

## COMMENT

# The impact of EU agricultural policy on the conservation of the English Pennines

The Pennines are a chain of low mountains, which are often called the ‘backbone of England’, stretching 300 km from Ashbourne in Derbyshire almost to the Scottish border. Much of the land is over 250 m in altitude, with the highest peak, Cross Fell (893 m), being the highest peak in England outside of the Lake District National Park.

The Pennines contain two national parks, several designated areas of outstanding natural beauty (AONBs), farming environmentally sensitive areas (ESAs) and a Ramsar site of world natural heritage on the flank of Cross Fell. The flora of the highest ground is characterized by heather (*Calluna vulgaris*) and moss over peat (i.e. *Sphagnum* spp.). The valley sides and bottoms are pasture land and hay meadows. The Pennines’ dominant native tree-cover of birch, Scots pine, oak and ash, has been progressively lost over the past 5000 years, with only remnant woodlands in the steepest valleys, which are inaccessible to grazing livestock.

The important moorland bird species are red grouse (*Lagopus lagopus scoticus*), black grouse (*Tetrao tetrix*), merlin (*Falco columbarius*), and golden plover (*Pluvialis apricaria*). The rough pasture and hay meadows are the nest sites of curlew (*Numenius arquata*), lapwing (*Vanellus vanellus*), snipe (*Gallinago gallinago*), and skylark (*Alauda arvensis*). The wooded valleys and streams are the habitat of red squirrel (*Sciurus vulgaris*), otter (*Lutra lutra*), roe deer (*Capreolus capreolus*), dippers (*Cinclus cinclus*), oystercatchers (*Haematopus ostralegus*) and three varieties of salmonid.

These uplands are largely marginal farmland, which is farmed traditionally and has a high degree of native species biodiversity. Over the past 25 years, European Union (EU) farm subsidies and UK environmental legislation have resulted in significant degradation of this environment (Peak District National Park Authority 1997). The reform of the Common Agriculture Policy (rCAP), as outlined in the agricultural aspects of the EU ‘Agenda 2000’ (Anon. 1997a), if not fully revised, may produce further cultural and environmental losses to an area which has been called ‘England’s last wilderness’ (Bellamy & Quale 1989).

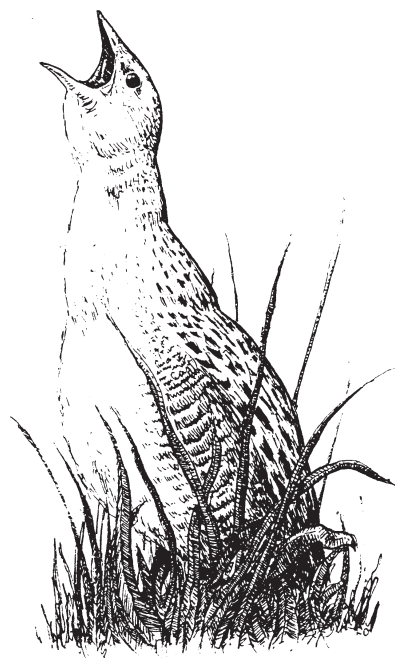
### UK legislation

The UK Clean Air Acts, 1956 and 1968 (Department of the Environment, UK 1996) resulted in the transfer of fossil fuel pollution from urban areas to upland rural areas such as the Pennines by the construction of tall chimneys at electricity-generating stations, without significant reduction in sulphur dioxide emissions; sulphur acid-rain pollution, exacerbated by the Clean Air Acts, was exported to Scandinavia. Acid scavenging by rain falling through the Pennine cap-clouds results in greatly enhanced acidity in rainfall in UK uplands (Choularton *et al.* 1988). The effects of this increased acidity are lower growth rates for heather, loss of sphagnum moss, reduction in dipper populations and a reduction in resident salmonid, particularly brown trout (*Salmo trutta fario*; Tyler & Ommerod 1992).

The world oil crisis in the early 1970s and the subsequent reduction in UK government spending meant a reduction in grants to farmers for pasture lime application, which exacerbated the acidification of upland soils and river systems and losses in species diversity (Tyler & Ommerod 1992). The current trend of reduction in sulphur emissions, but increased emission of nitrogen oxides from motor vehicles, is likely to be further damaging to UK uplands. Both heather and sphagnum, the characteristic moorland flora, are highly sensitive to additional nitrogen inputs.

