

34 Prospects for the Future: the Uplands in Peril or Thriving?

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Summary

1. We provide a stock-take on the state of the uplands in Scotland from the perspective of land managers. Much of our evidence base comes from our work within Scotland's Moorland Forum, which was formed in 2002 and comprises 29 member organisations.
2. We argue that Scotland's uplands are in a state of peril – ecologically, economically and socially. This is a particular concern given recognition of their importance as a provider of key ecosystem services.
3. The uplands are maintained largely by land managers, many of whom are privately funded, have specialist skills, are at the centre of the local communities and are responsible for the maintenance of the social and cultural infrastructure.
4. The uplands suffer from many disjointed policies and the lack of a coherent strategic purpose. There is an outstanding need for a moorland land use strategy to fill this gap, and the 2010 Scottish Government Rural Land Use Strategy is a welcome first step.
5. We propose that the management of the uplands is approached with consensus, coordination, collaboration, coherence and clarity. Traditional land uses, which contribute to a unique landscape, should be maintained, but adapted for the future. We should embrace the opportunities offered by the new enterprises and land uses. A balance between the different land uses should be developed, and we should seize opportunities for joint public and private funding. The interests of local communities need to be integrated into future proposals because in many areas these have been peripheral to management initiatives.

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34.1 Introduction

Virtually all of Scotland's uplands have been or are managed. Their landscapes and wildlife are a dynamic expression of the influence of management and comprise a unique assemblage of earth and biological resources – the epitome of a cultural landscape. Globally, heather moorland is virtually confined to Britain and Ireland, where large tracts are managed principally through muirburn (rotational burning to create a mosaic of moorland structures for the benefit of grouse), grazing for agriculture, field sports and/or conservation and amenity interests.

The uplands cover a range of habitats which typically occur above enclosed farmland. Beyond the climatic treeline the heaths and moorland becomes 'alpine' or 'montane'. Scotland's moorlands are open, semi-natural habitats, and at the extremities (north and west) they extend over terrain close to sea level, where they intermix with farmland. Moorland is a broad description of several habitats including dry and wet heaths, blanket bogs and rough grasslands. Some bird and animal groups occur in Scotland's uplands at higher densities or diversity than anywhere else (e.g. Ratcliffe and Thompson, 1988). As a whole, at least half of Scotland is upland, with moorlands representing some 38% (around 3 million hectares). Scotland's uplands are of international importance with more than twenty habitats listed under the EU Habitats Directive. In addition seven UK Habitat Action Plans exist to improve management for the uplands: Blanket bog; Inland Rock Outcrop and Scree Habitats; Mountain Heaths and Willow Scrub; Upland Calcareous Grassland; Upland Flushes; Fens and Swamps; Upland Heathland; and Limestone Pavements (BRIG, 2008).

Since its formation in 2002, Scotland's Moorlands Forum (see Box 34.1) has developed into a unique partnership that robustly engages with matters influencing the uplands of Scotland. The Forum provides the main opportunity for cross-cutting debates on the future of Scotland's uplands. It seeks consensus through its members on the key issues affecting the uplands, based on sound evidence and with the principal aim to achieve a sustainable future for Scotland's moorland.

The Forum currently consists of 29 member organisations. These are drawn from many sectors, and as a result of this diversity, it represents a broad and comprehensive range of opinion and expertise on Scotland's uplands. The Forum is not just about raising concerns; it is also about finding solutions that will bring sustainable and long-term benefits to Scotland's upland areas. In this paper we explore the contribution of the Moorland Forum to the management of Scotland's uplands, and discuss the effectiveness of current initiatives to look to what the future may have in store for Scotland's uplands.

Box 34.1 The Moorland Forum

Scotland's Moorland Forum strives to sustain and enhance the extent, diversity and range of habitats, species and enterprises encompassing moorland. The Forum wants to engender a greater awareness of these valuable habitats.

