The Nature Conservation Value of Low-Intensity Farming Systems

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Introduction

I have been asked, in this brief paper to:

- outline the work of the European Forum on Nature Conservation and Pastoralism;
- highlight the ecological context of European agriculture; and
- identify some of the research priorities in this area.

The work of the European Forum on Nature Conservation and Pastoralism

Europe's natural and cultural heritage is enriched by the wide variety of regional farming systems which work in harmony with local environmental conditions. However, many of these farming systems are currently under threat. The aims of the European Forum on Nature Conservation and Pastoralism are therefore:

- To increase understanding that certain European farming systems are of high nature conservation and cultural value.
- To ensure the availability, dissemination and exchange of supporting information, combining research and practical expertise.
- To bring together ecologists, nature conservation managers, farmers and policy makers to consider problems faced by these systems and potential solutions.
- To develop and promote policy options which ensure the ecological maintenance and development of these farming systems and cultural landscapes.

The Forum is a pan-European non-profit organisation. It is a network to exchange information, identify conclusions, and inform policy development. To achieve its aims, the Forum holds conferences every two years, organises workshops and seminars, and produces two issues of the newsletter *La Cañada* per year. It also conducts research into the ecological relationships on high-nature-conservation-value farmland and into the development of appropriate policies for such areas.

One of the Forum's means of making its work available to policy-makers is the series of seminars held in Brussels. These involve both NGO and

governmental/Commission personnel, and are particularly noted for bringing together people working at European policy levels and those farming and managing land for conservation on the ground.

The research work that the Forum has undertaken to underpin this work has included:

- the initial identification and classification of low-intensity farming systems in nine European countries (Beaufoy *et al.* 1994; Bignal 1998), and the production of popular posters (Bignal *et al.* 1994)
- detailed ecological studies on the ways in which certain species depend on farming operations (*e.g.* Bignal & Curtis 1989; Bignal & McCracken 1993, 1996; Bignal *et al.* 1997)
- analyses of the interactions between natural systems, farming practice and agricultural policy (*e.g.* Beaufoy 1997, 1998; Bignal *et al.* 1996; Galbraith & Pienkowski 1990; Goss *et al.* 1997; Mitchell 1996; Mitchell *et al.* 1997; Pain & Pienkowski 1996; Pienkowski & Bignal 1993, Pienkowski *et al.* 1995; Tubbs 1997).

The ecological context of European agriculture

If we think of them at all, we tend to consider sustainable land-use and the conservation of biodiversity as relating to tropical rainforests or the plains of Africa, rather than to most of Europe. However - until relatively recently - Europe was a region in which people were a closely integrated part of the sustainable system. Developments had taken place gradually over long periods so that human use and wildlife had developed alongside each other.

The long association of European wildlife and pastoral or mixed agriculture is often overlooked. Ten thousand years ago, forest began replacing the Ice Age landscape. After only three thousand years (around 5000 BC) the forests were already being cleared by Neolithic people. It is interesting to note that this agricultural landscape evolved over a period twice as long as that occupied by the post-glacial forests. Much of Europe is essentially a managed landscape - and its grasslands, heaths, moorlands and bogs together with the present day associated wildlife are partly the result of farming systems. From the Dark Ages - and probably much earlier - through to the mid 18th century, a highly developed and integrated regional livestock farming system evolved, with distinct local breeds of sheep, pigs, cattle and horses (see also Tubbs 1997).

How do we know that these systems were environmentally sustainable? There are many definitions of environmental sustainability. However, some of these systems have kept going, with developments, for 7000 years, supporting over 300 generations of people without significant external inputs. Such systems also supported, at least until the last few years, rich populations of wildlife. If anything I plan lasts a fraction of that time, I would dare to claim - if I were still around - that it was sustainable.

Human communities modified the landscape into a wide variety of farming systems, some of which survive (Beaufoy *et al.* 1994; Bignal 1998; Bignal *et al.* 1994). The interaction of grazing and climate considerably modified the plant communities of heathland, grassland, mountain and steppe which sustained the pastoralism, contributing to the survival and prosperity of local communities. Farm systems varied

in response to local and regional conditions, but their common characteristics were that they were low-input, low-output, usually labour-intensive, and economically and ecologically sustainable. These farm systems have enriched Europe's open-ground flora and fauna by enhancing diversity of habitat, such as around settlements, whilst maintaining the large-scale open habitats. The pastoral exploitation of mountain regions could be accomplished only by transhumance, leading to the development of long-distance drovers' roads which came to possess peculiar floras arising from seasonally extremely intensive grazing. Another kind of drovers' road, that led from regions of production to large city markets, such as those from Wales and northern Britain to London, were presumably equally rich, but these are almost completely lost to us now. Those areas of environmentally sustainable farming that survive tend to have high nature value.

