

Nature Conservation and the Agricultural Historian

By JOHN SHEAIL

AT a time when both farming and wildlife conservation are very much in the news, it is particularly appropriate for the agricultural historian to look afresh not only at the issues raised by the Common Agricultural Policy and State aid to farming, but also more generally at the use and perception of the countryside. The traffic in ideas will not be entirely one way. Those topics of contemporary interest, which will benefit from historical insights, may themselves suggest further lines for the historian to investigate. A greater awareness of what is happening today may emphasize how little is known about the agricultural environments of the past.

I
Many members of the British Agricultural History Society are likely to be also members of a natural-history or nature-conservation body. There is a long tradition of association between the historian and naturalist. For many members of local societies and field clubs, an interest in any one aspect of the local environment has led naturally to another. In a remarkably early lecture on the geographical distribution of plant species (given to the Literary and Philosophical Society of Newcastle upon Tyne in 1819), Nathaniel Winch recalled how he had come across numerous plough ridges, covered with heath, well above the limits of cultivation in the early nineteenth century. He regretted that both the written records and oral tradition were silent as to when, and by whom, these 'wide and extensive moors' of the northern counties had been tilled.¹

Some naturalists realized that the only way to understand the contemporary abundance and distribution of species was to reconstruct in their mind's eye the agricultural history of the area. At the turn of the century, James Trail used the maps available for Aberdeen since the mid-eighteenth century for that purpose. Whilst it was impossible to reconstruct the precise species composition of the vegetation from these sources, Trail believed that 'we may form what is probably an almost accurate conception of it from a knowledge of the original features of the surface, and of the plants that still grow in similar situations in the neighbouring parishes'.² Trail was among the first to develop an historical approach that has become increasingly relevant in gauging the extent of changes that have taken place in the natural environment and the need to safeguard species and communities for conservation purposes.

Early instances can be found of ecologists taking account of the historical factor when designating nature reserves. In a memorandum setting out the need for a scheme to preserve the South Downs, submitted to the National Park Committee in 1930, A G Tansley joined O G S Crawford, E Cecil Curwen and others in describing how the characteristic vegetation was affected not only by differences in soil, slope and exposure, but also by the length of time that had elapsed since the ground was last disturbed. Recent archaeological research had made it possible to distinguish areas which appeared never to have been under the plough from others which had been

¹ N J Winch, *An Essay on the Geographical Distribution of Plants, through the Counties of Northumberland, Cumberland and Durham*. Newcastle upon Tyne, 1925, pp 16-17.

² Anonymous, *James William Helenus Trail: a memorial volume*. Aberdeen, 1923, pp 57-98.

undisturbed since Celtic times, and from others that had not been ploughed since the Napoleonic Wars. In the words of the memorandum, 'the correlation of these facts with the changes of vegetation — a field of research which has scarcely yet been touched — will be of the greatest interest and should yield important contributions to our knowledge'.³ The close affinity between the research interests of the ecologist and historian were further emphasized in an official report of 1947, recommending the creation of a series of national nature reserves and the appropriate statutory authority to administer them. In any proposed legislation, it was important to include the preservation of archaeological features in the general conservation and planning machinery.⁴ An official body, the Nature Conservancy was established in 1949, with statutory powers conferred under the National Parks and Access to the Countryside Act of that year.⁵

Despite these pronouncements, ecologists remained slow to appreciate how far the activities of man had affected the distribution and abundance of wildlife in the past. It was not until the 1950s that Lambert *et alii* demonstrated that the Norfolk Broads, and their distinctive wildlife, occupied the excavations made by medieval man, digging for peat. Although the suspicions of those looking at the geology and vegetation of the Broads had been aroused, the direct historical evidence was lacking. As Godwin later recalled in the preface to the published monograph, it had been an historical geographer who had added the 'formidable and clinching evidence'.⁶ Meanwhile, ecologists had begun to recognize the full impact of rabbit-grazing on calcareous grasslands and other communities. Following the

outbreak of myxomatosis and almost total disappearance of rabbits in 1953-4, many tracts of closely-cropped turf had been covered with long coarse growth, scrub and incipient woodland. Not only did the character and management requirements of many nature reserves change, but ecologists were left wondering what such sites looked like before rabbits became abundant and commonplace. According to the historian, there had been no rabbits in England before the Norman Conquest.⁷

An important lesson was learned. Unless ecologists paid more attention to the history of the sites and communities which they sought to conserve, they ran the risk of making fools of themselves as scientists and as managers of land. It was, therefore, no coincidence that the term 'historical ecology' was first taken up in Britain in the conservation movement. By the 1960s, the ecologist had become very conscious of the fact that wildlife could not be left to look after itself on nature reserves, otherwise grasslands became wooded, and wetland sites became dry, and their original wildlife interest would be lost. The challenge was to find ways of sustaining that interest — and very often the most obvious course was for the manager of the nature reserve to sustain, re-introduce, or simulate the kind of husbandry practices pursued by the farmer or woodsman on the site in the past.