The Forum seeks to halt and reverse the loss of heather cover, and to find ways of enriching the overall interest of Scotland's moorland, not least its natural heritage. At least a quarter of Scotland's heather cover has been lost since the 1940s and it is estimated that this loss is continuing at a rate of about 0.5% each year. The retention, and restoration where possible, of moorland habitats and related species is a high priority for management action.

There is a long Scottish tradition of local stewardship of the land, based on both private and public funding sources. This needs to be built on to improve further the beauty, nature and social fabric of our moorlands.

The Forum continues to work with the Scottish Government to implement Natura 2000 legislation, the Nature Conservation (Scotland) Act 2004, and conservation management programmes to help to meet government and European targets, including the 2010 target to halt the loss of biodiversity.

We seek to eliminate all illegal practices, not least the persecution of birds of prey, and work, with the Scottish Government and land managers, towards adherence to all wildlife and countryside legislation.

As a key stakeholder, the Forum contributes to the passing of new legislation and the development and implementation of policies and initiatives in relation to moorland areas.

There are three meetings of the Forum each year and much of the output from the Forum is produced from Task Groups that are established to investigate particular issues or run a specific project.

Our **Partnership for Delivery 2008** was launched by Michael Russell, MSP, then Minister for Environment, in March 2008. It is available to download from the Documents page of the Forum's website: www.moorlandforum.org.uk. The website lists the details of the 29 members.

34.2 Concerns about the state of the uplands

Land managers are under increasing pressure in their efforts to generate a viable income to support their businesses, livelihoods and obligations. In many areas, traditional enterprises such as livestock productions, forestry, grouse shooting, stalking and fishing are struggling to produce sufficient income. Increasingly, land managers are scaling back their operations, reducing investment and future

commitments, and seeking additional income from new enterprises such as renewable energy and access management. Many are pursuing as yet undeveloped sources of income from, for instance, the development of environmental markets to harness ecosystem service delivery opportunities, such as carbon storage.

The Countryside Survey (2007) reported on habitat changes across the UK (Carey *et al.*, 2008). As part of the same survey Norton *et al.* (2009) detailed the changes that had occurred in Scotland (Table 34.1). They showed no detectable significant changes, between 1998 and 2007, in the overall extent of six Broad Habitats which form the upland landscape mosaic across Scotland. However, they also noted that there had been a substantial decline of over 113,000ha in the extent of dwarf shrub heath, but this was not significant. Moorland is largely comprised of dwarf shrub heath, and a decline of 23% loss of heather moorland between 1948 and 1988 was reported by Mackey *et al.* (1998).

We are concerned about the apparent loss of heather cover. Historically, it has been replaced by forestry (broadleaved and coniferous woodlands), bracken (*Pteridium aquilinum*) and grasslands (acid and improved). Norton *et al.* (2009) report that there has been some changes in the conversion of dwarf shrub heath to other habitats, primarily coniferous woodland; calcareous grassland; acid grassland; bracken; fen, marsh and swamp; bog; and urban. This picture is not as straightforward as it seems as there have been changes in other habitats resulting in

Table 34.1 Extent of Upland Habitats 2007 compared with the extent in 1998 (from The Countryside Survey, 2007). Statistically significant change depicted by*.

Habitat Type	2007		1998-2007	
	000 ha	% Scotland	change (00 ha)	% change
Acid Grassland	983	12.3	72	7.9*
Bracken	132	1.6	10	8.4
Dwarf Shrub Heath	894	11.1	-18	-2
Fen Marsh Swamp	239	3	-22	-8.6
Bog	2044	25.6	5	0.2
Montane	38	0.5	1	1.9
Inland Rock	84	1	-7	-7.8
Total Upland Area	4414	55%		
Not Upland	3605.3	45%		
Scotland area	8019.3	100%		

conversion to dwarf shrub heath in coniferous woodland; acid grassland; and bog. Other studies have shown an increasing homogenisation of the uplands which may be a result of land management practices, climate or other factors (see Britton *et al.*, 2009; Rothero *et al.*, Chapter 37; Brooker, Chapter 32; Ross *et al.*, Chapter 36).

