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The Centre for Mountain Studies Contributes to Sustainable Mountain Development at All Scales



University of the
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Centre for
 Mountain Studies

The Centre for Mountain Studies (CMS) is located at Perth College, University of the Highlands and Islands, Scotland. Since its establishment in 2000, staff and students at the CMS have been active in research and knowledge exchange activities at all scales, from the local, in Scotland, to the global. Projects in Scotland have focused mainly on estates, wild land (see below), and forests. Work across part, or all, of Europe has addressed mountain foods (see below), adaptation to climate change, large-scale regional planning, and the characterization of Europe's mountains. At the global scale, the CMS has been involved in activities relating to sustainable mountain development, global change, interdisciplinary research, and biodiversity conservation. The CMS also runs a part-time online MSc in Sustainable Mountain Development. This article summarizes some recent and ongoing activities. More information, including additional published references, is available on the CMS website.

The world's mountain forests

A quarter of the world's forests are in mountain areas. These forests typically have high biodiversity and provide many goods and services for people both in the mountains and in the lowlands, often far away. Mountain forests are important as sources of wood as well as other products such as medical herbs. When managed well, they are also vital for ensuring reliable supplies of high-quality water and for protection against natural hazards such as avalanches, landslides, and floods. They are also the setting for tourism and many recreational activities.

These issues were explored in a publication (Price et al 2011) coordinated by the CMS and BOKU, University for Natural Resources and Life Sciences, Vienna, Austria, and designed as a contribution to the International Year of Forests 2011 with support from the Swiss Agency for Development and Cooperation. Through introductory texts and 32 case studies from around the world, this report presents the many values of mountain forests, outlines current challenges for their management, and proposes recommendations for their sustainable management.

Quality foods and sustainable mountain development

Recent years have seen a building of momentum around efforts to harness quality foods as an engine for sustainable mountain development. The research in this area with which the CMS has been involved has included the European Mountain Agrofood Products, Retailing and Consumers project (EuroMARC), funded by the European Commission's 6th Framework Programme for Research and Development (2007–2010) and involving partners from 6 countries and a recent study with the Institut Supérieur d'agroalimentaire Rhône-Alpes (Isara) Lyon, France, and Euromontana, commissioned by the European Commission's Institute for Prospective Technological Studies.

The literature reviewed in these studies confirmed that mountain agriculture delivers a range of positive externalities, such as natural hazards protection and carbon sequestration. Primary production

and food-related businesses also represent an important source of employment in mountain regions, and the multifunctionality of mountain agriculture is associated with substantial environmental and biodiversity benefits. Research within EuroMARC evidenced a considerable demand for mountain foods, with consumers in a number of European countries willing to pay a premium for mountain products because of their association with high-quality natural environments and modes of production. However, the term "mountain" is used in relation to a variety of products, some of which are produced outside mountain areas, which results in the reduction of any potential market advantage for "legitimate" mountain food producers and a lack of accounting for the positive externalities associated with mountain food production in the final price.

To explore these issues, research conducted by CMS has examined policy and labeling schemes that are relevant for mountain foods. Issues identified included a lack of consistent interpretation of the term "mountain food" across Europe and the inadequacy of existing mechanisms for protecting and sustaining mountain foods. Despite the development of a European Charter for Mountain Quality Food Products in 2005, the potential for misuse of the mountain term remains: it has no formal policy-based European definition, although national-level schemes have been developed in certain countries. The Swiss Ordinance on the terms "Mountain" and "Alpine Pastures" legislation is the most advanced example of such a scheme. This

specifies that mountain food products must be produced and processed in defined mountain, alp, or alpine pasture regions, with the bulk of raw materials also originating in these areas. Similar schemes have been developed in France and Italy, and discussions are also underway within the Alpine Convention on the development of a coherent definition for mountain foods.

