Salvador, Guatemala, Honduras, Nicaragua, Mexico, and Paraguay. It might also have been useful to include recent experiences from Brazil. The objective of the book is to share recently acquired knowledge and experience with practitioners and to motivate others to discover and experiment with new forms of cover crop use. It will be useful not only in Latin America but also in Africa and Asia.

The book uses selected case studies and topics from a wide range of agroecosystems discussed during a 4-day workshop in Merida, Mexico, in 1997. Well-organized chapters detail the use of cover crops:

- For weed, disease, and pest control in cropping systems.
- For human diet and livestock feed.
- As a component of improving land husbandry (in soil and water conservation and improving soil fertility).
- In encouraging farmer experimentation as part of a strategy for promoting wider use.
- Presenting case strategies of how participatory research can be undertaken.
- Summarizing key issues and sug-

gesting future strategies regarding cover crop integration into low external input agriculture.

Types of cover crop and cover crop associations in both annual and perennial crop systems are discussed in detail, with many case study examples, which brings the book to life and makes it eminently practical. Farmers are often reluctant to grow cover crops unless they see a direct and immediate benefit to compensate for the loss of main crop. The book usefully identifies a range of criteria used by farmers for evaluating cover crops, which is particularly useful in providing a guide for potential uses that are most likely to be adopted.

Problems hindering wider use of cover crops have been identified as:

- Poor seed availability.
- Lack of markets for products.
- Limited selections for food and forage use.
- Lack of consideration of socioeconomic aspects such as gender, access to inputs, financial resources, and technical support.
- The large variation in farmers' circumstances, including socioeconomic conditions governing access to resources and the many different agroecosystems, which indicates that blanket recommendations are unlikely to be acceptable.
- An overdependency on 1 cover crop species, such as *mucuna*, which can be potentially disastrous if pest or disease problems occur.
- Differing objectives for cover crops between external and local stakeholders; there remains a need to put productivity first and conservation second in a "win-win" scenario.
- Too much reliance being placed on cover crops as "wonder crops." For instance, they do not present a short-term solution to land degradation. They can at best serve as a component of a

wider system that incorporates live and physical barriers within an acceptable land tenure system where socioeconomic aspects are considered.

Cover crops are not a panacea and need to be combined with other strategies. Their use is not without its problems, and more work on identifying their wider impacts is required. The book states that projects often fail to evaluate the impact of cover crops beyond the plot level. At the same time, information on the impacts of cover crops on pests and diseases, crop development, and most importantly, crop yields is scarce. These are important factors for farmers and require urgent attention. There is an ongoing need to build on local experience and knowledge and to share this information. In particular, institutions acting as links with local communities need to increase their capacity to act as facilitators in identifying and communicating research needs and products to researchers, planners, and policy makers. Institutions such as the Centro Internacional de Información sobre Cultivos de Cobertura have an important role to play.

Cover crop innovations are becoming increasingly important in smallholder agricultural systems in poorer parts of the world, where inputs—especially inorganic fertilizers, herbicides, and pesticides—are becoming more expensive, and in many cases, unavailable. Because cover crops have the potential to fill these roles, NGOs, researchers, and farmer organizations are increasingly promoting their use. Consequently, the book deserves to be widely read, and the experiences, good and bad, should be used to encourage increased use of cover crops.

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Mountain Environments

By Romola Parish. Harlow, UK, and New York: Prentice Hall, 2002. xx + 348 pp. £21.99. ISBN 0-582-41911-5 (paperback).

Mountain Environments by Romola Parish was published on the heels of *Mountain Environments and Communities* (Funnell and Parish 2001). In a review of the earlier coauthored text, Ives (2002) stated that this was “a step forward in the treatment of mountains by academics for it enters the policy agenda.” He then took the authors and the publisher to task for their “alarming number of mistakes, slips, or misrepresentations” and weak treatment of mountain physical parameters (Ives 2002). To avoid confusion, readers should bear in mind that the book reviewed here—authored by Parish alone—was released a year later by a different publisher.

This book attempts to update and expand the previous classic undergraduate mountain geography texts by Peattie (1936) and Price (1981). The author evenly groups 12 chapters into 4 parts: “Evolution of Mountain Landscapes”; “Mountain Peoples and Cultures”; “Mountain Resources and Resource Use”; and “Managing Mountains.” The text includes a “Preface,” “Introduction,” and “Epilogue.” A comprehensive and very useful “Bibliography” completes the book.