As a number of the upland habitats receive special protection (within Special Areas of Conservation and Sites of Special Scientific Interest). Results from the Site Condition Monitoring programme covering protected areas showed that 72% of upland habitats were in favourable condition, with a further 4% receiving remedial management (SNH, 2010).

As much as any part of Scotland, the uplands require strategic and sustainable management. Motivated, well-trained, capable people are needed to achieve this, and the need to be able to generate a standard of living that is comparable with other parts of Scotland. Without the ability to earn a fair reward there are concerns that it will become increasingly difficult to attract the right people into upland management. There is a real risk that a whole range of skills and experience will be lost.

There are considerable gaps in our knowledge about upland ecosystems, yet it is becoming more difficult to secure funding for the necessary research. Issues of concern to the broad membership of the Forum include sheep tick (*Ixodes ricinus*) impacts on birds, as well as their role in the spread of Lyme disease, and heather beetle (*Lochmaea suturalis*) impacts on heather extent, where more research is needed to updated guidance on best management practices.

The changing climate may well be influencing the condition of the uplands in ways that are not yet fully understood (see Brooker, Chapter 32; Pearce Higgins, Chapter 33; Thompson and Mackey, Chapter 42). Management needs to be adapted to take account of these changes and to ensure that the uplands are managed in a sustainable manner so that the vital ecosystem services are preserved and their iconic status maintained.

34.3 Ecosystem services

Ecosystem services can be viewed as providing a link between natural assets and human well-being (Millennium Ecosystem Assessment, 2005). These are a relatively new concept, but are increasingly important for our understanding of the uplands as a supplier of key services.

In Scotland, the value of ecosystem services and natural capital has been estimated at £17 billion with around 14% of Scotland's jobs being reliant on these services (Williams *et al.*, 2003).

Many of these ecosystem services are essential for the quality of life in urban and suburban areas, and the supply of clean drinking water is one of the most critical services. As demand for these services increases, the provisioning role of the

uplands will become ever more important. Climate change is likely to increase the emphasis on the need for the maintenance of the supply of these services. For example, an estimated 70% of Scotland's drinking water is supplied from upland catchments, so any changes in climate could be critical to this provision.

Another increasingly important role for the uplands is the capture and storage of carbon and the key benefits that this will deliver in helping to tackle global warming. Within Scotland, there are 1.8 million ha of peat and this contains almost 25 times as much carbon as all plant life in the UK. Put another way, these peat soils hold almost a third (3 billion tonnes) of the carbon held by all of Europe's forests.

Food supply and security are predicted to become a major challenge in the future and the uplands may have an increasingly important role to play. At the FAO High Level conference in June 2008, Ban Ki-Moon, the Secretary-General of the United Nations, stated that to meet rising demand by the year 2030, world food production will need to rise by 50%. Others are predicting that global food production will have to double by 2050 (FAO, 2008). An additional factor of considerable importance is that climate change is likely to focus food production on the temperate zones. The demand for meat products from the emerging economies of India, China and other developing nations will increase as these countries are able to afford more of a western-style, protein-based diet. We need to consider the possible role of the uplands in response to these changes, whilst bearing in mind the limitations of such expansion into the uplands given the viability of the land for agricultural production (Hall, Chapter 25).

The economic value of the uplands is considerable. The income generated through farming, forestry, sporting enterprises was estimated at £240 million in Scotland in 2001 (PACEC, 2006) and tourism was estimated to contribute £4 billion in Scotland in 2008 (Visit Scotland, 2008). This underpins the livelihood of many fragile, rural communities. These communities are essential for maintaining the appropriate management of the uplands in order to safeguard the ecosystem services which include the social and cultural values associated with the uplands. Without people, and the management they are able to provide, these areas would become very different.