Current schemes and labels used for mountain foods include European Union schemes, national mountain legislative schemes, and a variety of regional schemes to promote market products based on their mountain origins. The European Union Protected Designation of Origin and Protected Geographical Indication schemes represent important marketing channels for many mountain food products. However, producers view these schemes as lacking a distinct mountain focus and as being bureaucratic and poorly suited to the marketing of many smaller-scale mountain products. More broadly, there is a lack of coherence in relation to how mountain products are defined across different schemes, at different scales. The potential exists for the European Commission to address this issue and align existing schemes through the development of a clear definition for mountain foods. This potential has now been recognized, with the European Parliament approving the development of a new regulation in September 2012, reserving the use of the term “mountain product” to food products produced and processed in mountain areas.

Land ownership, management, and partnership in Scotland's uplands

Scotland's uplands have a diverse pattern of land ownership, with much of the land in privately owned estates, some of which are many tens of thousands of hectares in area.

Estates are also owned by conservation organizations; public bodies; and, increasingly, since the Land Reform (Scotland) Act 2003, local communities. The “Sustainable Estates for the 21st Century” project has been underway at the CMS since 2007, which is funded by the Henry Angest Foundation. The overall aim of the project has been to integrate the concept of sustainability into the management of large, upland estates in Scotland. Researchers worked with a range of stakeholders and on a number of case studies to understand the complex driving forces that influence landowners' decisions and practice. The project is now in its synthesis phase: the detailed results will be published in an edited book (Glass et al 2013).

The project has illustrated the impact of landowners' decisions on community resilience by highlighting their role in facilitating business and lifestyle opportunities by sustaining upland employment and supporting community-generated entrepreneurship. This theme was explored in more detail at 3 stakeholder workshops across upland Scotland in late 2011. Funded by the Economic and Social Research Council, the Scottish Government, and Scottish Land and Estates (a nongovernmental organization that represents landowners' interests), the workshops focused on the need for more estates to work in partnership with communities and other organizations to deliver mutually beneficial projects and outcomes. Workshop participants were asked to comment on a short booklet called “Working Together for Sustainable Estate Communities,” and their feedback was incorporated into a final version (Glass et al 2012).

The booklet emphasizes that opportunities for engagement and partnership are important and exist across a wide spectrum, from simply taking a more “open” approach to estate management (an “open-door policy”), to the development of joint businesses between the estate and the

community, or the development of shared equity schemes in relation to specific services or assets. However, implementing any of these approaches requires consideration of the following key points:

1. Trusting relationships need to be developed: estates should consider representation on community organizations and/or groups to develop new relationships and to explore the benefits of working more closely with agencies and other stakeholders;
2. Methods and timings of interaction are crucial: communication needs to be two-way (rather than “top down”) and community consultation should be early, meaningful, and transparent;
3. Estate representatives need to be visible and approachable: this is crucial for developing a positive relationship between the estate and the community; estates that develop relationships with wider partners, such as community development trusts and public agencies, are better able to access wider support, knowledge, and resources;
4. Developing positive relationships may benefit from the involvement of an “honest broker”: when conflict occurs, a suitable “honest broker” can act as an impartial mediator, sharing policy information and guiding discussions without vested interest;
5. Explore suitable models for rural leadership: partnerships can increase the capacity of communities and estates to engage in local decision-making, and effective leadership can release volunteer energy and increase the availability of locally social capital.

When these key points were taken into account and productive engagement and/or partnership processes were developed, local governance models were stronger, with diverse mutual gains. The

booklet can be downloaded from www.sustainable-estates.co.uk.

Although this research has focused on the mountains of Scotland, we believe that its findings have far wider relevance in terms of recognizing and capitalizing on the opportunities for landowners, whether private, government, or nongovernmental organization, to work with the people who live in the communities on and near their landholdings for mutual benefit.