In developing the skills to manage wildlife for conservation purposes, the ecologist had much to gain from the resurgence of interest in agricultural and local history. In the first issue of *Agricultural History Review*, published in 1953, the Editor wrote of 'a very general awakening of interest in the history of the countryside'. Recognizing the far-reaching nature of the changes being brought about by 'the farming revolution of the mid-twentieth century', those in university departments, farmers, schoolmasters, craftsmen and other country-dwellers were

³ National Park Committee, *Report*, Cmd 3851, 1931, pp 77-9.

⁴ Ministry of Town and Country Planning, *Report of the Wild Life Conservation Special Committee*, Cmd 7122, 1947, pp 30-2.

⁵ J Sheail, *Nature in Trust: the History of Nature Conservation in Britain*, Glasgow, 1976.

⁶ J M Lambert, J N Jennings, C T Smith, C Green and J N Hutchinson, *The Making of the Broads*. Royal Geographical Society Research Series, 3, 1960.

⁷ E M Veale, 'The rabbit in England' *Ag Hist Rev*, V, 1957, pp 85-90; J Sheail, *Rabbits and their History*. Newton Abbot, 1971, 226pp.

making determined efforts to investigate and record the past.⁸ Not only were local historians devoting unprecedented energy to seeking out old maps and records, but they came to realize that the landscape itself was often the most important source of information in reconstructing past landscapes.⁹

It was not long before ecologists, looking at aspects of the management of wildlife for nature conservation, began to contribute to these studies of 'the making of the landscape'. Ecologists were able to demonstrate what historians had often assumed — the older a plant assemblage, the greater the number of species present.¹⁰ There were clearly difficulties in predicting the age of an agricultural artefact on the basis of its contemporary flora, but the experience of many individual studies of the hedgerow suggested that this could often be achieved in respect of that artefact. A recent study of early-medieval organization in the Cotswolds has suggested that the species composition of hedgerows may offer the best evidence for studying sequential change in landscapes dating as far back as Roman times.¹¹

II

The ecologist often seeks information on processes that are so gradual and complex that even today they can be monitored only imperfectly. In his seminal study, *Animal Ecology*, Elton stressed how the dispersal and interchange of plants and animals was 'on the whole a rather quiet, humdrum process', whether stimulated by natural processes or by human activity. Elton cited the example of the daily transport of four loads of thorns

for fuel from Wytham Wood near Oxford (the site of large-scale ecological studies in the 1950s) to the nunnery at Godstow, a mile away, in the medieval period. As he observed, 'all this transport of dead wood about the countryside must have provided additional opportunities for the dispersal of many kinds of animals and some plants'.¹² It would be hard enough for ecologists to record all the implications of this type of traffic today; there is small chance of Everyman having left detailed accounts of such activities in the past.

Although the distribution and abundance of plants and animals would have been as artificial as the landscape in which they lived, early naturalists, agricultural commentators and topographers recorded the presence of comparatively few species. In his studies of former bird populations, Jones has written of how the information for any one locality or period is likely to be exiguous or non-existent. Most birds adjusted to 'shifting land-uses and farm methods far too subtly for their fortunes or fate to appear in the patchwork of early ornithological records'.¹³ The temptation to extrapolate the presumed mix and density of birds and other forms of wildlife from modern information on habitat preferences, and from documentary evidence for farming practices in the past, can give rise to circular argument as to the functional relationships between wildlife populations and the natural environment.

The value of using as wide a range of source material as possible may be illustrated by reference to that available for reconstructing what happened on the site of the present-day National Nature Reserve of Holme Fen, following the drainage of the nearby lake, Whittlesea Mere, in the early 1850s. The lake was the most extensive in

⁸ H P R Finberg, 'Editorial', *Ag Hist Rev*, 1, 1953, pp 1-3.

⁹ W G Hoskins, *The Making of the English Landscape*, 1955.

¹⁰ Anonymous, *Hedges and Local History*, 1971, 36pp.

¹¹ E Pollard, M D Hooper and N W Moore, *Hedges*, 1974; R A D Cameron, 'The biology and history of hedges: exploring the connections', *Biologist*, 31, 1984, pp 203-8; R Reece, 'Continuity on the Cotswolds: some problems of ownership, settlement and hedge survey between Roman Britain and the Middle Ages', *Landscape History*, 5, 1983, pp 11-19.

¹² C Elton, *Animal Ecology*, 1927, p 148; C S Elton, *The Pattern of Animal Communities*, 1966, pp 53-4.

