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FARMLAND WILDLIFE

Farmland covers approximately three quarters of the United Kingdom and has historically provided a wide range of habitats for wildlife. Many British species are adapted to living in a farmed landscape, so efforts to conserve wildlife are often concentrated within managed ecosystems. Much of the wildlife that inhabits farmland has declined over recent decades. The reform of the EU Common Agricultural Policy has presented an opportunity for farmers to be rewarded for protecting wildlife. This POSTnote examines the current status of wildlife on farms. It reviews the options available to farmers for wildlife conservation and explores the implications of future changes to the countryside.

Wildlife on farms – the current situation

The second half of the twentieth century saw huge increases in crop and livestock production, achieved through intensification of farming methods and specialisation of farming businesses. Despite this, farm incomes have often fallen. Since the 1970s, yields of wheat per hectare have doubled and almost twice as much milk is produced per dairy cow[1]. The increase in productivity has come at a cost to wildlife and habitats. The losses have not been confined to rare species; populations of previously common and widespread birds such as the skylark and grey partridge have fallen by 53% and 87% respectively, since 1970[2]. Major declines have also been reported for bumblebees, butterflies and mammals, such as the brown hare. Diffuse water pollution from farms has affected important habitats in rivers and wetlands.

Until recently, wildlife conservation in the UK often concentrated on specifically targeted species and habitats. England's most important areas for wildlife, Sites of Special Scientific Interest (SSSIs), have generally improved in quality in recent years. However, the decline of many species in the wider countryside has led to an increased awareness of the importance of all areas for conservation:

- as valuable biodiversity resources in their own right;
- for providing opportunities for people to enjoy nature;
- for linking and protecting existing high priority habitats;
- for providing ecosystem services (Box 1).

Box 1. Why is farmland wildlife important?

Farmland wildlife contributes to the overall biodiversity of the UK. Biodiversity (or 'biological diversity') refers to the variety of all life and natural processes on Earth. The Government is committed to halting the loss of biodiversity by 2010 and its importance is reflected in the Public Service Agreements covering SSSI quality and farmland bird populations.

In addition to aesthetic and moral reasons for biodiversity conservation, there is growing recognition of the connection between natural ecosystems and human wellbeing[3]. Also, the growing discipline of ecological economics has begun to quantify the financial benefits that humans gain from nature, known as 'ecosystem services'. For example, the annual value of insect pollination of crops in the UK has been valued at £172 million per annum[4].

The animals, plants and micro-organisms that inhabit farmland in the UK are important for maintaining other key ecosystem services such as:

- nitrogen fixation;
- control of crop pests;
- water purification;
- carbon storage;
- soil formation.

High biodiversity has been shown to improve the resilience of ecosystems. Therefore, well connected, high diversity agricultural ecosystems may act as an important buffer to future changes to the landscape, such as those predicted as a result of climate change.

The Common Agricultural Policy

Background

Agriculture in the UK operates within the EU's Common Agricultural Policy (CAP). Established in 1962, the CAP

is the most expensive common policy of the EU, costing EU consumers and tax payers approximately €100 billion per annum[5]. Major reform of the CAP was undertaken in 2003, described by the National Farmers' Union as "the most radical change to EU farming policy since the creation of the European Union"[6].

Decoupling
At the heart of the reform was 'decoupling', which broke the link between subsidy payments and production. Decoupled payments in England are now delivered in a Single Payment Scheme, which was initially based on each individual's historical payment under the old system, but will move to a payment based on land area by 2012. Farmers will be paid regardless of what they produce, provided that certain basic standards are met. These standards are collectively known as 'cross compliance'.

How are farmers' payments made?
There are two 'pillars' of CAP funding. Pillar I delivers direct payments to farmers and provides market price support such as import tariffs, export subsidies and the purchasing of surplus products. Pillar II, established in 1992, delivers rural development and environmental measures. From 2005, the redirection of funds from Pillar I to Pillar II (known as 'modulation') will be applied on a compulsory basis in all EU Member States. In 2006, the compulsory rate of modulation in the EU will be 4% but an agreement has been secured for the UK Government to allow an additional increase, giving a total of 10%[7]. The Treasury currently matches Pillar II funding that is received from the EU. The Government believes the farming industry should be rewarded by the taxpayer only for producing public benefits that the market cannot deliver and that all EU payments should in future be based on the current Pillar II[5].

Environmental Stewardship

In March 2005, the Government launched a new agri-environment scheme: Environmental Stewardship (Box 2). As agricultural affairs are devolved to the Northern Ireland Executive, Scottish Executive and Welsh Assembly, Environmental Stewardship is only available in England. Environmental Stewardship builds on 15 years of experience in developing agri-environment schemes, which pay farmers and other land managers for environmental management that goes beyond what is required as part of cross compliance. Environmental Stewardship replaced all other agri-environment schemes in England (although agreements currently in place will run until the end of their contract period). The old schemes were competitive, had a limited budget and targeted a small number of areas particularly threatened by agricultural change. This targeted approach is incorporated into Higher Level Environmental Stewardship (HLS)(Box 2). What is new in Environmental Stewardship is that all farmers and landowners can, in principle, participate in the Entry Level scheme, to ensure a broad benefit for the environment.