Wild land and wilderness

Since 2005, wild land, wilderness, and re-wilding have been a focus of CMS research. In Scotland, wild landscapes are areas with outstanding scenery, with minimal evidence of human influence, diverse opportunities for high-value outdoor recreational experiences, and often

containing large areas of seminatural or near-natural habitats. The work on wild land began with a study commissioned by Scottish Natural Heritage (Scotland's national agency for biodiversity conservation) to study the benefits and opportunities of Scotland's wild landscapes (Figure 1). A key conclusion was that wild land required clearer definition and criteria in Scotland to ensure the future sustainability of this resource (McMorran et al 2008).

Following on from this work, Scotland's 2 national parks, Cairngorms and Loch Lomond and the Trossachs, both in mountain areas, undertook the challenge of mapping and managing wildness as a landscape attribute. CMS has been directly involved in this work in partnership with the Wildland Research Institute at the University of Leeds. The process of mapping wildness uses a geographic

information system to merge layers of data that reflect key criteria (eg ruggedness and remoteness from roads, naturalness of vegetation, density of modern human built structures) that influence how wild a given landscape is perceived to be. These criteria were based on existing relevant policy and supported by public perception studies of wild land in Scotland.

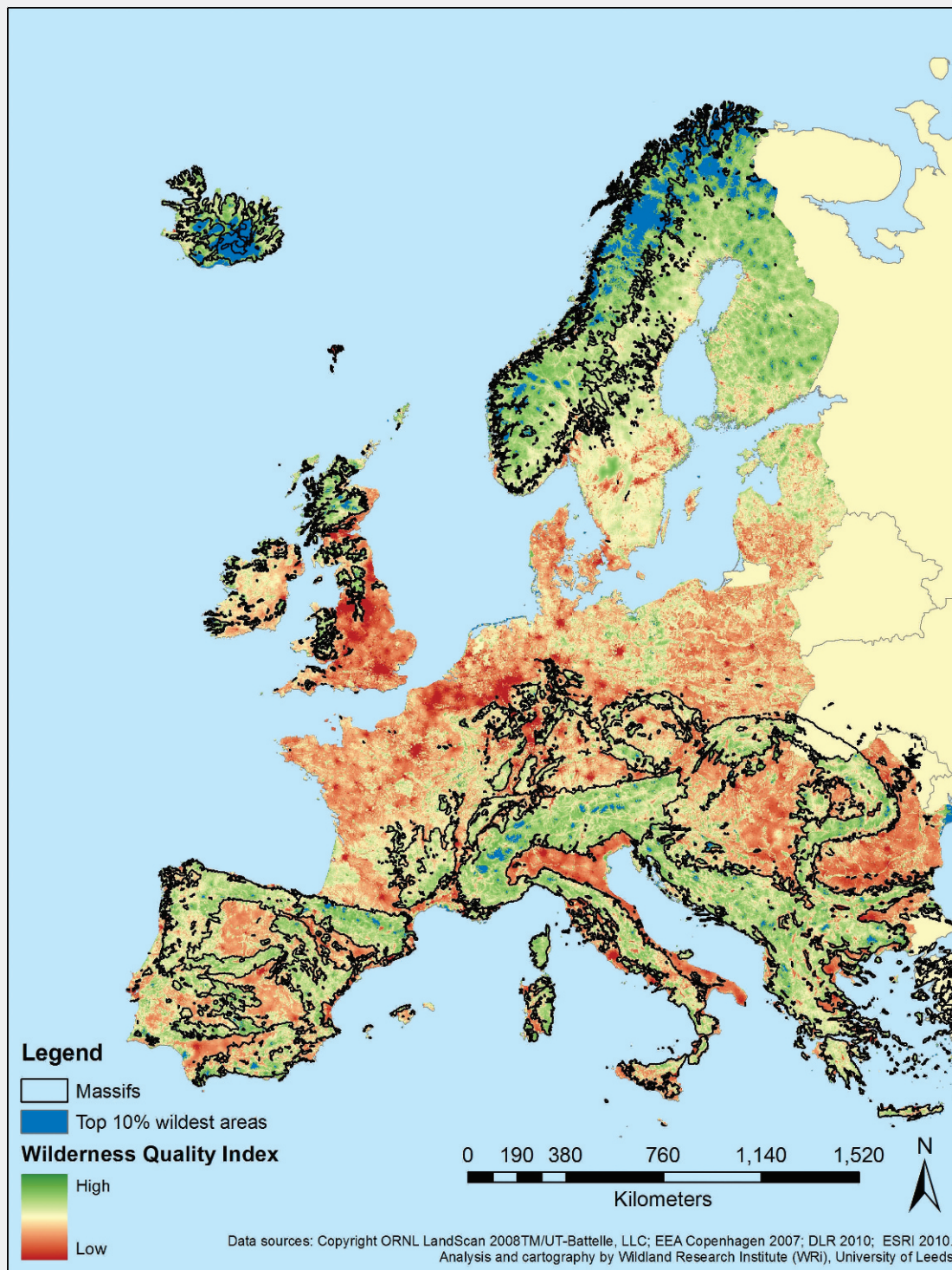
These efforts have led to the development of detailed maps of a *continuum of wildness* in the 2 national parks in conjunction with the on-going delineation of core areas of wild land and development of planning guidance. More recently, Scottish Natural Heritage has used this methodology to develop maps of wildness for Scotland as a whole. These were completed in 2012 and represent a landmark, with Scotland leading the way in producing Europe's most accurate and detailed maps of wildness.