¹³ E L Jones, 'The bird pests of British agriculture in recent centuries', *Ag Hist Rev*, 20, 1972, pp 107-25; E L Jones, 'Reconstructing former bird communities', *Forth Naturalist and Historian*, 6, 1981, pp 101-6.

lowland England, and the last of a series to be drained in the Huntingdonshire Fenland. The accounts written by the leading landowner in the drainage and reclamation scheme, William Wells, and by a contributor to the *Illustrated London News* describe how every effort was made to convert the bed and fringes of the lake, and the tracts of *sphagnum* bog, to arable use in the minimum time. The overriding objective was to grow wheat, the only crop able to provide sufficiently high returns to warrant the capital investment and offset the high drainage rates. The luxuriant vegetation of the formerly undrained fen was pared and burned, and a layer of clay was spread over the peat surface.¹⁴

The publications and manuscript material of contemporary naturalists suggest the environmental changes were both gradual and limited in extent. Significant changes had been taking place *before* Whittlesea Mere was finally drained. The last specimens of the Large Copper butterfly, *Lycaena dispar dispar*, were taken in the 1840s. In an article published in *Phytologist* in 1851, W T Bree described how 'cultivation had been gradually creeping on for many years past'. He found that some of the sites, where he had gathered bog and aquatic plants on a morning ramble in July 1840, were now in arable use, growing oats and barley. Some of the native species were growing with exceptional vigour in this transitional phase. Bree had never seen such large specimens of *Samolus valerandi* as those growing on land already broken up and sown with a crop.¹⁵ A coleopterist wrote in 1855 of taking specimens from 'one of the few unburnt and uncultivated spots now remaining' between Holme and Yaxley. The survival of some unreclaimed tracts is implied by the comment of a lepidopterist in 1878 that

Holme Fen was 'to some extent still unaltered'.¹⁶

The most detailed insights into the post-drainage environment may be gained from the day journals of the Marchioness of Huntly, a remarkable naturalist who made at least twenty-three visits to the 'fens below Yaxley' between 1880 and her death in 1893. Her journal for May 1880 records how 'I went on . . . to the uncultivated ground in the vicinity of what was Whittlesea Mere — explored for plants, of these many of the old ones remain although the land is gradually becoming dry from the continued drainage'. In May 1884, the Marchioness described a search 'over a rough uncultivated tract of which few pieces are left'. The marsh violet was found. In 1886, the Ordnance Survey carried out its first survey of the area at a large scale. It depicts tracts of rough pasture, scrub and plantations within a regular layout of drainage courses. It may have been within these areas that the Marchioness found, in 1886, '*Parnassia palustris* by the site of one of the ditches, a remnant of the old marsh times'. She included specimens in her herbarium, together with those of *Anagallis tenella*, collected in 1885. In another entry for June 1888, she noted,

on through Yaxley to Holme and found some nice plants . . . *Carduus pratensis* [*Cirsium dissectum*], which I was not aware lingered still in the fens. It must be 40 years since I found it on the borders of Whittlesea Mere.¹⁷

These references in the Marchioness's journals, and the specimens in her herbarium, testify to the presence of refugia for wildlife in the otherwise reclaimed landscape. The extent of the refugia may be deduced from references to *Calluna vulgaris* and *Erica tetralix*. In August 1883, the Marchioness recalled how 'Beatrice [her daughter] picked handfuls of heather and

¹⁴ W Wells, 'The drainage of Whittlesea Mere', *Journal of the Royal Agricultural Society*, 21, 1860, pp 134–53; W Wells, 'On the treatment of the reclaimed bog-land of Whittlesea Mere', *Journal of the Royal Agricultural Society*, 6, 1870, pp 203–8; C Bede, 'The drainage of Whittlesea Mere', *Illustrated London News*, 26 April 1851, supplement, pp 324–5.

¹⁵ W T Bree, 'Recollections of a morning's ramble in the Whittlesea Fens', *Phytologist*, 4, 1851, pp 98–105.

¹⁶ J F Dawson, 'Coleoptera. Notes on British Geodephaga', *Entomologists' Annual*, 2, 1856, pp 65–81; J Balding, 'Lepidoptera', in S H Miller and S B J Skertchley, *The Fenland*, 1878, pp 401–12.