Increasingly, upland landscapes are important for recreation and access. They provide popular health and lifestyle opportunities and a 'safety valve' for an increasingly urban population. As transport infrastructure has improved, more people have been able to take advantage of the benefits offered by recreation in even the remote areas of the uplands. The cultural and historical importance of these areas should also not be ignored. The archaeology and heritage of the uplands comprise a valuable strand of Scotland's history and our increasing knowledge of it confirms that no part of Scotland has escaped the imprint of

previous generations. An understanding of the development of these upland areas adds to the cultural interest that they offer, and therefore to our cultural heritage.

34.4 Discussion

The uplands are often thought of as a vast, self sustaining wilderness, but this is a mistaken view. The uplands have been shaped by the activities of people and livestock for millennia. They require management, particularly if we are to maximise the economic and biodiversity potential. Improved economic viability would in turn underpin new investment, improved management and better outcomes for people and nature.

Many may consider the environmental benefits as the most important feature offered by the upland areas of Scotland. A vision of wide-open spaces with mountains clad in purple heather in the late summer is an internationally revered image of Scotland. But it is not just heather moorlands that are important – well managed uplands will provide the ecosystem services on which we rely.

Protected areas serve to highlight the most valuable parts of the country in conservation terms and include Special Areas of Conservation, Special Protection Areas, National Parks, Sites of Special Scientific Interest, National Nature Reserves and National Scenic Areas amongst others. Such designations should enhance the management of key areas both for conservation and public benefit purposes. Scotland's three million hectares of moorland encapsulate a rich and important diversity of interests and sensitivities. It is therefore inevitable that this diversity can at times also lead to diverse opinions and conflicts.

Diverse voices and conflicting views have in turn led to advocacy that is often not based on evidence, incoherent policies and inadequate solutions with respect to the uplands. The uplands are in peril and cannot afford to suffer further from such neglect. Addressing this problem is a prerequisite to managing our upland areas better. Scotland can preserve its uplands and moorlands if it can harness the genuine diversity to work for a common purpose.

Since its formation in 2002, the Moorland Forum has provided a unique opportunity in the uplands for cross-cutting debate, consensus-building, and partnership working. The Forum has coordinated the skills, resources and commitment offered by its member organisations and it has encouraged collaboration across all agendas and sectors. In this way, the Forum is filling a vital gap and inspiring a more coherent approach to the future of the uplands. One of the key features offered by the Forum has been the opportunity to develop mutual trust and understanding between members. This has enabled collaboration across sensitive issues. The Forum provides an essential link between different agendas: science and research; government policy; economic interests; best practice management; people

and communities; habitats and species; and public awareness. As this is a very wide agenda and the Forum has limited resources, a clear plan has been drawn up covering the Forum's activities where it considers it can make a difference.

34.4.1 The way forward: Forum Task Groups and the Upland Solutions Project

A large proportion of the Forum's delivery is through Task and Working Groups. In 2008, the work programme covered forestry, agriculture, carbon, access and awareness and muirburn. Papers were produced by the groups and circulated widely so as to be able to influence the formation of policy and provide guidance through the Forum's member organisations.

In 2009-2010, the Forum developed its *Upland Solutions*. In contrast to the Forum's previous work, this is a bottom-up project, engaging directly with landowners, land managers, local communities and other key interested parties. The project is operating in two target areas, Muirkirk and the Upper Findhorn catchment, and the issues are being addressed through three strands of enquiry: upland birds; upland economics; and carbon. Practical problems, and opportunities to address these where they exist, will be identified and solutions proposed. Barriers to what would otherwise be practical solutions are being identified, and how these might be overcome will be one of the most compelling outputs of this work.

This work provides an opportunity to harness the knowledge and experience available to the Forum through its members and to apply it to helping land managers achieve improvements on the ground. The lessons learned from this project will inform how such an approach could benefit other parts of the country in the future.