FIGURE 1 Red deer on Alvie Estate in the Cairngorms. (Photo by Neil McIntyre and courtesy of Scottish Natural Heritage)



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FIGURE 2 Wilderness Quality Index for Europe, showing mountain massifs and top 10% wildest areas. The index is based on a simple equal-weighted combination of population density, road density, distance from nearest road, naturalness of land cover, and terrain ruggedness. The top 10% wildest areas are defined on a simple equal area percentile basis and highlighted in blue. (Originally published as Map 10.5 in EEA [2010], reproduced with kind permission of the authors; special thanks to Dr Stephen Carver, director, Wildland Research Institute [www.wildlandresearch.org/], School of Geography, University of Leeds for providing the map)



In conjunction with this work, CMS led the organization of a national conference on Scotland's Wild Landscapes in 2010 (www.wildlands.info) to disseminate research findings and provide a platform for discussion of the implications of current work. Subsequently, the Scottish Government commissioned a wider study, in which CMS was involved, on how wild land is being managed in Europe and the lessons that could be learned for the management of this resource in a Scottish context. This work identified the importance of the adoption of "zoning" approaches for the management of wild land in Scotland and a greater integration of ecological elements within wild land management, potentially through further development of national ecological networks. These findings were presented at the European Commission's Conference on Wilderness and Large Natural Habitat Areas, in Prague in 2009, part of a coordinated strategy to protect wilderness and wild land areas in Europe that led to the adoption of a Resolution on Wilderness by the European Parliament in 2010. There is a clear relationship between the occurrence of wilderness and mountains in Europe, as shown in Figure 2, prepared by the Wildland Research Institute at the University of Leeds (Carver 2010) as a contribution to the assessment of Europe's mountain areas coordinated by the CMS and published by the European Environment Agency (EEA 2010).

Looking forward

Although the CMS is a small center in a new university (the University of the Highlands and Islands only gained title in 2011), it has a strong reputation at all scales from Scotland to the world. This is due, not only to its research, but also to its involvement in education and knowledge exchange activities, particularly in the context of the UNESCO Chair in Sustainable Mountain Development. With regard to education, it is hoped that the recent approval of the MSc in sustainable mountain development for global delivery will lead to students joining the course from more countries around the world; already, it has attracted students from Bulgaria, France, Germany, Italy, Spain, and the United States, as well as the UK. In terms of knowledge exchange, in following on from 2 major international conferences on global change and the world's mountains in 2005 and 2010 (Price and Weingartner 2012, in supplement to volume 32 of *Mountain Research and Development*), it is anticipated that a third conference will follow in 2015. It is hoped that many readers of *Mountain Research and Development* will be able to attend!

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