### EU legislation: the Common Agricultural Policy

The original Common Agricultural Policy (CAP) was principally concerned with safeguarding European food supplies and the protection of farming communities (Whitby *et al.* 1996). The production subsidies for breeding ewe sheep, beef cattle and dairy cows have resulted in more



**Figure 1** The corncrake (*Crex crex*) has largely disappeared from Western Europe as a farmland species, largely because of EU subsidy-driven, intensive agriculture.

intensive farming on marginal land in the UK uplands, without protecting full-time farming employment (Ministry of Agriculture, Fisheries and Food [MAFF] 1996). Similar trends in sheep number and farm employment on marginal farmland attributable to EU livestock headage payments have been noted elsewhere in the EU (Lyrintzis 1996).

The combined production subsidies, which can be up to £38 per upland breeding ewe (ECU 1.49/£ in October 1997), have resulted in increased stocking ratios and significant changes in farming practices. Hill sheep were traditionally brought off the moorland to lower altitude 'in-bye' pasture in winter months. EU production subsidies and the availability of all-terrain-vehicles now make it more profitable to purchase lowland hay, silage and concentrated protein supplements, and feed sheep on the moorland over the winter period. This has resulted in widespread overgrazing of moorland and pasture, with loss of heather ground cover and consequent soil and peat erosion.

Livestock production subsidies have stimulated a trend to new forms of silage production and increased nitrogen fertilizer application. The resulting losses in hay flora diversity (Peak District National Park Authority 1997) and of ground-nesting birds (MAFF 1996) have been extensive. In June 1988, the last corncrake (*Crex crex*) nest was destroyed during silage cutting on Alston Moor in the Pennine Dales ESA.

The UK population of corncrakes is now > 400 pairs, with 140 pairs presently existing on just two small islands in the Scottish Hebrides. These birds cross the Pennines when migrating from North Africa to Northern Scotland, and could recolonize this area if the habitat were restored. Declines in the populations of ground-nesting waders and songbirds continues, principally due to loss of ground cover and disturbance by high densities of grazing animals (MAFF 1996). Upland skylark populations declined by 61% between 1988 and 1995 (Avery *et al.* 1995; Hancock & Avery 1998). Over the same period the populations of meadow pipits declined by 46%, golden plover by 33%, and dunlin by 43% (Hancock & Avery 1998). The intensification of agriculture in lowland over-wintering sites is blamed for this decline, as these particular upland sites were not subject to farm intensification (Hancock & Avery 1998).

#### *Environmentally sensitive areas scheme*

Over the years, attempts have been made to counter the adverse environmental effects of the CAP (Whitby *et al.* 1996; Canters 1997). The formation of ESAs to protect upland hay meadows and the Moorland Scheme (Whitby *et al.* 1996) and the Country Stewardship Schemes (Whitby *et al.* 1996) to reduce the stocking levels on moorland and restore heather moorland, are just some

examples. However, the areas within the Pennines covered by these schemes are but a small percentage of the total area and, even within an ESA, there may be little more than 50% of the total land area farmed. In the Peak District National Park, 75% of the hay meadows have been lost or have deteriorated over the past decade (Peak District National Park Authority 1997). The level of environmental subsidy for hay meadows in ESAs is currently £145 ha<sup>-1</sup> (218 ECU ha<sup>-1</sup>). Three additional ewes per hectare together with five lambs can attract subsidy and, with the sale of two lambs, produce a financial return greater than that of the ESA per hectare payment. An ESA management agreement in the Pennine Dales will generally limit stocking levels, reduce nitrogen and lime inputs and delay hay cutting until after flower seed-setting. Significant numbers of the farmers who farm intensively and have relatively large farms have not signed the management agreements, and continue to farm with high, subsidy-attracting, stocking levels, high nitrogen inputs and early grass/silage cutting.