The essential characteristics of high-biodiversity rural land-uses are that external energy inputs are low. Inevitably, as a result, outputs per unit area are also low. This does not mean that efficiency is low; generally, it is rather high.

In the second half of the 20th century, there has been a new kind of disruption in the European ecosystem which has involved a massive decline in biodiversity. Wildlife had been able to adjust and exploit the earlier agricultural situations because modifications to the environment had been gradual. However, in the last century and particularly in recent decades, this has changed. Modern machinery and agro-chemicals allow rapid changes to the farmed environment over huge areas, to impose a high-input, standard, factory landscape over the previous characteristic regional features.

There are many costs to Society of these changes, but the range of these impacts is often overlooked. One of the major costs is to wildlife. This is important in itself, but also provides some measure of the degree of sustainability of our actions.

Some of the best monitoring data are for birds (Pain & Pienkowski 1996; Tucker & Heath 1994). For example, skylark *Alauda arvensis* populations are declining throughout the western half of Europe. The eastern populations are expected to follow if we continue to "aid" eastern European farming in the ways we seem to be doing. Other species have already gone. The corncrake *Crex crex* was a common feature of farmland throughout Europe until earlier this century, as is well attested in popular stories and poetry. It is declining throughout Europe. In the British Isles, its progressive restriction to a few Hebridean islands and parts of Ireland match well the introduction of mechanisation and tidy fields.

The intensification of agriculture has had other major impacts on both the human population and wildlife. The quantities of fertilisers used have increased markedly in recent decades. Much of this finds its way into the water supply. In 26 countries of Europe, the European Environment Agency has reported that groundwater pollution by nitrates, largely from agriculture, is a risk to human health problem. There have been similar increases in pesticide usage. The problem is even more widespread than for nitrates (Stanners & Bourdeau 1995).

I will not give examples of all the hidden costs to Society of the intensification of agriculture, especially as many were given in the Forum's seminars (Mitchell 1996;

Goss *et al*. 1998; Hindmarch *et al.* 1998). However, major costs have been identified in a range of aspects including:

- wildlife and habitats
- regionally adapted livestock breeds and mixtures
- employment & rural communities
- knowledge
- cultural identity and quality of life
- water supplies
- animal welfare and human health
- financial cost

Much of this intensification is driven by the structure of agricultural policies (see Goss *et al.* 1997; Goss *et al*. 1998; Beaufoy 1998). There are two global processes, which will impact this - and these changes could be very positive or negative for the environment. The World Trade Organisation negotiations will mean that payments for farming will soon be possible only for aspects, which do not distort the market. One of the few elements for which this is likely to be possible is for payments for the public good of nature conservation, soundly based on ecological work. Farming and nature conservation interests will need to develop even further their co-operation.

This links to the second global process. People throughout the world are increasingly concerned with a sustainable life-style and the conservation of biodiversity. For some, this relates to the quality of life. For others - whose home islands are likely to be drowned as a consequence of pollution and climate change - it is a matter of life itself. Politicians have taken these points on board, at least to the extent of reaching various treaties, such as those at Rio in 1992. The fulfilment of these commitments has been variable, but there are some signs that there is an increasing seriousness being attached to them.

The essence of the Convention on Biological Diversity is that wildlife cannot be conserved just tucked away in enclaves but its conservation depends on this being integrated in other land-uses (or sectors of human activity), whether these be agriculture, fisheries, transport, industry or whatever. This is intimately related to undertaking work in an environmentally sustainable way.

Article 6 of the Convention is particularly important in stressing the need to incorporate conservation into other policies and practices: each Contracting Party has committed itself [amongst other things] to:
b) Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

Turning to that formerly highly environmentally sustainable activity, farming, we can ask:

- Do more sustainable farming systems still exist?
- What policies do we need to maintain and restore environmentally sustainable farming systems?
- What practices on the ground do we need to maintain and restore these high-

nature-value systems?

These three questions represent the focus of the Forum's work.

The European Forum on Nature Conservation and Pastoralism identified some years ago the need for information on where such farming systems of high nature value still exist (Beaufoy *et al.* 1994; Bignal 1998; Bignal *et al.* 1994). A collaborative study in 9 countries identified, classified and mapped the areas in which high-nature-value farming still occurs fairly commonly. Not surprisingly, there is a good general match between the areas in which high-nature-value farming remains and those where the water supply is least contaminated (see above).