¹⁷ J Sheail and T C E Wells, 'The Marchioness of Huntly: the written record and the herbarium', *Biological Journal of the Linnean Society*, 13, 1980, pp 315–30.

said, "this is like Scotland", and in May 1887, she wrote of how 'Peggy [the pony] got a good run over the heather'. The story of the late nineteenth century may have been one of the gradual elimination of the last refugia of species, as part of the reclamation of the fenland and of the succession of any surviving fen pasture to scrub and woodland. It is possible to discern the extension of rough pasture and scrub on the revised edition of the Ordnance Survey maps, surveyed in 1902. By that time, several hundred acres of Holme Fen had become a game-covert; bracken, bramble and further birch were planted as cover for the pheasants and hares. Within these areas, some of the species characteristic of the undrained fen survived the twentieth century and were included in the land designated as a National Nature Reserve in the 1950s.¹⁸

III

As late as 1963, Jones and Tubbs were able to write of how comparatively little work had been carried out explicitly on the ecological history of Britain. In consequence, the all-pervasiveness of the human influence had hardly been explored. Their observation was made in a note published in *Nature*, drawing attention to the relationship of gorse (*Ulex europaeus*) to previously-cultivated sites in the New Forest. A survey of 1961 had revealed that about 8000 of the 37,000 acres of heath within the perambulation of the Forest were occupied by gorse. Further examination revealed that at least three-quarters of the total area of gorse occupied ground for which there was evidence of earlier disturbance, often in the form of cultivation.¹⁹

The national survey of areas of importance for wildlife, initiated by the Nature

Conservancy in 1965, provided an important stimulant to identifying where and why the main types of natural and semi-natural communities had survived and developed. A total of 735 sites was included in an inventory of sites of national importance, eventually published as the *Nature Conservation Review* in 1977. Among the criteria considered for assessing the quality of sites, account was taken of diversity, rarity, fragility, typicalness, and recorded history. The existence of a scientific record of long standing added considerably to the value of a site, and could elevate its rating above that of a site comparable in intrinsic quality, but about which little or nothing was known.²⁰

The value of an historical perspective was increasingly recognized during the promotion of the Wildlife and Countryside Bills and the formulation of policies calling for the protection of at least 10 per cent of the area of Britain for nature-conservation purposes. In justifying the extension of legislation and the reserves-acquisition programme, survey data were put forward to indicate how over 80 per cent of grasslands associated with chalk and Jurassic limestone areas had lost their wildlife importance since about 1940, mainly through conversion to arable. Over a longer time scale, almost 90 per cent of the 120 lowland 'raised bog' systems included in a survey of four regions of Scotland and northern England had been destroyed, according to comparisons made of Ordnance Survey maps compiled between 1850 and 1900, and series of recent air photographs. Half the remainder had been reduced to fragments of less than 25 acres.²¹

In order to identify major changes taking place in upland land use, the Department of the Environment, in consultation with the Countryside Commission, sponsored a study based on a sample of twelve study areas

¹⁸ J Sheail and T C E Wells, 'The fenlands of Huntingdonshire, England: a case study in catastrophic change', in A J P Gore (ed), *Swamp, Bog, Fen and Moor. B. Regional studies*. Amsterdam, 1983, pp 375-93.

¹⁹ E L Jones and C R Tubbs, 'Vegetation of sites of previous cultivation in the New Forest', *Nature*, 198, 1963, pp 977-8.

²⁰ D A Ratcliffe, *A Nature Conservation Review*, vol 1, Cambridge, 1977, pp 6-10.

²¹ D Goode, 'The threat to wildlife habitats', *New Scientist*, 89, 1981, pp 219-23; Nature Conservancy Council, *Nature Conservation in Great Britain*. 1984.

of England and Wales, located within the 'less-favoured areas' of mountain and hill farming, as identified by the EEC. Four main types of vegetation were identified on the basis of visits to 1000 sites within these twelve areas, namely improved pastures (characterized by the presence of introduced species of high agricultural value, eg *Lolium perenne*), rough pastures (characterized by the prominence of such species as *Agrostis tenuis* and *A. canina*, *Juncus* and other coarser species), grassy heaths (where coarse native grasses, such as *Nardus stricta*, *Deschampsia flexuosa* and *Molinia caerulea*, are dominant), and shrubby heaths. An attempt was made to correlate their distribution with differences in past and current land-use practices.²²

A wide range of published and documentary sources was used to chronicle changes that had taken place in each study area. The evidence transcribed from Ordnance Survey maps and air photographs made it possible to distinguish three types of situation, namely farmland which had been continually under intensive cultivation, moorland fringe where an interchange between moorland and farmland (or forest) had taken place over the last 200 years, and, thirdly, moorland core, which appeared from the evidence to have been always under extensive management. Over the combined areas, about 16 per cent of the moorland had been directly affected by land use changes since about 1800. The main influence had been a loss of 9 per cent to forestry. Agricultural reclamation had affected 2.6 per cent of the total moor, but this loss had been offset by reversion from intensive agriculture to moorland on about 5 per cent of the moor. Whereas the rate of loss of moorland to forestry had increased markedly in the last decade, reclamation and reversion through agriculture were long-standing features of

the landscape. Forty per cent of the reversions identified had occurred before 1885, and 60 per cent since then.²³