The 3 chapters in Part I, “Evolution of Mountain Landscapes,” are the weakest part of the text. Part of the problem arises in trying to cover the realm of mountain physical/geographic processes in just 69 pages. The result is an uneven treatment that allots only 2 paragraphs to explaining the role of glaciers in mountain denudation and only a single paragraph to the impact of water. Such lean coverage will handicap undergraduate readers, particu-

larly those from crossover disciplines who often lack a prerequisite course in physical geography. The explanation of tectonic processes is more detailed, but the supporting examples appear in a confusing array of boxes. Moreover, the Pacific Island Arcs are omitted, with no mention of tectonic hot spots to account for these distinctive mountain environments.

In some places, the generalized text flirts with inaccuracy. The chapter “Climate” describes how “westerly winds from the Pacific form rain over the coastal ranges of North America but on the lee side the winds are very dry, having an extra desiccating effect and contributing to the aridity of the Nevada Desert and Death Valley” (p 47). This statement is partly true but misleading: the Coastal Range rainshadow effect is present, but the much higher Sierra Nevada–Cascade chain to the east is the primary cause of interior desert environments. In a similar fashion, the chapter “Mountain Geocology” attributes a greater likelihood of forest fire ignition in California to a “reduction in the tradition for collecting deadwood and keeping forest floors relatively clear” (p 81). Whereas, again, this is partly true, the majority of forest fires in this region result from ever-increasing and careless human use, combined with the logging and fire suppression that resulted in an unnaturally dense even-age understory.

The remaining text concentrates on human–environmental interaction in mountain environments. Many of the examples derive from the author’s field research in Pakistan’s Hunza, northern Thailand, and the High Atlas of Morocco. Despite some tortured explanations about crop location, water resources, and the length of growing seasons, the remaining 9 chapters are much better than the opening physical section. The lucid and insightful discussions of the influence of culture, demographic prin-

ciples, and economic strategies will be useful to a wide range of readers. In particular, Parish devotes an entire chapter to analyzing mountain population change within the context of contemporary demographic and migration models. The broad diversity of factors that influence population change, from diet and nutrition to amenity migration, are integral to understanding current environmental and cultural mountain issues. Readers who are familiar with the 2 standard mountain geography texts mentioned above will also appreciate the new and expanded material regarding development issues, conservation, biodiversity, and tourism.

Anyone who labors under the broad rubric of “development” will find the “Epilogue” provocative. The various approaches to analyzing mountain problems are presented, with the underlying assumption that there is a “new acceptance on the part of the external development community that their role has changed, or perhaps should change, from a prescriptive approach to one of facilitation and response to indigenous propositions” (p 289). Parish questions both the ability of “Western development practitioners to give up the power, and the control over others’ livelihoods and futures” (p 289) and whether the intonation of

mountain residents will be heard over the ruckus of multinational NGO and corporate interests. To examine this issue in more detail, readers should consult *Mountains of the World: A Global Priority* (Messerli and Ives 1997).

A better treatment of physical processes should have been provided in this book. Furthermore, I have 2 additional suggestions on how an otherwise promising new text could have been improved. First, the considerable number of boxed case studies and field vignettes should have been woven directly into the manuscript. The discussion about livestock in Chapter 7, for example, isolates over half the content from the main text. Second, information about mountains in the Western Hemisphere, especially the United States and Canada, which is largely absent, should have been included. Whereas the “Preface” wisely cautions that the book “cannot tackle all aspects of mountains” (p xviii), by sticking to familiar terrain, the author largely ignores the geographic issues and emerging research elsewhere in the world. The fact that not one of the 30 black-and-white plates is from the Americas, Pacific Island Arcs, or Australasia illustrates this geographic imbalance.

This book will likely find its largest audience in introductory

mountain geography classes, particularly those targeting the general education sector. Instructors searching for concise summaries of published field research for presentation in lectures will find the case studies useful. Of special note are the innovative line drawings, which are exceptionally clear and easy to interpret. They are a superior addition to the text.

In summary, although this book offers a weak physical section and the examples are limited in geographic scope, it will find a place in many classrooms because the cultural sections are strong and there is currently little competition at this introductory level.

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