Unfortunately, these high-nature-value areas are still being lost. And the many in central and eastern Europe are coming under increasing pressure to match the policies of western Europe.
Both conservationists and farming policy have tended to adopt the policy of single use. This is the very opposite of the concepts of sustainable use, adopted now by the EU and most countries around the world in the Convention on Biological Diversity.

Research priorities
The purpose of this Workshop is to discuss future research needs. This again is a main function of the Forum. My final section outlines some of the areas in which the Forum plans to develop its collaborative research work.

European low-intensity farming systems: a phased programme of research to produce a pan-European typology to inform policy and practice
The work which led to the Forum's series of publications on *The Nature of Farming* (Beaufoy *et al.* 1994; Bignal 1998; Bignal *et al.* 1994), and which achieved the first description and preliminary classification of Europe's low-intensity farming systems, was conducted 5 years ago. This has proved invaluable in increasing the recognition of the value of these systems and achieving a high degree of agreement in principle that actions are needed to maintain them. However, further development of this work is needed, for several reasons:

1. Little positive action on the ground has yet been achieved, partly because more information is needed to link policy, farming systems and nature value. Classification is needed to inform relevant policy initiatives and to be sure that the necessary information is to hand.
2. The Commission's document *Agenda 2000* explicitly states that agri-environmental instruments will be given greater importance in future. It even suggests that the LFA support systems could be transformed into an instrument to maintain and promote low-input farming.
3. However, without some basic typology of farming systems (which links what the system does with what biodiversity is associated with it) there is a real danger that new proposals could, at the best, be of little value – and, at the worst, be counter-productive.
4. There is a great urgency to start work so that systems can be defined, understood, and targeted as rural development policies are gradually developed, and as agricultural policy changes. Agri-environmental aspects will be linked with forestry, early retirement, Less Favoured Areas, etc. (It is

proposed to combine all 7 existing Regulations into one piece of legislation.) Therefore, the agricultural–ecological context must be understood if measures are to be well informed and effective.

An initial assessment of the environmental implications for European rural areas of the potential shift from agricultural to regional support, as proposed in Agenda 2000

Historically, payments to rural communities have been made dominantly through agricultural subsidies and, more recently, also though regional policies. A consequence of this is that environmental policies have tended to seek impact through these other policies rather than directly. There is some sense in this, in that many traditional agricultural practices have been supportive of nature conservation value. However, recent Forum studies (Goss *et al.* 1997; Beaufoy 1997, 1998) have demonstrated that this is not necessarily a cost-effective use of public money intended for environmental benefit. As a general principle (and as shown by experience), effective delivery is normally highest when linked as directly as possible to clear objectives. The need for clear environmental objectives is emphasised also by the requirements of the Convention on Biological Diversity and those of the World Trade Organisation (see Bignal *et al.* 1996; Goss *et al.* 1998).

The issue is essentially that there is not an environmental policy, as such (although the biodiversity strategy may develop this). Environment is an issue in agricultural policy and, in the future, Agenda 2000 proposes that it will be combined with policies on forestry, early retirement, Less Favoured Areas, etc. Also, there is clearly a shift from agriculture *per se* to regional aid. There seems to be an assumption that an "integrated rural development policy" will answer all the prayers. Experience in the Western Isles of Scotland (which have lost high-nature-value/ high-productivity crofting agriculture during the period of such a policy) and in Greece is that this is not necessarily the case.

The work of the Forum has also demonstrated the need for policies to be tailored to the environmental potential of different regions (see Goss *et al*. 1998; Poole *et al.* 1998; Tubbs 1997; Hindmarch *et al.* 1998). A strength of the Forum is in keeping up-to-date with policies and issues – this can be done only through research into these issues. This study will seek to compare, in the context of the main ecological regions of the EU, the aspects of current environmental, agricultural and rural policies which are relevant to nature conservation.

Exploring European livestock farmers' reactions to the Agenda 2000 proposals and implications for the environment

In its work on examining options for better integration of environmental concerns into the EU livestock sectors, the Forum has recruited panels of farmers in sample areas of the 6 major ecological regions of the EU. These farmers were used in the DG XI commissioned study to obtain reactions to potential policy changes in agriculture (see Goss *et al.* 1997; Goss *et al*. 1998; Poole *et al.* 1998). DG VI found this very useful. The groups provide the opportunity of establishing a permanent consulting network of working livestock farmers to the proposals in Agenda 2000 and alternative ideas. Policies have an impact on the ground only if they are attractive enough for farmers (or other target groups) to adopt. Such pilot examinations are, therefore, of great value in avoiding the establishment of expensive administrative machinery which might be

little used or even have negative effects.

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