Any detailed reconstruction of vegetation change must take account of the imperfections of the historical data, namely inconsistencies in the way in which rough vegetation was depicted on successive editions of large-scale Ordnance Survey maps, the infrequency with which these maps were produced, and the paucity of data on how the land has been managed since it reverted to moorland. Although the surveyors and draughtsmen of the Ordnance Survey were expected to distinguish areas of rough pasture from cultivated land, the ecologist, Charles Moss, found inconsistencies in the way they were depicted even on the same 'six-inch' quarter sheet during the course of his surveys of the Mendips and Peak District in the early 1900s.²⁴

Fieldwork indicated that the reversion of land to moorland had followed the expected sequence of gradual change through rough pastures and grassy heaths to shrubby heaths from an assumed starting point of some form of improved pasture. What was unexpected was the very long period of time necessary for reversion to reach the shrubby stage on some sites. Although some had reverted to shrubby heaths within a period of forty years, others only developed heaths similar to the adjacent moorland core after more than 130 years (Table 1). The proportion of shrubby heaths on old, reverted sites was lower than on sites within the moorland core.

The sequence, tentatively interpreted from sampling sites which had reverted over conjectured periods of time, suggested that there was a fairly rapid initial change to rough pastures and grassy heaths, reflecting perhaps the deterioration of drainage,

²² The study areas were Alwinton, Cheviot; Lunedale, North Pennines; Shap, Lake District; Bransdale, North York Moors; Heptonstall, South Pennines; Monyash, Peak District; Llanfachreth, Snowdonia; Ysbyty Ystwyth, Cambrian Mountains; Glaschw, Radnor Clun Forests; Ystradgynlais, Brecon Mountains; Lynton, Exmoor-Brendon Hills; Widecombe, Dartmoor.

²³ D F Ball, J Dale, J Sheail and O W Heal, *Vegetation Change in Upland Landscapes*. Cambridge, 1982.

²⁴ J B Harley, *The Ordnance Survey and Land-use Mapping*. Norwich, Historical Geography Research Series, 2, 1979, 89pp; C E Moss, *Geographical Distribution of Vegetation in Somerset* 1907, 71pp; C E Moss, *Vegetation of the Peak District*. Cambridge, 1913, p 200.

TABLE I

The Percentage of Sites within Each Land-use Category Falling within the Respective Vegetation Groups

(numbers of sites shown in brackets)

Land Use History	Vegetation Group				Number of sites
	Improved pastures	Rough pastures	Grassy heaths	Shrubby heaths	
<i>Moorland Core</i>	1 (6)	13 (78)	33 (198)	53 (313)	(595)
<i>Moorland Fringe: Reverted from Improved pasture</i>					
before 1800	4 (1)	22 (6)	41 (11)	33 (9)	(27)
1801-1850	5 (1)	29 (7)	33 (8)	33 (8)	(24)
1851-1885	7 (1)	21 (3)	58 (8)	14 (2)	(14)
1886-1905	8 (1)	23 (3)	54 (7)	15 (2)	(13)
1906-1940	8 (2)	50 (14)	21 (6)	21 (6)	(28)
1941-1978	6 (1)	44 (8)	33 (6)	17 (3)	(18)
total	6 (7)	33 (41)	37 (46)	24 (30)	(124)
<i>Moorland Fringe: Reclaimed from Rough pasture</i>					
	47 (14)	37 (11)	10 (3)	6 (2)	(30)
<i>Farmland</i>	74 (165)	23 (51)	3 (6)	0 (1)	(223)

leaching of fertilizers, and growth of native species. There may, however, remain a tendency for sheep and cattle to continue grazing these areas preferentially, taking advantage of the residual effects of former intensive management. The effect of their cropping, and the return of dung and urine, may serve to sustain a higher circulation of nutrients, and thereby postpone still further what might in any case be a very slow development of the extremely acidic soil conditions required for the dominance of ericaceous shrubs.

Apart from the obvious interpretation that what man can change quickly takes a long time to restore by natural processes, there is a second implication, namely that the current vegetation may still be responding to changes in management that occurred decades or even centuries ago. Although much debate focusses on the absolute loss of moorland, changes of composition within the remaining moorland may be equally significant and long-term.

IV

It is not the purpose of this paper to set out an exhaustive agenda of research of interest to both the nature conservationist and agricultural historian, or to make detailed prescrip-

tions of how it might be carried out. Three topics might, however, be cited, namely weed control, soil erosion, and the re-creation of grass swards. They illustrate how contemporary issues in the management of the environment might suggest fresh topics for historical investigation. Much of the relevant data may already be in the hands of the agricultural historian, in his pursuit of other lines of research.

