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GUEST EDITORS' FOREWORD: LAND DEGRADATION AND ENVIRONMENTAL MANAGEMENT IN IBERIA

The problems associated with land degradation in Iberia have been the focus of a growing research effort and, increasingly, of action since at least the mid-1980s (Thornes, 1996). As elsewhere in the Mediterranean region, a particularly prominent concern, has been the incidence, causes and management of desertification, especially in semiarid areas of Spain (Mairota, Thornes and Geeson, 1998). This is reflected in the work of EU-funded international research programmes such as Medalus (Brandt and Thornes, 1996; Medalus, 2001), Archaeomedes (Van der Leeuw, 1998), Medchange (Coelho *et al*., 2001) and the recent Medafor programme (which has generated some of the work reported in this volume). The research focus on land degradation has been increasingly complemented by environmental planning and action by national authorities (Mourão, 1998; Rojo Serrano, 1998; Ministerio de Medio Ambiente, 2001). Other prominent challenges for environmental management in Iberia include the pressures on water resources (Ecologistas en Acción, 2000a), forest management (Garcia Pérez and Groome, 2000) and forest fires (Ecologistas en Acción, 2000b).

The following papers are a contribution to the maturing debate on land degradation and management in Iberia, from a geographical perspective. They result from a special session at the Annual Conference of the Royal Geographical Society–Institute of British Geographers held at Plymouth University in January 2001. British geographers have had a long engagement with Iberia both as a location for undergraduate fieldcourse teaching, (greatly assisted by the availability of low-cost package tours), and diverse research activity by individuals and collaborative groups (for instance, within the EU-funded Medalus and Medafor programmes).

The Plymouth session on Iberia brought together geographers with a common interest in land management issues in Spain and Portugal, but whose contributions reflected the great diversity of contemporary geography. The intention was to avoid the narrow perspectives typical of the more specialized study group meetings, and thereby emphasize geography's strong credentials in terms of the holistic perspective now widely regarded as fundamental for the understanding and solution of land management problems, particularly those relating to land degradation. There was an explicit concern to break down traditional divisions between physical and human geography. Contributors were encouraged (with varying degrees of success!) to take on the challenge of presenting complex ideas and technical material in a mutually accessible fashion, while maintaining scientific integrity. It is undeniable that these papers deal mainly with biophysical dimensions of land degradation and land management, which may suggest that there is still a need to widen social, economic and political perspectives on land degradation. Despite this, the papers demonstrate a range of perspectives and approaches that can contribute to a more holistic approach to understanding and managing land degradation in Iberia, while also identifying some common themes. Besides the mix of physical environmental and socio-economic research, the contributions range from complex geostatistical procedures to simple erosion risk-ranking methodologies, and examine erosion processes operating over time-scales ranging from a few years to 100 000 years. They also illustrate the problems of variability in space and time.

The value of multiple perspectives is demonstrated in the papers by Shakesby *et al*. ('Ground level changes . . . ') and Carvalho *et al*. Based on research in central Portugal, the former shows how some soils can lose half their thickness within a few years following wildfire and rip-ploughing disturbance in vulnerable terrain. Despite such dramatic evidence of the effects of inadequate and inappropriate land management, survey research reported by Carvalho *et al*. showed that the majority of farmers in the Maçao region of central Portugal had little understanding of the concept or causes of soil erosion. They believed such degradation to be mainly due to drought or intense rain. Clearly a more holistic perspective embracing such diverse findings is fundamental to the success of any strategy to combat land degradation.

The paper by Mather *et al*. provides a reminder that the dominant focus of policy on short-term anthropogenic causes of degradation can obscure the significance of longer term natural processes. Detailed examination of catchments in the arid zone of Almeria province shows that current patterns of intense landsliding and badland development are essentially a function of a river capture event some 100 000 years ago, and also variations in geology. Recognition of such underlying natural processes provides an important context for land management policies.

A further theme that emerges from these papers is the implications of changes affecting traditional land management systems in Iberia, especially those in sensitive environments. Throughout the region, such systems are being distorted both by increases and reductions of the intensity of land use as a result of major socio-economic factors and by policy shifts. The paper by Hooke examines the hydrological implications of the abandonment of traditional systems of managing floodwaters in ephemeral streams in the Guadalentin basin, southern Spain. As labour-intensive maintenance of such systems is withdrawn, their diminished effectiveness in flood attenuation and erosion reduction may be partly countered by the presence of vegetation growing in river channels. Further research on the management of in-channel vegetation would seem worth while.

The traditional dehesa and montado agroecosystems of Spain and Portugal are often regarded as a mature and environmentally sustainable integration of pastoral, arable and silvicultural land uses. However, Shakesby *et al*. ('A ranking methodology . . . ') show that they may be less effective in mitigating soil erosion and land degradation once they are put under stress by detrimental management practices, notably a localized increase in stocking densities and tillage frequency. Their paper suggests that a method based on the ranking of a series of erosion risk indicators offers a flexible and robust tool that might be of practical use in the future management of diverse and changing dehesa and montado landscapes. However, the paper by Fitzjohn *et al*. highlights the limitations of oversimplified, 'mono-specific' land management strategies, given the problems presented by high levels of localized variability in soil characteristics and vegetation cover. The patterns of complexity that are evident from detailed analysis at various scales present major challenges to land managers and the supporting research community. Fitzjohn *et al*. explore the potential of geostatistical analysis for understanding spatial and temporal variability in soil properties. Further, they argue that variability should be a key principle in land management, whereby spatially diverse and complex patterns of agriculture, forest and scrub would be encouraged in the interests of optimum resilience against land degradation. However, a proper appreciation of variability presents an intriguing dilemma in terms of land management strategy. The very complexity of physical processes and patterns demands relatively sophisticated and 'data intensive' scientific support, which may run counter to both funding constraints and a general emphasis in land management policy on more participatory approaches. Clearly a major research challenge is finding the right balance between everyday applicability and sufficient scientific sophistication.

Throughout Iberia, traditional resource management practices have, of course, been replaced by a variety of more modern and technologically sophisticated systems. Roberts's paper illustrates how even a modern planned system of water supply and distribution was only able to cope at the expense of agricultural and environmental integrity when tested to its limits by droughts in the early to mid-1990s, and was thus arguably unsustainable. Evidence presented by Shakesby *et al*. ('Ground level changes . . . ') in relation to contemporary post-fire forestry management in Portugal shows that despite evidence of recovery within three to four years, practices such as rip-ploughing are unlikely to be sustainable in the longer term.

In many rural areas of Europe, there has been growing emphasis on the value of involving local communities in various aspects of land management and development. While there is considerable faith in such participatory approaches at the European, national and regional level, the paper by Carvalho *et al*. contains some notes of caution about the possible limitations of local communities in terms of their ability to take on a stronger role in managing land degradation. In the Portuguese case study area, Maçao, the resident local population is still falling, and is also ageing. Further, their perceptions of the extent, gravity and causes of degradation appear to diverge from a more scientific appraisal. Thus there may be neither the incentive nor the capacity to confront land management problems adequately. Carvalho *et al*. therefore suggest a need for innovative action in terms of organization, promotion and capacity building, in which both participation and external expertise are required.

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