*EU response to World trade agreements: Agenda 2000*

In 1997, the Commission of the European Community (CEC) signed an agreement with the World Trade Organization to reduce agricultural production subsidies progressively. Sheep, beef and dairy subsidies will be reduced by up to 30% by the year 2000, and further subsidy reductions are anticipated in subsequent years. The EU Agenda 2000 initiative contains agricultural proposals which attempt to address reform of the CAP (Anon. 1997a). In Agenda 2000, it is recognized that agriculture needs a 'continual process of development and adaptation in line with socio-economic realities . . . taking into account . . . societies awareness of environmental protection' (Anon. 1997a). In the Commission's view, 'European agriculture as an economic sector must be versatile, sustainable, competitive and spread throughout Europe (including the less-favoured and mountainous regions). It must be capable of maintaining the countryside, conserving nature . . .' (Anon. 1997a).

The conversion of these stated objectives for environmental protection into economic reality is likely to be difficult, protracted and hard fought. Farm incomes in the uplands are up to 30% lower than the UK national average for all professions, and hill livestock incomes fell by 37% during 1997/98. This fall in income is due to short-term factors, such as the effect of a strong pound sterling exchange rate and the depressed beef and sheep market produced by bovine spongiform encephalitis (BSE) restrictions. The additional costs to the UK government to compensate farmers for the slaughter of cattle with possible BSE infection in 1997 reached £916 million. The estimated BSE payment costs in 1998 are £669 million, but these are almost certain to be exceeded as a result of new concerns about spongiform encephalitis in sheep, and possibly other livestock. The BSE compensation payments have put a severe strain on UK agricultural support, resulting in a reduction in spending on environmental conservation. Moorland subsidy is to be withdrawn, the UK has refused to access EU green currency funds worth approximately £485 million, and support for woodland regeneration and new tree planting has been reduced. Conservation and wildlife protection appear to have been relegated to a backwater by UK national fiscal imperatives.

If Agenda 2000 and rCAP are to be internally consistent, then fundamental changes in environmental subsidy need to be implemented urgently. The traditional Pennine environment of flower-rich hay meadows, drystone walls and heather moorland is maintained by non-intensive livestock husbandry and by sports-shooting management, largely for red grouse. With reduced hill farm incomes, much of the uplands will revert to non-farming uses such as recreational horse grazing and sport-shooting for pheasant, partridge, grouse and roe deer. While these recreational activities are useful as minor diversification, on a large scale they will cause loss of native flora and fauna, and of traditional cultural diversity.

With the removal of agricultural production subsidies, the level of environmental subsidy will need to be increased greatly. If both the Ewe Premium and Hill Livestock Compensatory Allowances are removed from the Pennine sheep farms (Whitby *et al.* 1996), then I believe an increase in ESA area payments of up to 500% could be required just to maintain farm incomes. The ESA is not at present an ideal mechanism for compensating farmers because it is restricted to unimproved pasture and does not apply to open heather moorland. The AONB or National Park status is more inclusive of traditional hill farmers requiring environmental conservation support (Whitby *et al.* 1996).

The operation of ESAs is at present bureaucratic with regulatory officials lobbied by the National Farmers Union, but with no direct democratic representation for a range of interest groups such as

Wildlife Trusts, the Ramblers Association, local businesses and parish councils. The ESA restrictions on lime application to hay meadows and pastures are a case in point. Prior to 1973, most of the fields involved were routinely limed and, particularly with current acid rain deposition, lime application to pasture and hay-meadows is frequently required and usually beneficial to the native flora.

The exclusion of woodlands from ESA payments is another anomaly. While tree removal in the Pennines is historical, a significant amount of woodland removal occurred during the social and economic disturbances in the first half of the twentieth century and this woodland should now be replaced. Within Agenda 2000, incentives are required to restore woodland as habitat diversity and as a biomass resource. Significant areas of heather moorland have reverted to rough bent grassland through overgrazing and acid rain. Restoring heather to some of these areas is not feasible due to changed soil conditions. Restoration of native tree cover to these degenerate environments, particularly at the pasture moorland boundary, could produce a significant income for farmers. This would be in line with Agenda 2000 objectives to 'keep alive the fabric of the countryside' and to 'promote proper compensation for natural constraints and disadvantages' (Anon. 1997a).