Even some of the most persistent forms of wild-plant life, namely agricultural weeds, are becoming rare. In a survey of over a thousand fields, conducted by the Weed Research Organization in central southern England in 1981-2, a third of the winter barley and a quarter of spring barley were found to contain no weeds of any kind. Over 40 per cent of the wheat crop, and 65 per cent of the barley, were free from dicotyledonous weeds.²⁵ How well placed is the agricultural historian to gauge the novelty of the situation portrayed by these figures?

In her seminal work, *Weeds of Farm Land*, Winifred E Brenchley wrote of how 'much of the science of farming consists in the skilful use of methods by which the weeds

²⁵ RJ Chancellor and RJ Froud-Williams, 'A second survey of cereal weeds in central southern England', *Weed Research*, 24, 1984, pp 29-36.

are kept in subjection'. In a section on 'weeds and work', Orwin and Whetham alluded to the impact of weed control on crop yields and the cropping pattern of the following year. By attacking weeds in the autumn, the optimal time of the year, farmers could reduce the area of fallow, and sow catch crops instead.²⁶ All too many historical studies, however, still give the impression that the farmer's crops and livestock were the only living things on the holding. By continuing to overlook the incidence and significance of weeds in the past, such historians may be portraying an unreal world, very different from the one perceived by the farmer and his family.

Increasing concern is being expressed over the incidence of soil erosion on agricultural land. Data from Shropshire, and the Bedfordshire/Cambridgeshire border suggest a surface lowering of between 1.4 and 0.1 mm per annum — rates probably much higher than the amount of soil formed over a similar period by weathering. Studies in south Somerset have highlighted not only the differences in erosion arising from different cropping practices, but also from the methods of cultivation. Soil losses tend to be highest in fields with most wheelings, and where the crop is drilled downslope.²⁷

The historian has long been aware of the incidence of dust blows in the fens and breckland, and has speculated on the scale of soil-abuse in the century, say, before the Black Death. The archaeologist has demonstrated the large-scale occurrence of erosion and alluviation following phases of woodland clearance and agricultural activity in parts of the Upper Thames valley and elsewhere.²⁸ There has been, however,

comparatively little attention given to the more general incidence of erosion over the last few centuries. Whilst it is unlikely that many explicit references will be found to soil erosion in estate papers and other documentary sources, the reconstruction of land use for specific periods in the past may make it possible to speculate on the extent of erosion, using the soil erosion models being developed for studying the present situation.

The practice of conservation would be much easier if ways could be found of creating the species-rich communities, normally associated with old grasslands or heathland, over much shorter periods of time. Until recently, conservationists believed such a goal to be impossible. To the agricultural historian, the stance of the conservationist might resemble that of farmers in the early nineteenth century, who argued that many years would have to elapse before the sward of a rich pasture could be reinstated, once it had been broken up and ploughed. Not everyone, however, took so pessimistic a view. In his classic study, *Hortus Gramineus Woburnensis*, George Sinclair asserted that the long delay could be shortened considerably if farmers took a more active part in grassland husbandry. As Sinclair remarked, it was extraordinary that farmers should be content to leave it entirely to nature to produce the kind of grassland best adapted to the soil. In view of the fact that 'the whole art of cultivating plants is nothing more than assisting nature in the process of the growth of vegetables', it seemed an obvious step for farmers to devise ways of assisting nature in 'clothing the soil with its natural perennial grasses', so that it took only two or three years, instead of eight, ten or twenty years, to achieve that objective.²⁹

If the relevant techniques were devised, there is no *a priori* reason why ecologists cannot create species-rich swards for amenity or nature-conservation purposes over short periods of time by introducing

²⁶ W E Brenchley, *Weeds of Farm Land*, 1920, 239pp; C S Orwin and E H Whetham, *History of British Agriculture 1846-1914*, Newton Abbot, 1964, pp 114-17.

²⁷ G J N Colborne and S J Staines, 'Soil erosion in south Somerset', *Journal of Agricultural Science*, 104, 1985, pp 107-12; R P C Morgan, 'Soil erosion measurement and soil conservation research in cultivated areas of the UK', *Geographical Journal*, 151, 1985, pp 11-20.

²⁸ M A Robinson and G H Lambrick, 'Holocene alluviation and hydrology in the upper Thames basin', *Nature*, 308, 1984, pp 809-14.

²⁹ G Sinclair, *Hortus Gramineus Woburnensis*, 1824.

species, either as seed into bare soil or as seed and vegetative fragments in established turf. In describing a series of trials designed to manipulate grassland communities in this manner, Wells has drawn attention to the value of studying the techniques and experience of farmers in the past, who converted 'plowed land into a delicate thick planted profitable Meadow'.³⁰ A reappraisal of the early writings on grassland husbandry, and the conversion of arable to grassland, might not only be of practicable value to the conservationist, but it could provide insights into how farmers in the past perceived and understood the relationships between productivity, species composition, and the environment.