Primary objectives of Environmental Stewardship are to:
- conserve wildlife (biodiversity);
- maintain and enhance landscape quality and character;
- protect the historic environment
- protect natural resources;
- promote public access and understanding of the countryside (HLS only).

Responses to Environmental Stewardship
Environmental Stewardship has been developed with and welcomed by both the farming industry and environmental groups. It is agreed that the "broad and shallow" approach of Environmental Stewardship will help to recruit many farmers who have never before considered being part of an agri-environment scheme. The management options available in Entry Level Environmental Stewardship (ELS) (Box 2) are accessible to most farmers without specialist support, making it easier for farmers to join the scheme and keeping administration costs low.

However, the benefits of the "broad and shallow" approach for farmland wildlife conservation have been questioned by some ecologists. If biodiversity protection were the only aim of the scheme, it could have been designed to be narrower and deeper, with more resources concentrated in fewer, higher quality farms. There is widespread agreement that Higher Level Stewardship (HLS) will provide substantial biodiversity benefits. However, fewer farmers will initially be involved in HLS as it is targeted to where specific objectives can be delivered. There is concern from some farmers' groups that no mechanism exists to reward farmers who wish to do more than is required for ELS, but who do not qualify for HLS.

Box 2. Elements of Environmental Stewardship

Entry Level Stewardship (ELS) requires a basic level of environmental management and is potentially open to every farmer and landowner in England. Farmers receive payment of £30 per hectare, per year, across the whole farm (except in extensively grazed upland). Options are chosen by the farmer and include managing hedgerows, leaving uncultivated field margins, over-wintering stubble, protecting in-field trees and mixed stocking.

Organic Entry Level Stewardship (OELS) is similar to ELS but farmers receive £60 per hectare, per year, on land registered with an Organic Inspection Body.

Higher Level Stewardship (HLS) aims to deliver greater environmental benefits in high priority areas and will usually be combined with ELS or OELS options. Environmental management is more complex and farmers and land managers will need advice and support which will be given by local Rural Development Service advisers. Payments relate to the options chosen and detailed applications are required by preparing a Farm Environment Plan. Unlike ELS and OELS, entry into HLS is not guaranteed by application.

ELS and OELS agreements last for five years, while HLS agreements last for 10 years.

Implementation
Implementation of Environmental Stewardship has not been smooth. Farmers' groups report that widespread optimism following the success of the pilot has been replaced by concerns that many farmers have been put off joining the scheme due to administrative problems. As of early December 2005, of 60,000 application packs issued, only 10,600 agreements were in place[7]. There has also been concern from environmental advisory groups working with farmers about the administrative burden of applying for Higher Level Stewardship; the necessary evaluations and paperwork are taking longer than expected. However, commitment in principle to the new scheme remains strong. It is hoped by all that initial problems are quickly resolved and the Defra target of having 60% of land in the scheme by 2007 will be met.

Tenant farmers
Approximately 30% of land in England is farmed by tenants. The implementation of agri-environment schemes on tenanted land is more difficult. Many tenancies run from one to three years, meaning that some tenants are unable to sign up to the scheme, as it requires a five year legally binding commitment. There is also concern among tenant farmers that in the future, landlords will expect higher rent from tenants who receive payment under Environmental Stewardship.

Monitoring and evaluation
It is widely felt that the thorough evaluation of Environmental Stewardship is essential. This is not only to justify the money spent to the taxpayer, but also to demonstrate to farmers that their work is making a measurable difference to the countryside (see Box 3). The coincidence of the launch of Environmental Stewardship with decoupling as a result of CAP reform may make it more difficult to attribute (possibly small but widespread) changes directly to Environmental Stewardship. Some scientists are concerned that an estimated £400 m a year will fund the scheme, but only £1.3 m will be spent directly on evaluation. All administration costs of Environmental Stewardship come directly from the exchequer. Therefore the evaluation budget could be increased in the future without reducing the amount of money available for farmers.

A report to the EU Court of Auditors on the verification of agri-environment expenditure was published in October 2005[8]. It concluded that the verification of agri-environment measures can rarely be delivered at a reasonable cost. The report also recommended that the EU Commission, Council and Parliament should consider how to take into account the principle that if a measure cannot be adequately checked, it should not be the subject of public payment. Critics of this report stress that just because agri-environment schemes are difficult to audit, this does not mean substantial public benefits cannot be achieved.

Advice to farmers
It is important for farmers to understand the rationale behind the management practices they carry out; the attitude of individual farmers is probably the most important factor for wildlife conservation at the farm scale[9]. Environmental Stewardship will therefore best succeed with the active participation of well informed and interested farmers. The Government has committed £2m for conservation advice to farmers over the next three years. However, there is widespread agreement that farmers are currently not getting adequate advice from the sources available to them; there is too much reliance on written handbooks, internet sites and local workshops. Demonstration farm visits and one-to-one meetings with advisors on the farm are agreed to be the most effective way of disseminating information, but farm visits by advisors are expensive. Farmers' groups report that the way specialist advice is delivered is also very important. Ecologists and farmers approach management situations from a different perspective and often 'speak a different language'. It is felt that finding more common ground, with options that are both beneficial to wildlife and practically and economically feasible would make farmers more receptive to conservation ideas.