#### *EU rural structural reform: LEADER I and II*

In the EU LEADER initiative for rural development (Anon. 1997b) much of the Pennines are classed as experiencing difficulties in development (Objective 5[b] areas). In addition to 'sustainable tourism', the objectives of LEADER have been to 'increase value-added agricultural production . . . using renewable raw materials'. The difficulties in maintaining Wensleydale cheese production at Hawes in the Yorkshire Pennines is a classic example of value-added agricultural production, saved, not by EU support, but by personal financial initiatives.

Under the LEADER II initiative (Anon. 1997b), agriculture is seen not only as a means of food production, but also as a focus for sustainable rural development. Agriculture helps with 'the upkeep of the countryside and maintenance of the traditional farming landscape. It also provides a multi-functional role of rural areas as places to live and work, as nature reserves and as places for leisure and recreation . . .'.

Other LEADER II objectives are 'sustainable management of natural resources' and 'biodiversity'. Extensive hill farming with flower-rich hay meadows and heather moorland has low external nutrient and fossil energy inputs, and must be an objective if biodiversity is to be retained. Hill farmers have traditionally provided landscape amenity in the form of drystone walls, access for recreation, and protection of water resources and wildlife habitats. Whilst the landscape amenity is of tourism and intrinsic biodiversity value, farmers have not been compensated fully for these activities. Traditional cultural values have encouraged farmers to maintain these landscape amenities in the past, but this behaviour is unlikely to continue if farm incomes are not maintained and the farming community is fragmented. The dereliction of drystone walls in much of the Pennines or their replacement with less expensive wire fences are cases in point.

A measure of environmental conservation success may be the widespread adoption of 'indicator species'. The use of migratory salmon as an indicator species for the environmental health of the River Tyne, which rises partly in the North Pennines, is a good example. The reintroduction of salmon (*Salmo salar*) to this river over a 40 year period has been highly successful, but the frequent summer deaths of migrating fish in the upper tidal estuary have also been used as an indicator of ecosystem damage. After extensive data collection, the discharge of primary-screened sewage from the regional interceptor sewage system has been pinpointed as causing excessively low oxygen levels in the estuary and salmon deaths (Priestley 1995).

#### *Cohort indicator species: making the biodiversity concept accessible*

The concept of indicator species makes environmental conservation more accessible to non-specialists: farmers and countryside-users need simple markers to evaluate complex ecosystems. As biodiversity is a primary goal of Agenda 2000, the use of a cohort of indicator species in each habitat is likely to be more appropriate than selecting a single species as in the past, for example, the osprey and the otter.

My own preliminary list of indicator bird species for Pennine heather moorland would be: red grouse, black grouse, golden plover, merlin and twite. For hay meadow and pasture, species would include yellow wagtail (*Motacilla fluva*), lapwing, curlew, snipe and skylark. In certain areas, such as the North Pennines, the restoration of corncrake populations could be a medium-term goal. In the

case of watercourses, populations of yellow wagtail, dipper, water vole (*Arvicola terrestris*), otter and brown trout would help indicate changes in a wide range of environmental variables. Particular flora and invertebrates might usefully also be included in special instances, although by careful choice of primary, secondary and tertiary consumer animals as indicator species, flora and invertebrates may also be monitored. For example, the adult red grouse has an almost exclusive diet of *Calluna*, but during the first 10 days of life the young require a high-protein diet of insects, and red grouse survival is an indirect measure of insect biodiversity. Similarly the dipper population requires healthy freshwater invertebrate populations; these prevail only if low acid-rain, low nitrogen and low pesticide run-off conditions are maintained (Tyler & Ommerod 1992). The dipper also requires streamside scrub cover and may thus be considered an indicator species for livestock overgrazing.

### Conclusions

Radical revision of funding for UK hill farming is urgently required if the traditional upland environment is to be maintained. A new integrated framework of conservation measures requires high levels of funding under rCAP and Agenda 2000 to replace continued reduction in production subsidies. The use of a wide range of agreed indicator species would give a clear indication that conservation objectives had been achieved. The economic outcome from an increase in natural habitats and conserved biodiversity will be a growth in 'sustainable tourism' and associated 'value-added' agriculture and craft industry potential.

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