V

One area where the agricultural historian may provide direct assistance to the conservation movement may be in explaining why the role of the farmer in preserving wildlife appears to have changed so markedly. Farmers were regarded traditionally as custodians of wildlife and amenity in the countryside — a role which they were keen to promote in the public mind. Over increasing tracts of countryside today, they are now regarded as the greatest single threat to wildlife. The striking change in public perception is puzzling to some farmers, who point out that wildlife has always been subject to change, prompted by shifts in the use and management of farmland. Wildlife can be expected to adapt and adjust to these changes in the same way as in the past. For their part, conservationists agree that there is nothing primeval about the plant and animal communities of the countryside — they are largely the outcome of millennia of farming operations. What is new is the intensity and extensive scale of farming activity. For the first time, farmers have the capacity to

eliminate species and communities on a regional and national scale.³¹

The significance of these changes for wildlife conservation has been graphically displayed in the Somerset Moors, and most particularly on West Sedgemoor. Where conflict occurs over land-use priorities, the obvious response is to assess how far wildlife may be affected by drainage and other agricultural operations. What artefacts of the countryside are important for the conservation of wild plant and animal species, and how far is their protection jeopardized by farming and other activities? In seeking to answer these questions, the first priority is to plot the present-day distribution of wildlife. In a survey carried out for the Nature Conservancy Council, the plant life of 240 sites in the Somerset Levels was recorded in 1982 (with further surveys of a proportion of these sites in later years). Each site consisted of a ditch and adjacent fields. It was soon found that the main refugia for wild plant life were the banks of the watercourses — over half the fields in the sample had been ploughed, or their swards were treated with herbicides and fertilizers.

Two types of multivariate analysis were used to determine what features of the ditch were likely to favour particular kinds of species and plant community structure. The long-term effects of ditch cleaning and regular maintenance are to keep the ditch at the same stage in seral development. Species impoverishment is much more likely to occur where a ditch has become redundant (and where the cessation of management leads to the watercourses becoming overgrown by a very few species). Alternatively, it happens where the ditch becomes part of a much larger drainage system. Here, the ditch will probably be deepened, and the substrate of peaty ooze, the gently-sloping banks, and their associated plant life, will be removed.

³⁰ T C E Wells, 'The creation of species-rich grasslands', in A Warren and F B Goldsmith (eds), *Conservation in Perspective*, Chichester, 1983, pp 215–32; W Ellis, *The Farmer's Instructor*, 1747, pp 130–7.

³¹ D A Ratcliffe, 'Post-medieval and recent changes in British vegetation: the culmination of human influence', *New Phytologist*, 98, 1984, pp 73–100.

The evidence obtained from fieldwork will provide a base-line from which future change may be monitored; further, but less complete base-lines can be constructed for periods of time in the past, based on the Flora published on a regional, county, or local basis since perhaps the mid-nineteenth century. If the records available for the Somerset Levels and Moors are collated, 101 species appear to have declined (of which forty-three have experienced a marked decline). Most species are associated with long-established pastures and high water tables. No more than thirty-two species have undergone an increase in status.³²

The agricultural historian may have two kinds of contribution to make to such an appraisal. First, he can use the documentary and field data with which he is already familiar to indicate the presence and role of the watercourses and other features of the Levels and Moors in the past. If the ecologist uses his knowledge of plant life in the Moors today, together with the information provided by early maps, and manorial and estate records, he may be able to speculate on the kind of plant life that occupied the habitats depicted and described, and the degree to which the changing extent and juxtaposition of closes, furlongs, rhynes, and the sedgemoor may have affected species diversity. Data on the extent and degree of success of drainage schemes, attempted in the medieval, post-medieval, and more recent periods, may provide a perspective for assessing the rapidity and areal significance of changes taking place in the same valleys today.³³

A second role for the agricultural historian might be to provide guidance as to how far the agricultural policies of the 1970s might be regarded as a break with the past. A report by the Minister's Agricultural Advisory Council on Soil Structure and Soil Fertility in

1970 had been highly critical of those farmers in the Somerset Levels and Moors who treated watercourses primarily as 'wet' fences for confining their livestock. If there was greater investment in arterial drainage, ditching, and under-drainage, the Council believed that about 130,000 acres (out of a total area of 146,000 acres) could be made suitable for arable cultivation. Since 1966, the scale of drainage work had increased by 10 per cent per annum in terms of the value of schemes.³⁴