Box 3. Do agri-environment schemes benefit biodiversity?
Ecologists have previously been critical of the benefits of agri-environment schemes. A 2003 review of the effectiveness of European agri-environment schemes for wildlife conservation suggested that biodiversity did not always benefit from management changes and was highly critical of the quality of the science presented in the studies reviewed[10].

Environmental Stewardship is designed to be complementary to other conservation measures (such as Biodiversity Action Plans) in order to deliver benefits to biodiversity that other tools cannot. Recently, greater emphasis on targeting and outcomes has led to increasing evidence linking specific biodiversity improvements to agri-environment options[11]. The large body of research into the causes of the decline of farmland bird populations has been drawn on in the development of Environmental Stewardship. However, responses to management changes have been much more widely studied in some groups of animals (for example, birds) than others (for example, soil insects). Ecologists stress the need for a much wider range of animals and plants to be included in evaluations, and for studies to take into account geographic variation in responses. Defra have an annual budget of £2.4 m for research to support agri-environment schemes.

Studies on farmland wildlife that are not published in peer-reviewed journals can be difficult for other scientists to locate. While Defra-funded studies are now available on their website, there is no universally accessible, searchable database for studies that are not published in scientific journals. Better dissemination of all studies would allow thorough post-publication scrutiny and would facilitate systematic reviews of current knowledge. Recommendation of management practices could then be more strategic, relying less on individual advisers' personal experience.

Organic farming and wildlife conservation
Several recent studies have concluded that, in most cases, organic farming can be expected to have positive effects on biodiversity, although this will differ between groups of animals and plants and in different

landscapes[9,12,13]. Organic farming also has benefits for the environment as a whole that are not always reflected in farmland biodiversity. These include a reduction of pesticides in waterways and eliminating the energy expended producing inorganic fertiliser. This has lead the government to offer ongoing support for organic farming in OELS. There is widespread concern from farmers' groups, that organic farming has been seen as a panacea and that the promotion of organic farming by the Government should not be to the detriment of conventional farmers. Along with the benefits from prohibitions on synthetic pesticides and inorganic fertilisers, it is often the broad management practices that are largely intrinsic (but not exclusive) to organic farming that are most beneficial to wildlife[12]. These include the preservation of mixed farming and sympathetic management of non-cropped habitats.

Importance of the wider landscape

Wildlife generally relies on an area far larger than an individual farm and is therefore dependent on the management practices on neighbouring farms. Investigations into the success of agri-environment schemes and organic farming for wildlife conservation must therefore account for the nature of the surrounding landscape[9]. The scale at which research is carried out is critical, as differences attributed to management practices seen in the experimental plot or field may become either more or less apparent at the landscape scale[9]. Ecologists stress that monitoring and evaluation must be conducted at the appropriate scale for the species or group under investigation.

Implications of future change

Future CAP reform will necessitate renewed debate about what the public wants from farmers. While some in the farming industry believe that the loss of traditional agriculture in some areas would be a regressive step, the use of farmland for non-food producing activities is likely to increase in the future. Evaluations similar to those on GM crops have been suggested by some ecologists in order to assess the consequences of likely land use changes.

Fuel production

There is increasing interest from farmers in the production of biofuels (from crops such as sugar beet and oil seed rape) and biomass production (from short rotation coppice of willow and poplar trees). These types of fuels may reduce CO_2 emissions, when compared to fossil fuels, and may form part of the UK's response to climate change. However, there are concerns from the RSPB and others that wildlife may be negatively affected by an expanded UK industry relying on intensive production.

Farm abandonment

Many important habitats in the UK rely on management based on historical agricultural practices. These practices, such as low density grazing of particular stock, are no longer economically viable in some areas and valuable habitats may be lost. For example, the abandonment of cultivated land in the Pyrenees has led to the replacement of grazing pastures by shrubs, decreasing landscape diversity and increasing soil erosion[14]. In some locations, strategic management of abandoned farmland, leading to the creation of wild areas with natural vegetation could bring substantial biodiversity benefits. The National Farmers' Union believes that biodiversity should be seen as a legitimate 'crop' that farmers are paid to produce. Some farmland may be managed in the future for the provision of ecosystem services such as flood management, water purification or carbon sequestration, with wildlife conservation a by-product of such management.

Overview

- **Wildlife in the farmed landscape has declined due to the intensification of farming since the 1970s.**
- **Rare species and habitats have been targeted for recovery, but previously common species have continued to decline.**
- **Less intensive production can reverse these trends.**
- **The Government recently launched Environmental Stewardship, a new agri-environment scheme, that rewards farmers for protecting the environment.**
- **Farmland wildlife could be better conserved if farming payments were more closely tied to specific public benefits, such as environmental protection.**
- **Future CAP reform may make this possible. However such reform may alter the countryside and as yet, the implications of this change for both farmers and wildlife are poorly understood.**

Endnotes

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