34.4.2 Challenges for upland management

The highest priority, as outlined above, is to identify what we want from the uplands and then to establish appropriate policy instruments to allow the managers of these areas to achieve objectives. As the uplands are slow to respond to change, we need to develop a long-term vision for them; short-term initiatives are not the answer.

The traditional land uses of agriculture, sporting activities and forestry have, with the notable exception of sporting activities, been dependent on public funding, and it is unlikely that this position will change in the foreseeable future. However, these land uses have produced the uplands as we know them today and will remain critical for their future management. The Forum will be playing a particularly active role in advising on the new Land Use Strategy for Scotland (Scottish Government, 2011).

There are a range of other challenges and opportunities, including the identification of potential sites for renewable energy generation, and increasing demands for access and recreation. The future role of the uplands in global food production and timber production should not be forgotten. There may be more scope within the new uses for the uplands both to increase the level of income and reduce reliance on public funding. There is particular interest in the development of Environmental Markets, which would provide a financial linkage between the users of ecosystem services and the upland land managers who provide them. Carbon storage and water supply offer the most immediate potential for this concept – but other ideas are in the pipeline.

The development of long-term viability is the key to delivering the outcomes we want for the uplands. Public sector support through direct funding and grant schemes is likely to be necessary, but income generation from other means to fund management costs should also be developed further. Private sector investment has been – and remains – significant but it invariably suffers from being poorly recognised and undervalued. There is scope to develop a much more collaborative public/private sector relationship, overcoming mutual suspicions, as a means of generating new opportunities and funds. We need these to finance and deliver long-term strategic and sustainable objectives.

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References

- BRIG (ed. A. Maddock) (2008) (updated July 2010). *UK Biodiversity Action Plan; Priority Habitat Descriptions*. <http://www.ukbap.org.uk/library/UKBAPPriorityHabitatDescriptionsRevised20100730.pdf>
- Britton, A.J., Beale, C.M., Towers, W. and Hewison, R.L. (2009). Biodiversity gains and losses: Evidence for homogenisation of Scottish alpine vegetation. *Biological Conservation*, **142**, 1728-1739.

- Carey, P.D., Wallis, S., Chamberlain, P.M. et al. (2008). Countryside Survey: UK Results from 2007. NERC/Centre for Ecology & Hydrology. (CEH Project Number: C03259).
- FAO (2008). *Report of the High-Level Conference on World Food Security: the Challenges of Climate Change and Bioenergy, 11-13*. Food and Agriculture Organisation, United Nations, Montreal.
- Mackey, E.C., Shewry, M.C. and Tudor, G.J. (1998). *Land Cover Change: Scotland from the 1940s to the 1980s*. The Stationery Office, Edinburgh.
- Millennium Ecosystem Assessment (2005). *Living Beyond our Means, Natural Assets and Human Well-Being, Statement from the Board*. Millennium Ecosystem Assessment Cambridge.
- Norton, L.R., Murphy, J., Reynolds, B., Marks, S. and Mackey, E.C. (2009). *Countryside Survey: Scotland Results from 2007*. NERC/Centre for Ecology & Hydrology. The Scottish Government, Scottish Natural Heritage. (CEH Project Number: C03259).
- PACEC (2006). *The Economic and Environmental Impact of Sporting Shooting*. BASC, CA, and CLA, in association with GCT.
- SNH (2010). Notified habitats in favourable condition. Scottish Natural Heritage, Biodiversity Indicator S011.
- Scottish Government (2011). *Land use Strategy*. <http://www.scotland.gov.uk/Topics/Environment/Countryside/Landusestrategy>.
- Visit Scotland (2008). Research & Statistics, National Facts & Figures, Tourism in Scotland in 2008. http://www.visitscotland.org/research_and_statistics/national_facts_and_figures.htm, accessed on 6 December 2009.
- Williams, E., Firn, J.R., Kind, V., Roberts, M. and McGlashan, D. (2003). The value of Scotland's Ecosystem Services and Natural Capital. *European Environment*, **13(2)**, 67-78.