How far did these recommendations of the Advisory Council reflect a new dimension in the perception of the region? A rather different set of recommendations had been put forward by the Agricultural Land Commissioners in 1952. In a special study of the Brue Valley and Northmoor, the Commissioners had supported plans to eliminate summer flooding, and to reduce the incidence of spring and autumn floods, but they had urged that 'the present system of dairy farming with permanent pasture should continue to predominate the area'. Experience during and after the war had indicated that there was little advantage to be gained from 'any extension of arable cultivation'. In some senses, a greater affinity can be discerned between the report of the Advisory Council in 1970 and the sentiments expressed in a prize essay on the farming of Somerset, originally published by the Royal Agricultural Society of England in 1851. The latter emphasized the need to control water much more rigorously so as to ensure that it flooded and fertilized the peatlands when required, but was drained away as soon as the silt was deposited. Where this management regime could be achieved, skilful arable cultivation could lead to extensive areas of grass being broken up for wheat and mangold-wurzels.³⁵

³² R P Murray, *The Flora of Somerset*. Taunton, Somersetshire Archaeological and Natural History Society, 1, 1896; J W White, *The Bristol flora*. Bristol, 1912.

³³ M Havinden, *The Somerset Landscape*, 1981, p 158; M Williams, *The Draining of the Somerset Levels*. Cambridge, 1970.

³⁴ Agricultural Advisory Council on Soil Structure and Soil Fertility, *Modern Farming and the Soil*, 1970, pp 87-8.

³⁵ Agricultural Land Commission, *Land in the Brue Valley and Northmoor, Somerset*, 1955; T D Acland, *The Farming of Somerset*, 1851, pp 44-58.

More detailed comparisons of the perception of different regions at varying points in time may suggest that, while the farmer of today might be much more successful in achieving his objectives in land use and management, his perception of what is desirable may represent not so much a revolution in outlook as a resumption of what had become evident in some parts of the country during the period of so-called High Farming during the mid-nineteenth century, before the onset of the peacetime decades of agricultural depression that did not come to an end in the mind of the farming community until the 1950s. In that context, the kind of wildlife encountered on farmland during the post-war years represented not so much the outcome of a 'traditional' pattern of farming, but of a degraded system, when measured against the base-line of the 1850s.³⁶

VI

The aim of this paper has been to illustrate ways in which the agricultural historian

³⁶ I am grateful to Dr E J T Collins, who drew my attention to a paper, 'Nature conservation in England: the historical perspective 1880-1939', which he gave to the International Congress of Agriculture Museums at St Riquier, France, in September 1984; E J T Collins, 'Agriculture and conservation in England: an historical overview', *Journal of the Royal Agricultural Society*, 146, 1985, pp 38-46.

might contribute to knowledge on a range of topical issues in the nature conservation movement. Under his inspiration and guidance, it may become possible to construct further base-lines, from which changes in the rural environment can be monitored and assessed. It may become easier to explain how and why there has been such a dramatic change in the impact of farming on the environment over recent decades. An historical dimension may assist in finding optimal ways of sustaining or creating species-rich wildlife communities today.

Through collaborating with ecologists and others in the conservation movement, the agricultural historian may look anew at ways in which the farmer in the past perceived, understood and utilized the natural resources of the countryside. By participating in wide-ranging, current enquiries, including those related to habitat destruction and pollution, the historian will encounter plenty of opportunities to study particular localities and periods of time from a fresh angle. By responding to such openings for research, the agricultural historian will bring the fascination of his own subject before a wider audience.

Notes and Comments

WINTER CONFERENCE, 1985

Once again the Winter Conference of the Society was held jointly with the Historical Geography Research Group in the Institute of Historical Research, University of London. Professor P D A Harvey opened the proceedings with a useful survey of 'The Regions of Medieval England'. In a different vein Dr N Gregson examined some of the problems involved in 'Conceptualizing Agricultural Regions'. A paper dealing largely with abstract ideas about the nature of regions understandably stirred its audience. After lunch Dr E J T Collins presented a paper on 'Local and regional designs of edge-tools in England and Wales'. The conference was brought to an end with some examples of regional variation in nineteenth-century farming in a paper by Dr G Robinson on 'Agricultural Regionalization in England in the late nineteenth century'. The Society is grateful to Mr Phillips for organizing another successful conference and to the

Director and staff of the Institute for their hospitality.

The next Winter Conference on the theme of 'Agricultural Censuses and Statistics' will be held on Saturday 6 December 1986 in the Institute of Historical Research, University of London. The organizer is Dr Michael Turner, Department of Economic and Social History, University of Hull, Hull HU6 7RX.

SPRING CONFERENCE, 1986

The next Spring Conference will be held at Seale-Hayne College, Newton Abbot, Devon from 6 to 9 April 1986. The excursion on Tuesday afternoon will include visits to some farms belonging to the Royal Duchy of Cornwall and will be introduced in a paper by Mr J W Y Higgs on Monday evening. On Tuesday morning Dr B M S Campbell will speak on 'The Geography of Seigneurial Agriculture in

(continued on page 44)